Dinawan Solar Farm

Submissions Report

Prepared for Spark Renewables

September 2024

Dinawan Solar Farm

Submissions Report

Spark Renewables

E220305 RTS

September 2024

Version	Date	Prepared by	Reviewed by	Comments
V1	5 July	Sofia Stergio	Kate Cox	For Spark review
V2	2 August	Sofia Stergio	Kate Cox David Richards	For Spark review
V3	13 September	Sofia Stergio	Kate Cox David Richards	For submission

Approved by

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13 September 2024

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Executive Summary

ES1 Background

Spark Renewables Pty Limited (Spark Renewables) proposes to develop the Dinawan Solar Farm, a large-scale solar photovoltaic (PV) generation facility and battery energy storage system (BESS), supported by associated infrastructure (the project). The project is on the traditional lands of the Wiradjuri people and several smaller nations of the Murrumbidgee plains, about halfway between the towns of Coleambally and Jerilderie. The regional context of the project is within the Murrumbidgee local government area (LGA) in New South Wales (NSW).

The main objective of the project is to generate and dispatch renewable energy, consistent with NSW Government policy for renewable energy generation and storage. The project will have a generation capacity of up to approximately 800 megawatts (MW) (AC), equivalent to the demand of more than 300,000 NSW households, along with a storage capacity of up to 300 MW for 2 hours (600 MWh).

The project is a State significant development (SSD) pursuant to schedule 1 of State Environmental Planning Policy (Planning Systems) 2021 (Planning Systems SEPP). Accordingly, a development application (DA) and environmental impact statement (EIS) was submitted to the NSW Department of Planning, Housing and Infrastructure (DPHI) for the project under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The EIS for the project was publicly exhibited from 17 November 2023 to 18 December 2023.

During the public exhibition of the EIS, a total of 82 submissions were received by DPHI from the public and organisations. Additionally, 11 regulatory agencies provided advice on the project. This submissions report has been prepared to address the matters raised in these submissions, in accordance with Section 59(2) of the NSW Environmental Planning and Assessment Regulation 2021 (EP&A Regulation).

ES2 Submission received

During the public exhibition of the EIS, 82 public submissions were received by DPHI objecting to the project. Of the 82 submissions received, 79 were from individuals and 3 were from organisations. Of these, 17% of submissions were from the local and regional area (i.e. less than 100 km from the project). In addition, 11 regulatory agencies provided advice on the project.

The most commonly raised matters from public submissions included:

- justification of renewable energy
- general justification and evaluation of the project
- loss of agricultural land
- contamination of the environment
- cost of energy and cost benefit analysis.

Submissions from the local and regional area also raised concerns about the project's impact on biodiversity (including threatened species and ecological communities) and bushfire risk.

ES3 Actions since EIS exhibition

ES3.1 Project refinements

Following the exhibition of the EIS, further review of the design has been completed to refine the development footprint. As a result of this detailed design as well as ongoing engagement with the local community, project landholders and other stakeholders, Spark Renewables has amended the project. The primary change involves a reduction in the development footprint, from 2,499 hectares (ha) to 1,792 ha (a 28% reduction), which incorporated opportunities for further avoidance of environmental impacts.

A separate amendment report has been prepared to outline the amendments to the project that have been made since the public exhibition of the EIS and provides a summary of the impacts associated with the amended project. The amendment report will be submitted to DPHI in conjunction with this submissions report.

ES3.2 Engagement

Stakeholder engagement for the project commenced in 2021 and has been comprehensive to date. Since the lodgement of the EIS, Spark Renewables has continued to engage with stakeholders including local authorities, government agencies, the local community and neighbouring landholders.

Spark Renewables has actively engaged with the local community since the exhibition of the EIS. This has included setting up temporary offices in Coleambally and Jerilderie for four weeks during the public exhibition of the EIS (November and December 2023), conducting targeted consultation with local community groups and neighbouring properties (including R049) in February, April, May, June and July 2024 and updating First Nations Groups on the amended project at Aboriginal focus group meetings in May 2024. Spark Renewables have incorporated feedback from the community into the project, including amending bushfire mitigation measures following consultation with Argoon Rural Fire Brigade.

Engagement with government agencies has focused primarily on the content of the submissions provided during their review of the EIS and the amendments to the project. Specifically, these responses have been the subject of further engagement with DPHI, Murrumbidgee Council, NSW Rural Fire Service, Transport for NSW and NSW Department of Primary Industries – Agriculture.

ES3.3 Further assessment of impacts

The following technical assessments have been updated in response to matters raised by government agencies and/or to reflect the amended project:

- Biodiversity development assessment report (BDAR) – the BDAR has been updated in response to comments from NSW Department of Climate Change, Energy, the Environment and Water – Biodiversity, Conservation and Science Group (BCS) and to reflect the amended development footprint. It is provided in Appendix D.1 of the amendment report.
- Aboriginal cultural heritage assessment (ACHA) – the ACHA has been updated in response to comments from Heritage NSW and to reflect the amended development footprint. It is provided in Appendix D.2 of the amendment report.
- Traffic impact assessment (TIA) – the TIA has been updated to in response to comments from Transport for NSW and Murrumbidgee Council. It is provided in Appendix D.5 of the amendment report.
- Water resources assessment – further information has been provided in the amendment report on the project water supply in response to comments from Water NSW. It is provided in Section 6.8 of the amendment report.

- Bushfire assessment report – the bushfire assessment report has been updated in response to recommended conditions of consent from NSW Rural Fire Service and Murrumbidgee Council, engagement with Argoon Rural Fire Brigade and to align with project amendments. It is provided in Appendix D.7 of the amendment report.

In addition to the above, the amendment report has considered how project amendments will affect other environmental assessments prepared for the EIS (Chapter 6 of the amendment report).

ES4 Evaluation and conclusion

In response to submissions received on the project and based on the outcomes of engagement with key stakeholders, amendments have been made to the project since the public exhibition of the EIS, primarily a 28% reduction in the size of the development footprint which has incorporated opportunities for further avoidance of environmental impacts.

The amended project avoids and minimises the following impacts:

- Avoid a further 653 ha of NSW listed (42% reduction) and 110 ha of Commonwealth listed (74% reduction) TECs.
- Biodiversity offsets required for the project have been further reduced by 12,663 (88% reduction) for species credits and 19,244 (48% reduction) for ecosystem credits.
- Avoid a further three additional Aboriginal heritage sites (DEHS-2023-IF3, DEHS-2023-AS3 and DEHS-2023-AS8).
- Avoid up to 707 ha of agricultural land.
- Increase buffer distance between PV modules and nearby private and public receptors (including R036, R049, Liddles Lane and Kidman Way) to further minimise visual impacts of the project.

The project is considered to be justified and in the public interest because:

- it will contribute to energy security and reliability in NSW by diversifying the State's energy mix and helping to prepare for the retirement of large-scale coal-fired power generation
- it will contribute to reducing GHG emissions from electricity generation, reducing the impacts of climate change and the community and the environment
- it is aligned with Commonwealth and NSW Government electricity policies and strategies and regional plans
- it will provide ongoing economic benefits for both the local economy within the Murrumbidgee LGA and more broadly, the regional economy
- it will provide significant employment and business opportunities during construction
- the impacts of the amended project have been assessed and can be adequately managed through the proposed design and mitigation and management measures proposed to be implemented during construction and operations.

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1 Introduction

1.1 Background

Spark Renewables Pty Limited (Spark Renewables) proposes to develop the Dinawan Solar Farm, a large-scale solar photovoltaic (PV) generation facility and battery energy storage system (BESS), supported by associated infrastructure (the project). The project is on the traditional lands of the Wiradjuri people and several smaller nations of the Murrumbidgee plains, about halfway between the towns of Coleambally and Jerilderie. The regional context of the project is within the Murrumbidgee local government area (LGA) in New South Wales (NSW) as shown in Figure 1.1.

The project is within the South West Renewable Energy Zone (REZ), a region selected by the NSW Government for its significant potential for renewable energy generation and regional development.

The project will connect to the Dinawan Substation (Figure 1.2), currently under construction as part of the Project EnergyConnect interconnector that will run between Robertstown in South Australia and Wagga Wagga in NSW. The substation and interconnector are a separate approved project that is being built by Transgrid.

The main objective of the project is to generate and dispatch electricity from renewable sources, consistent with NSW Government policy for renewable electricity generation and storage. The project will have a generation capacity of up to approximately 800 megawatts (MW) (AC), equivalent to the demand of more than 300,000 NSW households. The project will significantly contribute to the government's 3.98-gigawatt (GW) generation target for the South West REZ. It will assist in meeting NSW and Australian Government emissions reduction targets and have the capacity to abate approximately 1.5 million tonnes of greenhouse gases (GHG) annually.

The project is a State significant development (SSD) pursuant to schedule 1 of State Environmental Planning Policy (Planning Systems) 2021 (Planning Systems SEPP). Accordingly, a development application (DA) and environmental impact statement (EIS) was submitted to the Department of Planning, Housing and Infrastructure (DPHI) for the project under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The EIS for the project was publicly exhibited from 17 November 2023 to 18 December 2023.

During the public exhibition of the EIS, a total of 82 submissions objecting to the project were received by DPHI from the public (including 79 individuals and 3 organisations). Additionally, 11 regulatory agencies provided advice on the project. This submissions report has been prepared to address the matters raised in these submissions, in accordance with Section 59(2) of the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation).

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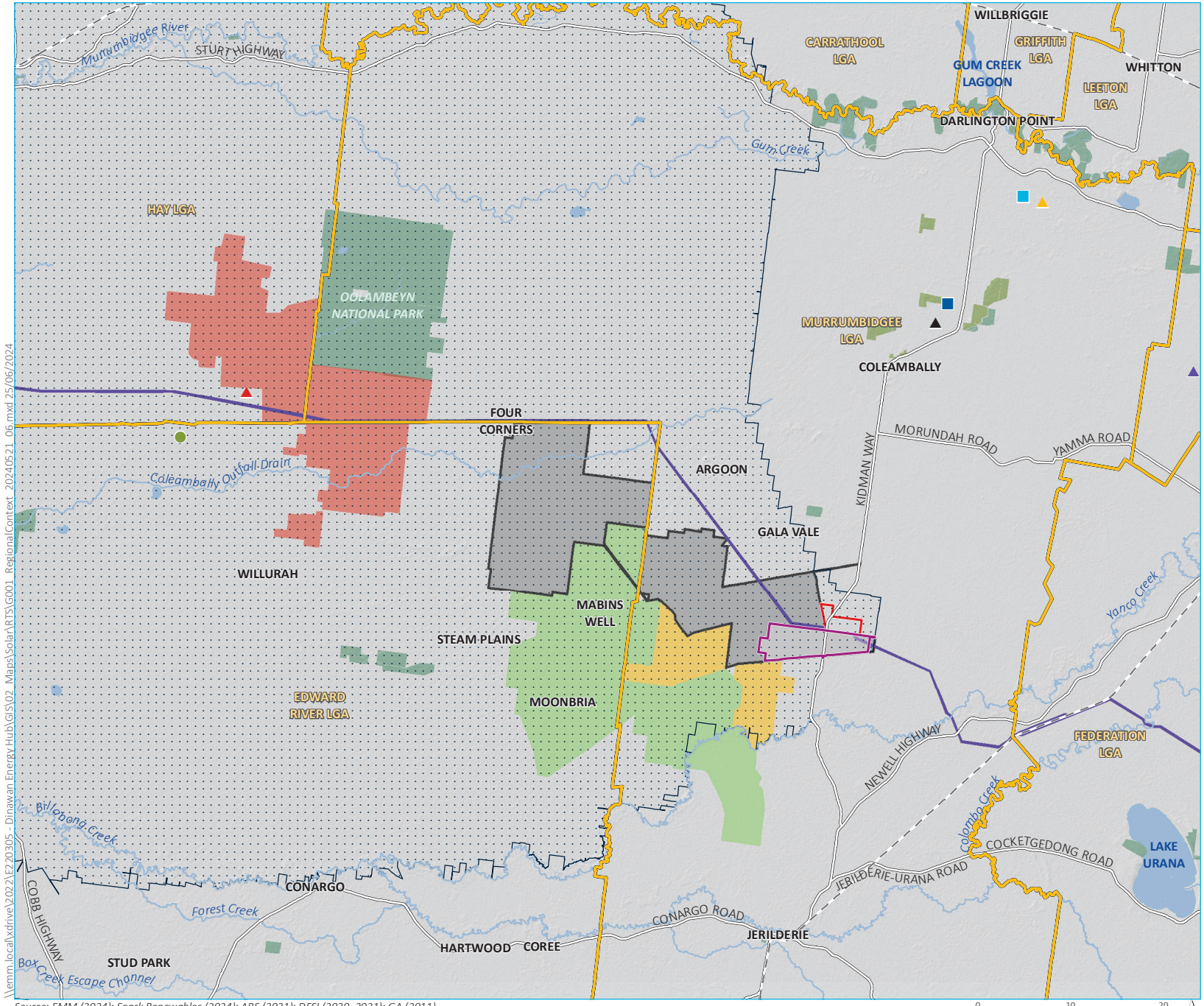
A separate amendment report has been prepared to outline the changes to the project that have been made since the public exhibition of the EIS and provide a summary of the impacts associated with the amended project. The amendment report will be submitted to DPHI in conjunction with this submissions report.



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Source: EMM (2024); Spark Renewables (2024); ABS (2021); DFSI (2020, 2021); GA (2011)

Regional context

Dinawan Solar Farm
Submissions Report
Figure 1.1

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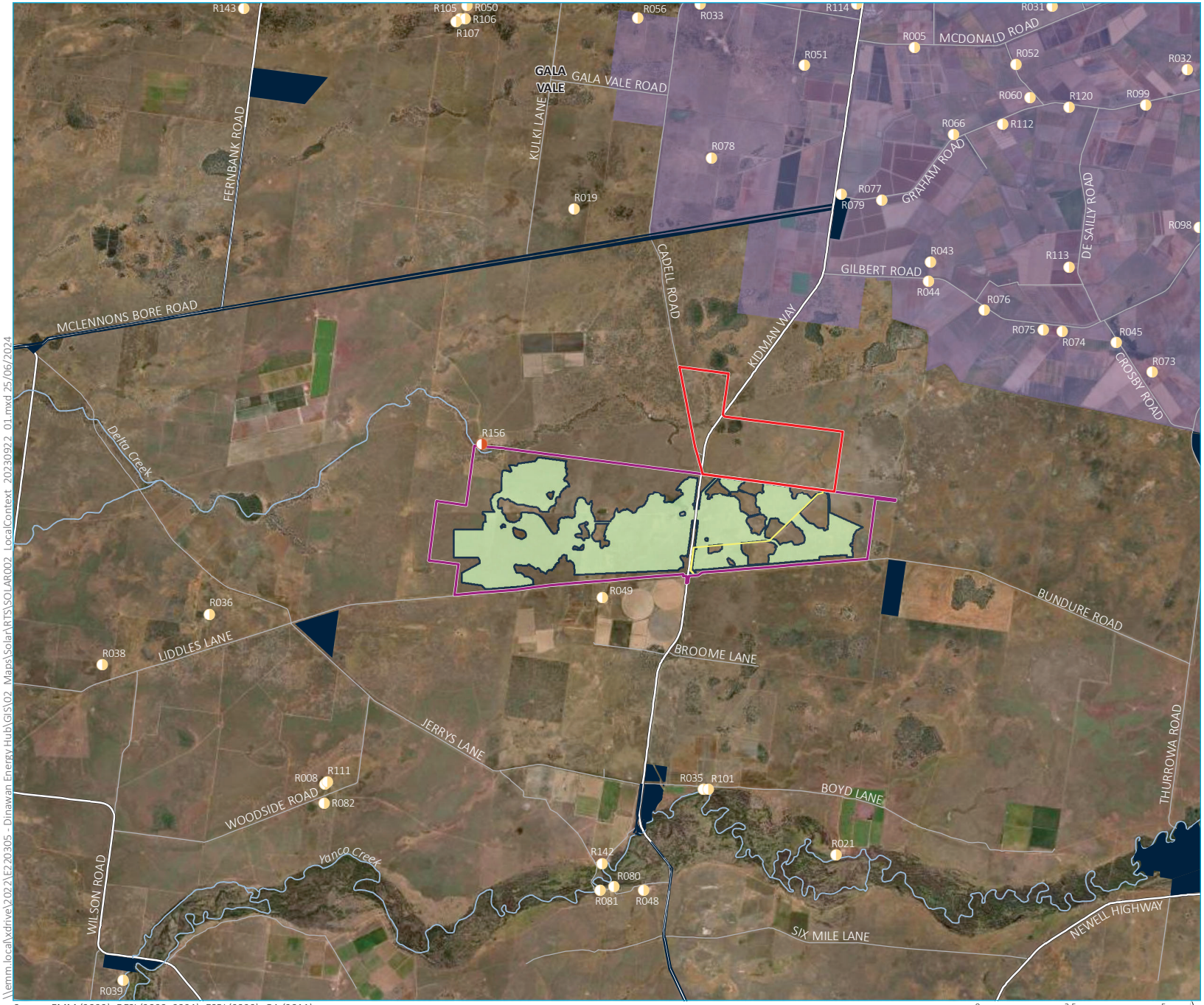

KEY

- Project area
- Development footprint

Project EnergyConnect (Transgrid)

- Dinawan Substation

Residence

- Associated residence
- Non-associated residence

Existing environment

- Watercourse (third order and higher)
- Major road
- Minor road
- Coleambally irrigation area
- Travelling stock reserves
- Coleambally irrigation channel

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Source: EMM (2023); DFSI (2020, 2021); ESRI (2022); GA (2011)

0 2.5 5 km

GDA2020 MGA Zone 55

N

Local context

Dinawan Solar Farm
Submissions Report
Figure 1.2

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1.2 Project overview

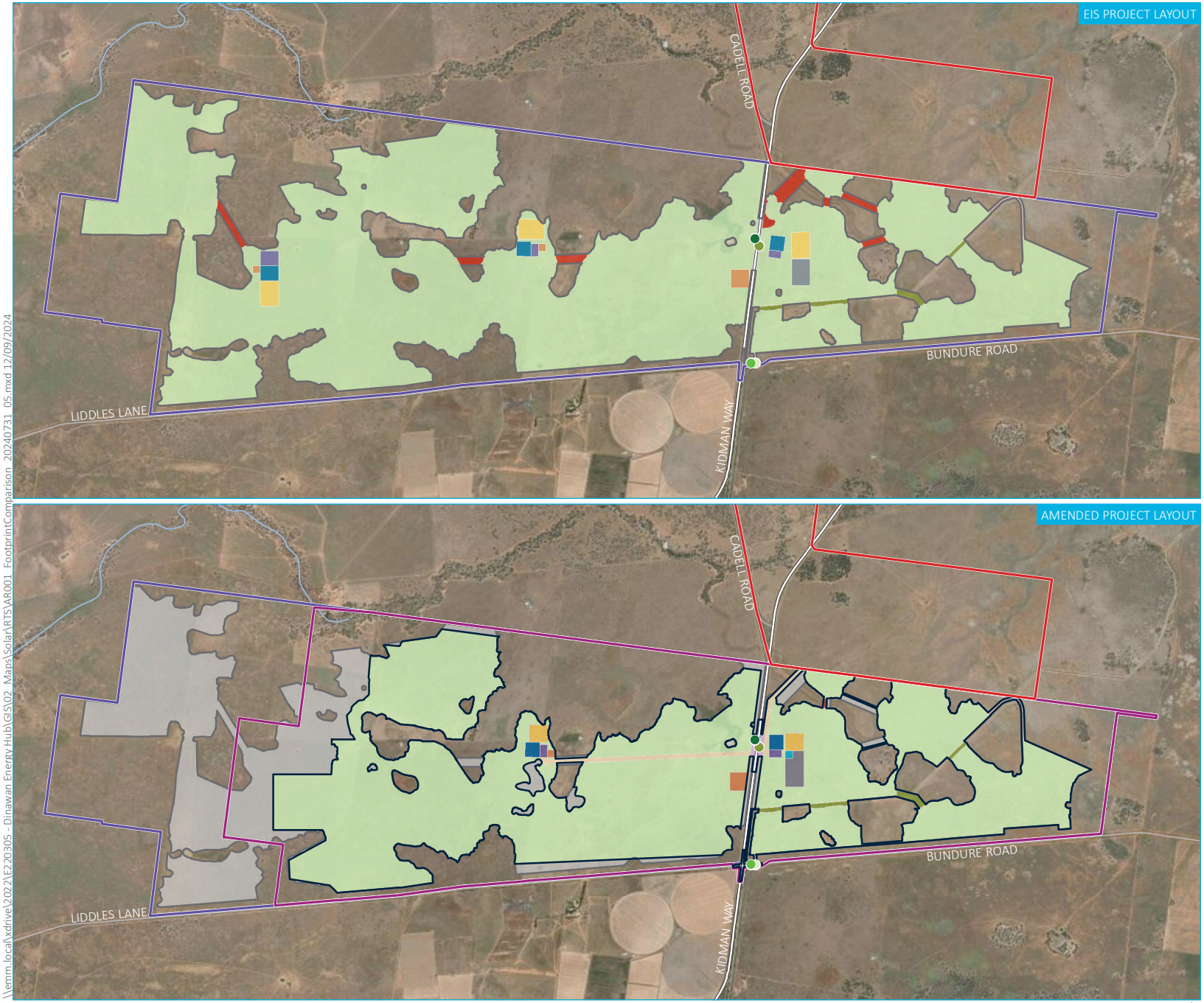
A detailed description of the amended project is provided in Chapter 3 and Appendix A of the amendment report (EMM 2024). An overview of the amended project is shown in Figure 1.3. The project will comprise the following key components:

- a network of approximately 2 million solar PV panels and associated mounting infrastructure
- a BESS with a capacity of up to 300 MW (AC coupled) and a storage duration of up to 2 hours equivalent to 600 megawatt hours (MWh)
- electrical collection system, substations and control rooms
- operations and maintenance (O&M) infrastructure, including site offices and amenities, buildings, equipment and maintenance sheds, laydown, storage and parking areas
- electricity transmission line infrastructure connecting the project substations to the Dinawan Substation
- site access from Kidman Way and Bundure Road
- temporary construction facilities, including workforce accommodation, construction compounds, site offices and amenities, laydown areas, construction materials storage and parking areas.

1.3 Purpose of this report

Spark Renewables received correspondence from DPHI on 19 December 2023 requiring responses to the matters raised in the submissions to the EIS. Accordingly, this submissions report has been prepared by EMM Consulting Pty Limited (EMM) in accordance with the *State significant development guidelines – preparing a submissions report* (DPHI 2024a) (Submissions Report Guidelines). The purpose of this report is to consider and respond to submissions made by agencies, organisations, and the general public during the public exhibition of the EIS.

Following lodgement of this submissions report and the amendment report, DPHI will prepare its assessment report, considering the submissions received, and the project's response to these submissions.



KEY

- EIS project area
- EIS development footprint
- Amended project area
- Amended development footprint
- Area excised from the development footprint

Site access

- Kidman Way western site access
- Kidman Way eastern site access
- Bundure Road eastern site access
- Bundure Road western site access

Project elements

- Solar array
- O & M facility
- BESS
- Substation
- Switchyard
- Construction compound
- Construction compound/accommodation camp
- Transmission line
- Restricted development area (irrigation)
- Site access
- Electrical cabling/site access
- Public road upgrade/electrical cabling
- Public road upgrade

Project EnergyConnect (Transgrid)

- Dinawan Substation

Existing environment

- Major road
- Minor road
- Watercourse (third order and higher)

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Source: EMM (2024); Spark (2024); DFSI (2020, 2021); ESRI (2024)

0 2.5 5 km

GDA2020 MGA Zone 55

N

Summary of project amendments

Dinawan Solar Farm
Submissions Report
Figure 1.3

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2 Analysis of submissions

2.1 Summary of submissions

During the public exhibition of the EIS, 82 public submissions were received by DPHI. Of the 82 submissions received, 79 were from individuals and 3 were from organisations. Following the exhibition period, an additional public submission was received by DPHI, which has not been included in that statistics in this chapter, however, has been responded to in Chapter 5.

In addition, 11 regulatory agencies provided advice on the project, including Murrumbidgee Council, the relevant local government authority.

Submissions are available to view on the NSW Government's Major projects website at: https://www.planningportal.nsw.gov.au/major-projects/projects/dinawan-solar-farm. A submissions register is provided in Appendix A of this report, which summarises all submissions received. A summary of submissions, including the total number of submissions who oppose, support or commented on the project, is provided in Table 2.1.

Table 2.1 Summary of submissions received

Source	Object	Support	Comment	Advice	Total
Public – individual	79	-	-	-	79
Public – organisation	3	-	-	-	3
Sub-total	82	-	-	-	82
Government/public agency	-	-	-	11	11
Total	**82**	**-**	**-**	**11**	**93**

Note: The type of submission has been categorised by DPHI on the major projects website (i.e. object, support and comment).

The following government agencies or other stakeholders relevant to the project provided advice on the project:

1. Department of Primary Industries – Agriculture (DPI Agriculture)
2. NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW) – Heritage NSW
3. NSW DCCEEW – Water NSW
4. NSW DCCEEW – Biodiversity, Conservation and Science Group (BCS)
5. Crown Lands
6. Fire and Rescue NSW (FRNSW)
7. Murrumbidgee Council
8. NSW Rural Fire Service (NSW RFS)
9. Transport for NSW (TfNSW)

10. Mining, Exploration & Geoscience (MEG)

11. Transgrid.

All government agency submissions provided advice on the project, with no objections received. Two agencies acknowledged the project and did not provide further comment (Crown Lands and MEG).

The following organisations provided submissions objecting to the project:

1. Climate and Energy Realists Queensland

2. Save Our Woodlands

3. Save Our Surroundings.

2.2 Response methodology

All submissions received were collated and categorised based on who they were from, in accordance with the following categories:

- government or other agencies
- public submissions from individuals and organisations.

The submissions were reviewed, and the key matters raised in each submission identified.

2.3 Categorisation of issues

Matters raised in the submissions have been classified as one of the following five broad categories in accordance with the Submissions Report Guidelines (DPHI 2024):

1. the project (such as the project study area, the physical layout and design, key uses and activities, timing)

2. procedural matters (such as the level of quality of engagement, compliance with the Secretary's Environmental Assessment Requirements (SEARs), identification of relevant statutory requirements)

3. the environmental, social or economic impacts of the project (such as amenity, air quality, biodiversity, heritage)

4. the justification and evaluation of the project as a whole (such as consistency of the project with Government plans, policies or guidelines)

5. issues that are beyond the scope of the project assessment (such as broader policy issues) or not relevant to the project.

Each of these categories have been divided into sub-categories (such as biodiversity, air quality, bushfire, cumulative impacts) and then key matters raised have been further identified within these sub-categories as outlined below in Table 2.2.

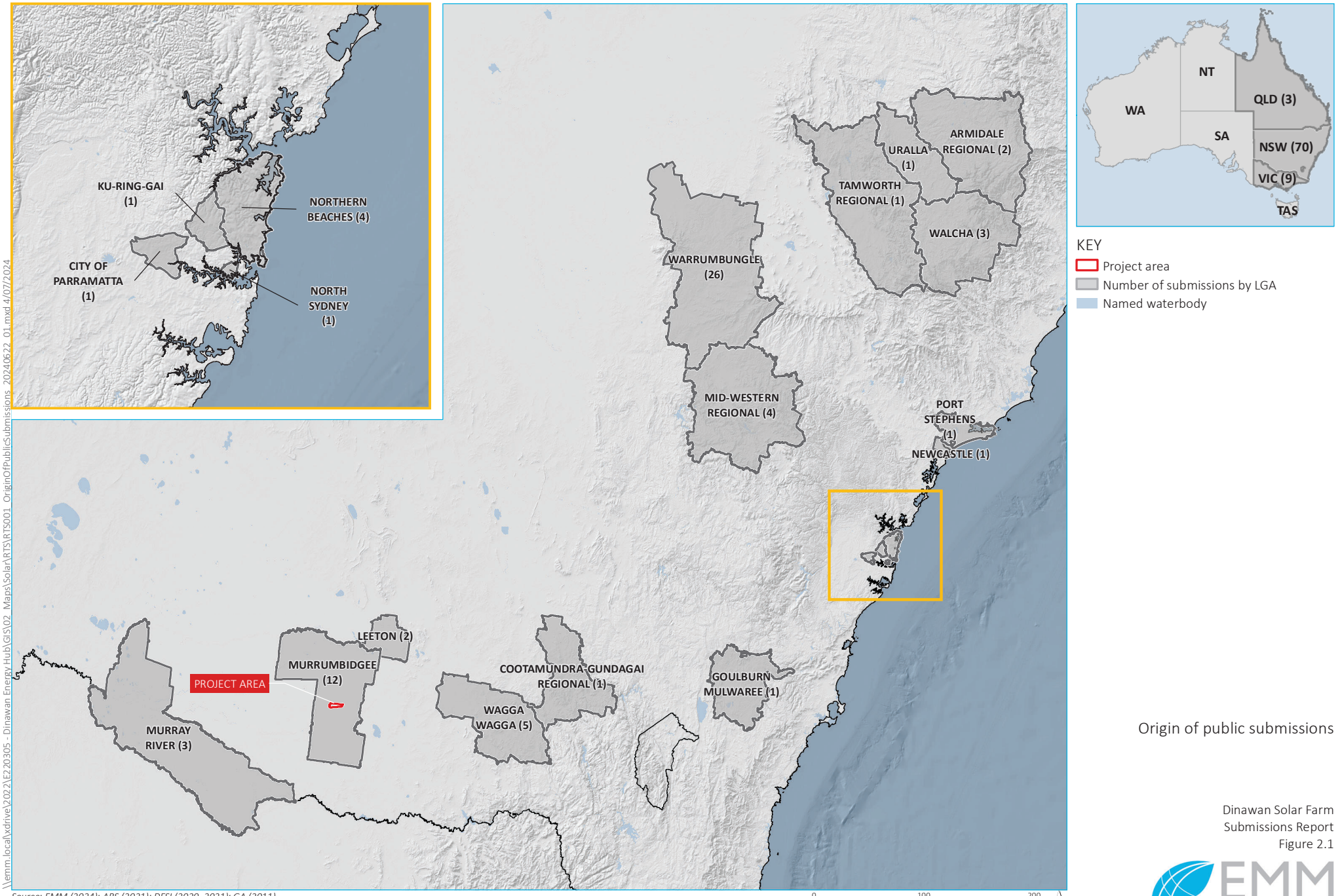
2.4 Public submissions

2.4.1 Origin of public submissions

The number of public submissions were analysed by their locality and distance from the project area. Public submissions came from 48 different localities. Of these 48 localities:

- 15% are from the local area (i.e. less than 5 kilometres (km) from the project area)
- 2% are from the regional area (i.e. 5–100 km from the project area)
- 83% comprise broader community interest (i.e. greater than 100 km from the project area).

It is noted that while 15% of submissions are from localities within 5 km of the project area (i.e. Bundure and Jerilderie), there are only 2 non-associated residences within 5 km of the project area. The origin of public submissions is shown in Figure 2.1.



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Source: EMM (2024); ABS (2021); DFSI (2020, 2021); GA (2011)

Origin of public submissions

Dinawan Solar Farm
Submissions Report
Figure 2.1

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2.4.2 Summary of issues raised in public submissions

A list of the matters raised within the public submissions and where they have been addressed in this report is provided in Table 2.2. A graphical representation of the number of submissions received in relation to each sub-categories is provided in Figure 2.2.

The key matters most raised in public submissions include:

- justification of renewable energy (54% of submissions)
- general justification and evaluation of the project (30% of submissions)
- loss of agricultural land (28% of submissions)
- contamination of the environment (21% of submissions)
- cost of energy and cost benefit analysis (21% of submissions).

Table 2.2 List of matters raised in public submissions

Key matter	Sub-category	Number of submissions	Percentage of submissions	Relevant section where submission is addressed
The project				
Site suitability	Site suitability	4	5%	Section 5.1.1
Procedural matters				
Assessment process and guidelines	Assessment process	1	1%	Section 5.2.1
Inadequate engagement with the community	Engagement	3	4%	Section 5.2.2
The environmental, social, or economic impacts of the project				
General impact on flora and fauna	Biodiversity	13	16%	Section 5.3.1i
Impact on birds	Biodiversity	2	2%	Section 5.3.1ii
Impact on biodiversity of neighbouring properties	Biodiversity	3	4%	Section 5.3.1iii
Impact on threatened species and ecological communities	Biodiversity	8	10%	Section 5.3.1iv
Loss of agricultural land	Land	23	28%	Section 5.3.2
General landscape and visual amenity impacts	Landscape and visual	13	16%	Section 5.3.3
Noise impacts on neighbouring properties	Noise	4	5%	Section 5.3.4
Increased traffic volumes	Traffic	5	6%	Section 5.3.5
Water availability and use	Water	2	2%	Section 5.3.6
Contamination of the environment from infrastructure	Contamination	17	21%	Section 5.3.7
General fire risk	Hazards	12	15%	Section 5.3.8i

Table 2.2 List of matters raised in public submissions

Key matter	Sub-category	Number of submissions	Percentage of submissions	Relevant section where submission is addressed
Firefighting methods	Hazards	3	4%	Section 5.3.8ii
Benefits not felt by the local community	Social	3	4%	Section 5.3.9i
Community relationships	Social	8	10%	Section 5.3.9ii
Competition for employees	Social	1	1%	Section 5.3.9iii
Increase in population	Social	4	5%	Section 5.3.9iv
Lifestyle and community	Social	4	5%	Section 5.3.9v
Mental health	Social	3	4%	Section 5.3.9vi
Property values	Economic	4	5%	Section 5.3.10i
Local economy and businesses	Economic	7	9%	Section 5.3.10ii
Insurance costs	Economic	2	2%	Section 5.3.10iii
Greenhouse gas emissions	Greenhouse gas	7	9%	Section 5.3.11
Decommissioning and waste	Decommissioning	14	17%	Section 5.3.12
Cumulative impact of multiple renewable energy developments	Cumulative	4	5%	Section 5.3.13
The justification and evaluation of the project as a whole				
General justification and evaluation of the project	Other matters	25	30%	Section 5.4
Issues that are beyond the scope of the project				
Impact of transmission lines	Beyond the scope	3	4%	Section 5.5.1
Justification of renewable energy	Beyond the scope	44	54%	Section 5.5.2
Cost of energy and cost benefit analysis	Beyond the scope	17	21%	Section 5.5.3
Renewable energy infrastructure supply chain	Beyond the scope	11	13%	Section 5.5.4
Location of renewable energy projects	Beyond the scope	15	18%	Section 5.5.5

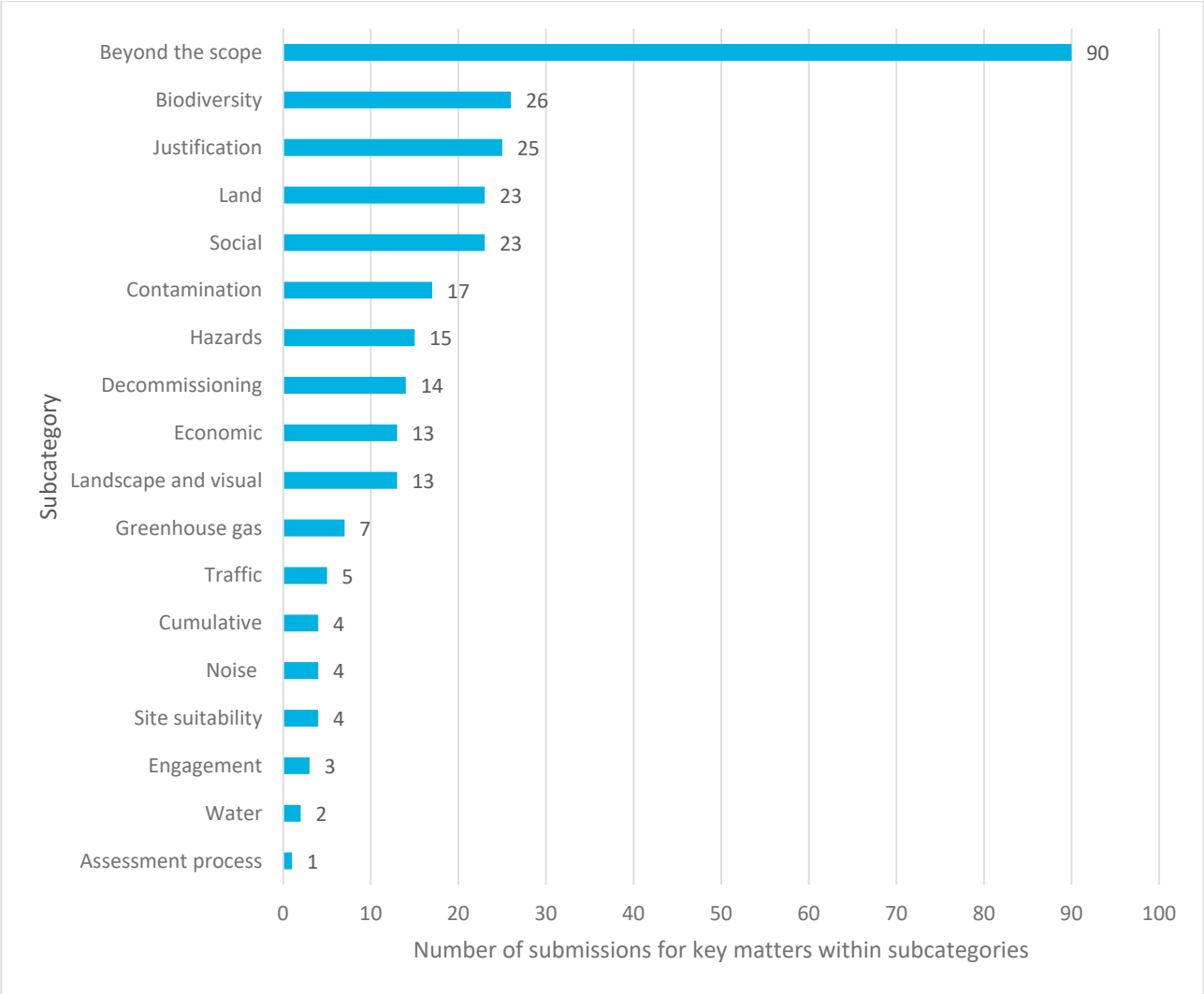

Figure 2.2 Sub-categorisation of public submissions

3 Actions taken since exhibition

3.1 Project amendments

In response to outcomes of ongoing engagement with the local community, government agencies, and other stakeholders, and following additional detailed design, Spark Renewables have made amendments to the project. The amended development footprint has been reduced by approximately 707 ha from 2,499 ha to 1,792 ha. Spark Renewables have considered opportunities for further avoidance of impacts in the revised design.

A full description of the amendments proposed is provided in Chapter 3 of the amendment report and an overview of the amendments is shown in Figure 1.3. Amendments involve:

- reduction in the project area from 4,222 ha to 3,257 ha, containing 48 land parcels that overlap with the amended development footprint
- reduction in the development footprint from 2,499 ha to 1,792 ha
- amendments to the project layout, including the removal of one construction compound, and removal of the westernmost BESS, substation and switchyard location
- other minor amendments in response to advice from regulatory agencies during EIS exhibition including:
    - amendments to the new site access intersection at Kidman Way from a four-way intersection to two staggered T-intersections in response to submission from Transport for NSW
    - minor changes to the project area and development footprint at the Liddles Lane/Bundure Road/Kidman Way intersection to accommodate the strategic intersection design
    - optimisation of biodiversity offset staging from five to three stages.

3.2 Engagement

Stakeholder engagement for the project commenced in 2021 and has been comprehensive to date. A summary of engagement carried out during the preparation of the EIS is provided in Chapter 5 of the EIS.

Since the lodgement of the EIS, Spark Renewables has continued to engage with stakeholders including local authorities, government agencies, the local community and neighbouring landholders. An overview of the engagement activities carried out during and after the public exhibition of the EIS is provided in the following sections.

3.2.1 Community engagement

A summary of the community engagement undertaken post-submission of the EIS on the project is provided in Table 3.1.

Table 3.1 Summary of engagement post-EIS submission – community

Stakeholder	Summary
Local community	Spark Renewables set up temporary offices in Coleambally and Jerilderie for four weeks during the public exhibition of the EIS (November and December 2023) to share project information and answer any questions about the project and EIS. The temporary exhibition offices raised community awareness of the project and facilitated greater connection of the Spark Renewables team with the local community. The Spark Renewables team discussed the project with a range of community members during the exhibition period including project neighbours, local residents, local businesses, community groups and clubs, local government and First Nations stakeholders. Both positive and negative feedback was received during the exhibition with key matters discussed including opportunities for local employment, management of bushfire risks and visual amenity impacts. Spark Renewables also conducted targeted consultation with the local community in February, April, May, June and July 2024, including drop-in sessions in Coleambally and Jerilderie and meetings with the Bundure landowner group and Argoon Rural Fire Brigade (many of whom are neighbouring landholders), to review their feedback on the EIS and provide general project updates. Spark Renewables have incorporated feedback from Argoon Rural Fire Brigade into the amended bushfire assessment report, including additional mitigation measures to address bushfire risk (Appendix D.7 of the amendment report). Further consultation with the local community was completed during public exhibition of Dinawan Wind Farm EIS, which included providing updates on the status of Dinawan Solar Farm. Meetings with local community members during this period raised the management of bushfire risk and the potential for contamination to occur as key issues of discussion. As mentioned, feedback from community members including the Argoon Rural Fire Brigade has informed the amended bushfire assessment report (Appendix D.7 of the amendment report). A detailed response to community concerns regarding contamination impacts is provided in Section 5.3.7.
R049	Spark Renewables has maintained regular consultation with R049. The landholder visited Spark Renewables' temporary offices during public exhibition of the EIS. Additional face-to-face meetings were held in February and May 2024. Key concerns related to visual amenity and bushfire have been addressed as part of the amendment, including through increasing the setback distance of the development footprint from R049. Additionally, Spark Renewables has conducted further engagement with Argoon Rural Fire Brigade and their feedback has been incorporated into the amended bushfire assessment report (Appendix D.7 of the amendment report).
First Nations groups	A summary of the amended Aboriginal cultural heritage assessment (ACHA) was presented to the registered Aboriginal parties (RAPs) for the project at two focus group meetings in May 2024. This included discussion around comments from Heritage NSW on the ACHA and the significant reduction in the development footprint that will maximise the preservation of cultural materials. No concerns with the amendments or changes to the ACHA were raised.

3.2.2 Agency engagement

Engagement with regulatory stakeholders continued post-submission of the EIS and is summarised in Table 3.2.

Table 3.2 Summary of engagement post-EIS submission – agencies

Stakeholder	Summary
DPHI	Spark Renewables continued to engage with DPHI during the public exhibition of the EIS and as part of the preparation of this submissions report and the amendment report. A letter was provided in April 2024 to inform DPHI of the proposed amendments to the project and included a summary of the proposed assessment approach. A meeting was held in June 2024 to discuss the status of the submissions report and the amendment report with a focus on the amended development footprint and reductions to the project's biodiversity impacts.

Table 3.2 Summary of engagement post-EIS submission – agencies

Stakeholder	Summary
Murrumbidgee Council	Spark Renewables and Murrumbidgee Council have agreed upon a Voluntary Planning Agreement (VPA) that in total meets the recommended $1,050/MW per annum for wind and $850/MW per annum for solar. Spark Renewables continue to liaise with Murrumbidgee Council and provide regular updates on the project. This has included discussions with traffic engineers at Murrumbidgee Council to discuss the vehicle access requirements and proposed road upgrades associated with the project and Dinawan Wind Farm and discussions regarding mobile telecommunications reliability in the region.
NSW Rural Fire Service (including Argoon Rural Fire Brigade)	Spark Renewables met with RFS in April 2024 to discuss the project and outcomes of the bushfire assessment report. In response to feedback from RFS, a safe refuge will be incorporated into the accommodation facility. Spark Renewables met with representatives from Argoon Rural Fire Brigade in May and July 2024 to discuss their concerns around bushfire risk from the project. Spark Renewables have incorporated feedback from this meeting into the amended bushfire assessment report, including additional mitigation measures to address bushfire risk (Appendix D.7 of the amendment report).
NSW Department of Primary Industries (DPI) – Agriculture	Spark Renewables met with DPI Agriculture in April 2024 to discuss the project and outcomes of the land and rehabilitation assessment. Spark Renewables addressed questions from DPI Agriculture on the extent of earthworks proposed as part of the project, opportunities for agrivoltaics, potential impacts on irrigation infrastructure and biosecurity management.
Transport for NSW (TfNSW)	Spark Renewables met with TfNSW in March 2024 to discuss the project and TfNSW's submission on the EIS. In addition to clarification of matters raised during review of the TIA, design requirements for the new site access intersection off Kidman Way and the proposed upgrades for the intersection of Kidman Way/Bundure Road/Liddles Lane were discussed. Strategic concept designs for road upgrades are provided in Appendix D.5 of the amendment report.

3.3 Further assessment of impacts

The following technical assessments have been updated in response to matters raised by government agencies and/or to reflect the amended development footprint:

- Biodiversity development assessment report (BDAR) – the BDAR has been updated in response to comments from BCS and to reflect the amended development footprint. It is provided in Appendix D.1 of the amendment report.
- Aboriginal cultural heritage assessment (ACHA) – the ACHA has been updated in response to comments from Heritage NSW and to reflect the amended development footprint. It is provided in Appendix D.2 of the amendment report.
- Traffic impact assessment (TIA) – the TIA has been updated to in response to comments from Transport for NSW and Murrumbidgee Council. It is provided in Appendix D.5 of the amendment report.
- Water resources assessment – further information has been provided in the amendment report on the project water supply in response to comments from Water NSW. It is provided in Section 6.8 of the amendment report.
- Bushfire assessment report – the bushfire assessment report has been updated in response to recommended conditions of consent from NSW RFS, engagement with Argoon Rural Fire Brigade and Murrumbidgee Council and to align with project amendments. It is provided in Appendix D.7 of the amendment report.

In addition to the above, the amendment report has considered how project amendments will affect other environmental assessments prepared for the EIS (Chapter 6 of the amendment report).

4 Response to agency and council submissions

4.1 Introduction

A submissions register is provided in Appendix A, which summarises all submissions received from government agencies and council.

As noted in Section 2.1, 11 agencies provided advice on the project. Each of the matters raised by government agencies and council are provided in grey boxes in the sub-sections below, followed by a response to the comment or advice. The submissions received from these agencies and council that required no further consideration are outlined in Table 4.1.

Table 4.1 No further response required

Agency	Submission	Response
Crown Lands	As no Crown land, roads or waterways are in the vicinity of the proposal/are affected by the proposal, Crown Lands has no comments at this time.	Crown Land's submission did not contain matters requiring further consideration in this report.
MEG	MEG has reviewed the EIS for the Dinawan Solar Farm and has no concerns to raise regarding potential sterilisation or access to mineral or extractive resources.	MEG's submission did not contain matters requiring further consideration in this report.

4.2 Heritage NSW

Heritage NSW provided details of further information and clarifications on the Aboriginal Cultural Heritage Assessment (ACHA) required for Heritage NSW to advise on whether the management recommendations are adequate. The matters raised in the submission are addressed in this seciton.

Please correct several incorrect consultation dates in the Table 2.1.

The consultation dates have been updated in Table 2.1 of the amended ACHA.

The ACHAR and consultation documents note that after the first week of survey, 22% of the project area had been subject to survey, however, following an additional week of survey this the percentage was not updated. As outlined in the ACHAR (Section 2.4), previous Heritage NSW advice has outlined that such survey extent is not sufficient to accurately characterise the nature of Aboriginal cultural heritage and archaeological materials across the project area. Please clarify the percentage of the project area that was subject to survey and discuss whether there are any sections that may require additional survey if visibility improves prior to construction works.

The EIS ACHA stated 22% of coverage was achieved after the initial week of fieldwork, as noted by Heritage NSW. Subsequent fieldwork, as well as refinement of the development footprint during preparation of the EIS, altered the survey coverage that was ultimately achieved to support the ACHA.

Survey coverage calculations for the development footprint considered in the EIS are presented in Table 6.2 of the amended ACHA. The field survey encompassed approximately 52% (i.e. 1,298 ha) of the development footprint considered in the EIS and included more than 190 individual points of observation and documentation.

It is estimated that survey coverage of approximately 62% (i.e. 1,101 ha) of the amended development footprint was achieved by the surveys completed as part of the ACHA.

Please include mapping of the areas that have been subject to extensive past disturbance (e.g., borrow pits).

The revised ACHA has been updated to include details of past disturbance, referenced in Section 3.8 and Figure 3.4 in the amended ACHA.

Please clarify whether any upgrades to Bundure Road may cause impacts the two sites located in its vicinity as well as to the paleochannel and aeolian sands adjacent. If any impacts may occur in these areas than further assessment in the form of additional survey and test excavations may be required prior to any construction works.

The extent of road upgrades proposed on Bundure Road has been limited to approximately 200 m east of the intersection with Kidman Way, and will avoid impacts to the two sites, DEHS-2023-WT1, DEHS-2023-AS6, as well as the paleochannel and aeolian sand sheet. The revised ACHA (Section 9.2), identifies that project avoids any direct impact to these two Aboriginal sites and the paleochannel and aeolian sands

Management and mitigation measures (AH1-6) should be strengthened to explicitly state that avoidance of Aboriginal cultural heritage within the development footprint will be attempted wherever possible. Where avoidance is not possible then suitable salvage methodologies will be included in the Aboriginal Cultural Heritage Management Plan (ACHMP).

The revised ACHA (Section 10.3) has been updated to state that, where feasible, Spark Renewables will consider modifying the project design and development footprint to avoid identified Aboriginal objects and/or sites.

Where avoidance is not possible, the revised ACHA includes recommendations, which includes measures such as further validation of certain sites, surface collection and salvage excavation. If salvage methodologies are to be implemented, these would be included in the ACHMP.

Please ensure that requests made by the Registered Aboriginal Parties (RAPs) for cultural input into the site induction and a minimum number of RAPs for monitoring and salvaging works are included in the ACHMP. Additionally, consideration must be given to monitoring of ground disturbance of areas of high cultural sensitivity.

The requests made by RAPs for cultural input, minimum number of RAPs for monitoring and salvage works, and monitoring of ground disturbance, are presented in the revised ACHA (Table 2.4).

Heritage NSW concurs with the implementation of an ACHMP [Aboriginal Cultural Heritage Management Plan] prior to any works associated with the project, be included in the Conditions of Approval (CoA). In additional to the proposed mitigation measures, Draft CoAs for an ACHMP have been provided in Attachment B.

Heritage NSW's draft conditions of approval are acknowledged. It is expected that an ACHMP requirement will be included in any conditions of approval that may be issued for the project.

4.3 DPE Water

DPE Water (now the Water Group in the Department of Climate Change, Energy, the Environment and Water – DCCEEW Water) provided one request for confirmation of the water supply strategy for the project.

DPE Water has reviewed the EIS and makes the following prior to determination recommendation:
The proponent should confirm a viable water supply is available for the project.

Insufficient information has been provided to demonstrate a feasible water supply is available for the project. The applicant notes the use of existing bores is still being investigated. Assessment of the feasibility of the proposed strategy to meet site water demands including the use of onsite harvestable rights dams, roof runoff, sediment dams and existing bores is requested. This should include indication of an agreement with the third parties with estimates of volumes available.

The project will require the non-potable water volumes outlined in Table 4.2. The peak demand will occur during construction.

Table 4.2 Predicted non-potable water volumes – Dinawan Solar Farm

Stage	Volume	Duration
Construction	230 ML	36 months
Operation	5 ML/year	35 years

Agricultural activities in the region typically utilise groundwater to meet irrigation, stock and in some cases domestic demands. The groundwater resource is a non-potable source of water and generally is low in salt and other physiochemical properties.

The project is proposed on private land held primarily by two landholders. An agreement is in place with the primary landholder to use existing licensed groundwater resources during the construction and operation of the project. The primary landholder has existing groundwater bores on land adjoining the project area which are currently used for agricultural activities. Groundwater resources for the project are proposed to be sourced from bores on two properties held by the primary landholder in the project area: Delta Park and Hawks Nest.

The water supply infrastructure available at Delta Park and Hawks Nest is summarised in Table 4.3, and was shown Figure 6.16 of the EIS. Groundwater bores associated with the Delta Park (Water NSW bore ID GW401211) and Hawks Nest (Water NSW bore ID GW062049) properties will serve as the primary source of non-potable water for Dinawan Solar Farm given the proximity of the nominated bores to the project area. Water will be trucked from the boreholes to the development footprint.

Table 4.3 Water supply infrastructure at Delta Park and Hawks Nest

Infrastructure	License information	Operational plan for project supply	Considerations	Water quality information	System priority / project supply
Delta Park					
Borehole 440 mm	GW401211 – WaterNSW bore ID 50CA503992 – Water supply water use approval WAL11874	Operate bore to fill dam.	Bore operation needs to be optimised to meet the needs of construction. On restart of the bore, sediment has the potential to impact on pump impeller – therefore continuous on-off cycles must be avoided.	Total dissolved solids - 400 mg/L	Primary source for Dinawan Solar Farm
Dam	No licence required (Turkeys nest farm dam)	To be maintained as full by the landholder during periods of construction demand.	Water volumes required during construction should be forecast and communicated to the landholder on a weekly basis.		

Table 4.3 Water supply infrastructure at Delta Park and Hawks Nest

Infrastructure	License information	Operational plan for project supply	Considerations	Water quality information	System priority / project supply
Nominated truck fill point	No licence required	Truck fill location at the existing dam. Fill method to be confirmed in detailed design.	Truck fill locations can be modified if water is directed into the existing irrigation channel network.		
Hawks Nest					
Borehole 160 mm	GW062049 - WaterNSW bore ID 50CA503997 – Water supply water use approval WAL11876	Operated only when truck fill is required.		Total dissolved solids - 800 mg/L	Secondary source for Dinawan Solar Farm
Nominated truck fill point	No licence required	Truck fill location at borehole. Fill method to be confirmed in detailed design			

Both bores will also continue to support the project landholder's existing agricultural activities.

The water supply works and water use licences relevant to the take of water for the project are summarised in Table 4.4.

Table 4.4 Groundwater works proposed to be used by the project

Works approval	Approval number	Documented works description	Location of works	Nominated works purpose	Licence expiry	WaterNSW bore ID	Bore yield recorded at construction
Water Supply Works and Water Use	50CA503992	Extraction groundwater works	Delta Park Lot 144 / DP756418	Irrigation	30/9/2029	GW401211	265 L/s
	50CA503997	Extraction groundwater works	Hawks Nest Lot 1 / DP593484	Irrigation	26/2/2031	GW062049	157 L/s

The water access licences (WALs) and entitlements connected with the above works are listed in Table 4.5.

Table 4.5 Groundwater allocation proposed to be used by the project

Nominated works approval	Water access licence number	Licence category	Water source	Entitlement (units)
50CA503992	WAL11874	Aquifer	Lower Murrumbidgee Deep Groundwater Source	1,091
50CA503997	WAL11876	Aquifer	Lower Murrumbidgee Deep Groundwater Source	743
Total				**1,834 unit shares**

The use of the nominated groundwater bores for the project's water supply will be well within the respective existing maximum extraction limits under the Works Approvals listed in Table 4.4 and Table 4.5 and therefore will operate within their existing approvals.

To enable the nominated bores to be used for construction water supply, the following tasks will be required:

- modification of the current Work Approvals to add a "commercial" designation
- confirmation of the location and type of water extraction for water cartage vehicles
- establish a standard operating procedure for the use of the proposed bores (including responsibilities for bore operation, methods for reading and recording of existing meters on the bore and acknowledgement of the water supply and use approval conditions).

If additional water licence entitlements are required for any reason, then this will be obtained through temporary allocation trading on the water market. The water market has been used by the landholder as part of their existing agricultural operations and has included both buying and selling of entitlements.

Other water sources for construction purposes were identified in the Water Resources Assessment. Section 5.4 of the Water Resources Assessment stated that water for construction purposes will also be opportunistically sourced from the following to minimise the need for imported water:

- use from existing dams where harvestable rights apply
- reuse from construction sediment basins
- reuse from rainwater tanks collecting runoff from building roofs.

Use from these sources will be determined during detailed design.

4.4 DPI Agriculture

DPI Agriculture requested clarification on the extent of earthworks, timeframes for rehabilitation, biosecurity and decommissioning.

> While the EIS generally covers agricultural land use planning and land use conflict requirements, clarification is sought on the extent of earthworks being undertaken for the overall project. The only earthworks identified are for the workforce accommodation site and removal of irrigation infrastructure. However, the mitigation measures include "stabilizing long term topsoil stockpiles" which raises concerns about what other earthworks are to be undertaken, whether control measures, e.g. for dust, are sufficient, and what are the timeframes for site rehabilitation.

Due to the flat landscape within the development footprint, site levelling is unlikely to be required over the majority of the site. The need for heavy earthworks and compaction is expected to be low, and will be minimised as much as practicable.

Minor earthworks (including site levelling) may be required for the preparation of some areas within the development footprint, including for:

- access track formation and drainage works
- placement of pre-fabricated demountable units (e.g. O&M facility, accommodation facility)
- placement of utility infrastructure (e.g. on-site substations and BESS).

More extensive earthmoving and cut/fill activities may be required where a level pad is required for project components and the existing topography is not suitable.

The location of project infrastructure will take into account the existing topography where practicable, to avoid major land reshaping during the construction phase and rehabilitation phase, and to minimise land disturbance and the alteration of drainage patterns.

The mitigation measures include a range of standard mitigation measures applied to construction activities. Where earthworks occur, soil may be stockpiled temporarily, however there is no intention to stockpile soil in the long term (i.e. beyond the construction phase).

During the construction phase, rehabilitation of disturbed areas will be undertaken progressively. At completion of construction, there will be a period of rehabilitation, expected to be a further 1–3 months. Rehabilitation (including progressive and at the end of construction) will involve:

- removal of any temporary infrastructure (e.g. accommodation facility, construction compound) used during the construction phase
- removal of hardstand areas, tracks and sediment basins
- removal of any road base or gravel no longer required
- re-establishment of pre-existing landforms by pushing any fill material back into the cuts (if required)
- stockpiled subsoil and topsoil will be re-spread and then seeded with appropriate crop, grass or legume species
- subsoil and topsoil stripped and stockpiled during the construction phase will be replaced in reference order to when it was stripped and at similar profile depths such that the pre-disturbance land and soil capability can be re-established.

Once operations are complete at the Dinawan Solar Farm, rehabilitation of the development footprint will involve:

- removal of the solar panels, BESS and ancillary infrastructure
- retention of some infrastructure may occur where it is agreed with the landowners to do so (subject to appropriate development consent). For example, some infrastructure may have alternative uses that support future grazing activities such as access roads, hardstand areas, sheds and tracks.
- removal of hardstand areas and tracks
- removal of any road base or gravel no longer required

- if required, pre-existing landforms will be re-established by pushing any fill material back into disturbed areas with suitable management of topsoil and subsoil

- topsoil will be re-spread and then seeded with appropriate grass and legume species.

During final rehabilitation, recommended construction management measures for soil handling and erosion prevention will be implemented to ensure soil and erosion is suitably managed during this stage. The final decommissioning and rehabilitation phase is expected to be 1–2 years.

Other issues raised in the SEARs should also be considered and incorporated in construction and operational plans:

- Potential biosecurity and emergency annual disease impacts on agricultural operations should be identified and protocols to be adopted for their management should be provided in a Biosecurity Management Plan (not just a sub plan of a Biodiversity Management Plan).

- A decommissioning and rehabilitation strategy should include removal of all above and below ground infrastructure upon decommissioning. This would then enable the site to be returned to pre-development Land and Soil Capability and agricultural land uses which is to include reinstatement of irrigation infrastructure.

DPI Agriculture's preference for a separate Biosecurity Management Plan is acknowledged. Spark Renewables' preference would be to maintain this plan as a sub-plan of the Biodiversity Management Plan, on the basis that it limits indirect impacts on biodiversity through weed and pest management.

Any future decommissioning and rehabilitation strategy will be prepared in consultation with the relevant regulatory stakeholders and the landholder. Removal of all above and below ground infrastructure will be considered. The objective will be to enable the site to be returned to pre-development land and soil capability and agricultural land uses, including reinstatement of irrigation infrastructure if this is consistent with the requirements of the landholder.

4.5 Fire and Rescue NSW

Fire and Rescue NSW (FRNSW) provided recommendations and requirements to be implemented should the project be approved.

FRNSW notes the proposal of a 300 MW/600 MWh BESS. BESS facilities pose special problems of firefighting and special hazards exist that may require additional fire safety and management measures. Should this project be approved FRNSW make the following recommendations:

1. That a Fire Safety Study (FSS) is developed in accordance with the requirements of Hazardous Industry Planning Advisory Paper (HIPAP) No.2 and submitted to FRNSW for review.
   - The FSS is to be developed to the satisfaction of FRNSW prior to any further submission being made to FRNSW; this includes: an Initial Fire Safety Report (IFSR) and / or Performance-Based Design Brief / Fire Engineering Brief Questionnaire (FEBQ).
   - The FSS should be prepared consistent with the FRNSW Fire Safety Guideline Technical Information – Large scale external lithium-ion battery energy storage systems – Fire safety study considerations.

2. Prior to occupation or commissioning an Emergency Plan (EP) is developed for the site in accordance with HIPAP No.1.
3. Prior to occupation or commissioning an Emergency Services Information Package (ESIP) be prepared in accordance with FRNSW fire safety guideline – Emergency services information package and tactical fire plans.
4. Prior to occupation or commissioning an Emergency Responders Induction Package is developed for the site in consultation with, and to the satisfaction of FRNSW. The package should inform first responders of site-specific features and safety measures to ensure they are able to undertake their duties effectively in accordance with agency specific Standard Operational Guidelines. The format of the Induction Package should be such that it can be readily shared across all agencies.

Spark Renewables acknowledges the recommendations from FRNSW and does not object to undertaking these requirements. The EIS included commitments to prepare a fire management plan and a bushfire emergency management and evacuation plan. Prior to operation of a BESS, Spark Renewables agrees to the imposition of conditions of consent requiring the preparation of:

- a Fire Safety Study in accordance with the requirements of *Hazardous Industry Planning Advisory Paper* (HIPAP) *No.2* (DoP 2011a)
- an Emergency Plan in accordance with *HIPAP No.1* (DoP 2011b)
- an Emergency Services Information Package (ESIP) in accordance with *FRNSW fire safety guideline – Emergency services information package and tactical fire plans*
- an Emergency Responders Induction Package.

4.6 Murrumbidgee Council

1. VPA – Section 5.7 of the EIS discusses Community Benefit Sharing and Voluntary Planning Agreement. Council is committed to agreeing to a VPA with Spark Renewables and has had initial discussions with representatives from Spark to achieve intergeneration community projects, but is yet to agree to the terms proposed by Spark. Council is determined that the community projects identified and included, following community consultation, in Council's current Development Contribution Plan are achieved.

Recommended Condition of Consent
That Spark Renewables enter into a Voluntary Planning Agreement with Murrumbidgee Council to achieve the intergenerational community projects listed in the Murrumbidgee Council Developer Contributions Plan prior to any Construction Certificate being issued.

Spark Renewables is committed to delivering a project that provides a positive legacy for the local community. Since the exhibition of the EIS, Spark Renewables and Murrumbidgee Council have agreed on a community benefit sharing program that is predominantly delivered in partnership with the council through a voluntary planning agreement (VPA). The key terms of the community benefit sharing program and VPA which have been agreed upon with Murrumbidgee Council are:

1. Spark Renewables will provide funding for benefit sharing initiatives associated with Dinawan Solar Farm.

2. The total fund amount (TFA) will be an annual payment of $850 per megawatt (MW) of capacity based on Dinawan Solar Farm's maximum export capacity. This may vary depending on construction/operational status within the LGA.

3. The first annual payments will be made after the commencement of construction of the relevant stage.

4. After the initial annual payments, future payments will be escalated in line with consumer price index (CPI).

5. The TFA will be allocated as follows:

    a) 70% of the funding ($595 per MW) will be provided for projects identified in Council's approved Development Contributions Plan or Community Strategic Plan.

    b) 15% of the funding ($127.50 per MW) will go to a Community Benefit Fund to be administered by a committee of Council, which will provide annual grant funding to initiatives that are put forward by and benefit the local and broader community.

    c) 15% of the funding ($127.50 per MW) will be administered by Spark Renewables (or the project owner) and will go to initiatives to share project benefits with the neighbouring community and local Aboriginal and Torres Strait Islander communities.

6. The Community Benefit Fund will:

    a) be administered by a committee of Council, which will include representatives from the local community, Spark Renewables (or the project owner) and Council

    b) prioritise funding for suitable projects located closer to the project

    c) prioritise projects that receive co-funding or in-kind support from other sources

    d) be used for environmental programs, enhancing local biodiversity, recreational facilities, education programs, arts or cultural programs and other initiatives that benefit the local community.

2. Bushfire – Section 6.10 of the EIS discusses the potential risks from bush fire and commits to the preparation of a Fire Management Plan that address a range of matters in conjunction with the NSW Rural Fire Service Guidelines. Due to the associated potential risks to surrounding landholdings and fire-fighting personnel, Council is committed to ensuring that fires within solar farms and, in particular, those associated with battery energy storage systems are able to be extinguished both safely and expeditiously whilst having a minimal effect on surrounding properties.
Recommended Condition of Consent – [detailed list of conditions included as a recommendation – refer to table below]

The EIS and relevant technical studies (Bushfire Assessment Report (BFAR) and Preliminary Hazard Analysis (PHA)), include commitments for the following plans to manage bushfire risks and fire and hazard-related risks from the project:

- Fire Management Plan
- Fire Safety Study (FSS)
- Emergency Management Plan (proposed to address the requirements of the Bush Fire Emergency Management and Evacuation Plan and Emergency Response Plan described in the BFAR and PHA).

These documents will be prepared in accordance with relevant NSW guidelines, including:

- *Planning for Bush Fire Protection* (RFS 2019)
- *Hazardous Industry Planning Advisory Paper No. 2 - FSS Guidelines* (DoP 2011a).

Council has provided prescriptive conditions and requirement for the conditions of consent. In most instances, these are aligned with commitments already made in the BFAR and PHA, and/or are consistent with requirements of relevant guidelines that apply in NSW which would apply to the management plans and FSS identified above. A response has been provided to each condition in Table 4.6.

Table 4.6 Murrumbidgee Council recommended conditions of consent and response

Recommended conditions of consent	Response
Bushfire management and mitigation measures	
In addition to the requirements listed by the NSW Rural Fire Service – Planning for Bush Fire Protection 2019, the Fire Management Plan (referred to in Table 6.26) must contain a Risk Report and Plan as set out by the NSW Planning Hazardous Industry Planning Advisory Paper No. 2 - Fire Safety Study Guidelines that addresses the following:	A FSS will be prepared in accordance with *Hazardous Industry Planning Advisory Paper No. 2 - FSS Guidelines* (DoP 2011a). Spark Renewables does not propose to prepare a separate risk report and plan.
a. Develop and submit to Council a Risk Management Plan that addresses:	The requirements listed by Murrumbidgee Council in this section of their submission will generally be addressed as part of the FSS. A FSS (and fire management plan) will be prepared in accordance with the relevant NSW guidelines, including *Planning for Bush Fire Protection* (RFS 2019) and *Hazardous Industry Planning Advisory Paper No. 2 - FSS Guidelines* (DoP 2011a).
i. Identification of fire hazards and risks from the solar energy system and BESS containers.	Fire-related hazards and risks are identified in the BFAR and PHA. Fire hazards and risks will be identified as required by the abovementioned guidelines as part of the FSS. The FSS will be completed based on the final battery energy storage system selected (with the assessment specific to the make and model selected and other detailed design parameters).

Table 4.6 Murrumbidgee Council recommended conditions of consent and response

Recommended conditions of consent	Response
ii. Details of tests conducted on the BESS and a summary of results.	The PHA specified that the selected BESS (make and model) will be tested to Underwriters' Laboratories (UL) 9540A Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems to evaluate the thermal runaway and fire propagation characteristics, informing the required protection for installation and operation of the respective BESS. A UL 9540A Test is considered successful if a fire does not propagate from one unit/cabinet to another during the test. The test results are as follows: • Flaming outside of the initiating BESS unit was not observed. • Surface temperatures of modules within the target BESS units adjacent to the initiating BESS unit did not exceed the temperature at which thermally initiated cell venting occurs. • Explosion hazards were not observed, including deflagration, detonation or accumulation (to within the flammability limits in an amount that can cause a deflagration) of battery vent gases. • The performance criteria of the unit level test have been met, therefore an installation level testing in accordance with UL 9540A need not be conducted.
iii. On-site and off-site consequence analysis of thermal runaway and possible fire scenarios within BESS containers:	Thermal runaway is considered in the BFAR and PHA. Consequence modelling for a BESS unit on fire is a requirement for the FSS (extent of impact - heat radiation and dispersion of toxic combustion products).
-Radiant heat flux from the BESS container to various distances (e.g. 3 m - 10 m).	Radiant heat flux is considered in the BFAR for bushfire risks. The BFAR included setbacks for APZs based on estimated heat radiation flux to protect project infrastructure from bushfire encroachment (where bushfire is the source of risk, rather than a BESS fire being the source of risk). Radiant heat from a BESS fire will be considered in the FSS. The radiant heat flux will be informed based on the consequence modelling for the specific BESS unit on fire (i.e. it will need to be make and model specific).
-The assumptions on which the radiant heat flux calculations are based, including weather conditions.	For the FSS, analysis of a BESS unit on fire is required. The FSS will specify input parameters and assumptions, including weather conditions.
-Site plan/excerpts that show radiant heat flux contours to site elements, including adjacent BESS containers, PCUs, fire water infrastructure.	For the FSS, analysis of a BESS unit on fire will be completed. A consequence overlay to meet this requirement can be produced.
-Plume analysis for fumes/vapour clouds that show likely spread.	Consideration of fumes and vapour clouds will be completed as part of the FSS. Generation of toxic combustion product is a consequence of a BESS fire. This will be completed in accordance with published guidance from Fire and Rescue NSW, *Large-scale external lithium-ion battery energy storage systems - fire safety study considerations (D22/107002)*.
iv. Fire prevention and explosion strategies and measures to be implemented, including those within and external to the BESS.	Fire prevention and explosion strategies and measures have been considered in the BFAR and PHA and will be addressed in detail in the FSS.
v. Analysis of the requirements for fire detection. Where installed fire safety systems are proposed (e.g. gas suppression), an analysis of the performance of the system.	Fire detection has been proposed and will be expanded upon in the FSS (including specific measures for the selected BESS technology).

Table 4.6 Murrumbidgee Council recommended conditions of consent and response

Recommended conditions of consent	Response
vi. Where proposing to reduce the minimum fire water requirements for solar energy facilities and battery energy storage systems, a calculation of the fire water supply and demand must be provided.	Further detail on the proposed water supply will be provided in the fire management plan. Calculation of fire water demand and supply is required as part of the FSS (to ensure that the design intent and basis for the fire water tank is clear). The calculation of the fire water supply will be completed as part of the FSS.
vii. The risk assessment is to address directly the impact of any ignitions arising from the infrastructure (solar panels, battery energy storage systems, electrical infrastructure) on nearby communities, infrastructure and assets, the impact of bushfire on the infrastructure (e.g. ember attack, radiant heat impact, flame contact), an assessment of whether the proposal will lead to an increase in risk to adjacent land and how the proposal will reduce risks on site to an acceptable level. Modifications to Model Requirements must be in consultation with the NSW RFS.	Risk assessments from the BFAR and PHA will be expanded upon in the FSS and fire management plan. The FSS and Fire Management Plan will be prepared in consultation with RFS.
viii. Measures for containment of contaminated firefighting water.	This is in line with *Hazardous Industry Planning Advisory Paper No. 2 - FSS Guidelines* (DoP 2011a) requirements for an FSS. Generally, the FSS is to include calculation of (subject to firefighting/protection strategy): • fire water demand and supply (including hydraulic analysis) • contaminated fire water containment.
ix. First-aid fire protection equipment	The FSS will consider first aid fire protection arrangements and equipment. This is in line with *Hazardous Industry Planning Advisory Paper No. 2 - FSS Guidelines* (DoP 2011a) requirements for an FSS.
b. The Fire Management Plan is to be developed and submitted to Council that addresses the following:	The BFAR includes a commitment to prepare a fire management plan in consultation with the Argoon Rural Fire Brigade, NSW RFS District Office for the Mid Murray Zone and Fire Rescue NSW, prior to construction.
i. A summary of fire hazards and risks to and from the site, specific to its location, infrastructure, activities and occupancy. Fire Management Plan Structure and Content is to be based on sound hazard identification and risk management processes. This must include risks to firefighter safety during emergencies.	The fire management plan will satisfy this requirement.
ii. Description of control measures to prevent and reduce the consequences of external fire impacting the facility, including Fire permits, ignition source controls, hot work permits, job hazard analyses, infrastructure, vehicle, equipment, road, fence, access maintenance, waste management, compliant dangerous goods storage and handling, vegetation/fuel reduction and management.	The fire management plan will satisfy this requirement.
iii. Description of control measures to prevent and reduce the consequences of external fire impacting the facility, including Bushfire monitoring, bushfire preparedness, reduced personnel presence/ activities/travel on days of Severe and above Fire Danger Rating, creation and management of fire breaks at the site perimeter and around infrastructure, vegetation/fuel reduction and management, Emergency Plan.	The fire management plan will satisfy this requirement.

Table 4.6 Murrumbidgee Council recommended conditions of consent and response

Recommended conditions of consent	Response
iv. Details of equipment and resources to manage fire at the facility, addressing • performance standards for risk controls, • specific activities to verify controls (servicing/maintenance, housekeeping inspections, external audits), • review processes for risk control effectiveness	The fire management plan will satisfy this requirement.
v. Procedures for review of the Fire Management Plan. Review triggers and schedule, organisational accountability for the Plan, allocated responsibilities (to persons or roles) for the ongoing review and development of the Plan.	The fire management plan will satisfy this requirement.
c. Specific to the development site, the design of the facility must incorporate:	
i. At least two access points are to be provided into each section where battery energy storage systems are located. The number and location of vehicle access points must be determined in consultation with the NSW RFS.	NSW RFS reviewed the EIS and did not identify any specific concerns with the proposed access points; however, additional emergency access points could be provided if requested in consultation with NSW RFS. Access to the western part of the site (west of Kidman Way) will be limited to one access point; however, multiple access points could be provided to the BESS facility from within the development footprint. Access to the eastern part of the site (east of Kidman Way) satisfies this requirement. Multiple access points could be provided to the BESS facility from within the development footprint.
ii. The fire protection system for solar energy facilities must incorporate at least one (1) x 22,500L static water tank at the primary vehicle entrance to each part of the facility.	As noted above, the required fire water supply will be calculated as part of the FSS.
iii. A fire protection system suitable for the risks and hazards at the facility must be provided. For battery energy storage systems, the water supply quantity must:	Fire protection systems for the project are described in the BFAR and PHA.
-Enable effective cooling of surrounding infrastructure.	The fire management plan and FSS will address this requirement.
-Account for reasonable duration of fire events based on the proposed battery chemistry. Account for local weather conditions and potential fire weather conditions. Provide for the safety of firefighters.	The fire management plan and FSS will address this requirement.
iv. For facilities with centralised battery energy storage systems, the fire protection system must include at a minimum:	
-Where reticulated water is available, a fire hydrant system that meets the requirements of AS 2419.1-2021: Fire hydrant installations, Section 3.9: Open Yard Protection, and Table 2.2.5(D):	Reticulated water is not available; therefore, a fire hydrant system will not form part of the project.
-Fire hydrants must be provided and located so that every part of the battery energy storage system is within reach of a 10 m hose stream issuing from a nozzle at the end of a 60 m length of hose connected to a fire hydrant outlet.	Reticulated water is not available; therefore, a fire hydrant system will not form part of the project.

Table 4.6 Murrumbidgee Council recommended conditions of consent and response

Recommended conditions of consent	Response
-If the existing reticulated water supply is not utilised, a fire water supply in static storage tanks is to be provided. The quantity of static fire water storage is to be calculated from the number of hydrants required to flow from AS 2419.1-2021: Fire hydrant installations, Table 2.2.5(D). (E.g., For battery installations with an aggregate area of over 27,000 m, 4 (four) hydrant outlets are required to operate at 10L/s for four hours, which equates to a minimum static fire water supply of 576 kL.)	As noted above, the required fire water supply, including static water supply for the BESS, will be calculated as part of the FSS. Spark Renewables is not able to commit to the minimum static water supply proposed by Murrumbidgee Council until completion of the FSS. BESS infrastructure will be designed with internal fire control systems and setbacks between units to prevent the spread of fire. In the event of a BESS fire, it is anticipated that firefighting water is unlikely to be applied, instead relying on the internal fire control system.
-The fire water supply must be located at vehicle entrances to the facility, at least 10 m from any infrastructure (electrical substations, inverters, battery energy storage systems, buildings).	This is consistent with the BFAR, which recommends tanks be located at vehicle access points to the facility and must be positioned at least 10 m from any infrastructure.
-The fire water supply must be reasonably adjacent to the battery energy storage system and shall be accessible without undue danger in an emergency. (E.g. Fire water tanks are to be located closer to the site entrance than the battery energy storage system).	The fire management plan and FSS will address the location of firefighting water to ensure accessibility. It is likely that water tanks will be located close to the primary site entrances.
-The fire water supply must comply with AS 2419.1-2021: Fire hydrant installations, Section 5: Water storage tanks.	The fire management plan and FSS will address the requirements and applicable standards for water supply. A static water supply will be provided, as there is no reticulated water supply.
-Battery management/monitoring systems for monitoring the state of battery systems to be installed to ensure safe operation and to detect smoke, heat (thermal), fire and toxic off-gassing within battery containers.	This requirement is aligned with design requirements/commitments for a BESS (i.e. monitoring, detection and fire prevention systems) and will be included as part of the fire protection system.
-Detection systems for off-gassing must be single- trigger and provide for both lighter and heavier than air gases.	This requirement is aligned with design requirements/commitments for a BESS (i.e. monitoring, detection and fire prevention systems) and will be included as part of the fire protection system.
-Systems to prevent heat/fire spread within battery containers (such as thermal barriers, shut- down separators, isolation systems, cooling systems).	This requirement is aligned with design requirements/commitments for a BESS (i.e. monitoring, detection and fire prevention systems) and will be included as part of the fire protection system.
-Systems to prevent explosion within battery containers (such as ventilation, pressure relief and exhaust systems).	This requirement is aligned with design requirements/commitments for a BESS (i.e. monitoring, detection and fire prevention systems) and will be included as part of the fire protection system.
-Systems to prevent water ingress to battery containers and appropriate ingress protection (IP) ratings for containers/cabinets and/or battery modules.	This requirement is aligned with design requirements/commitments for a BESS (i.e. managing water ingress) and will be included as part of the fire protection system.
-Warning and alarm systems within the battery containers, and/or the facility, to enable early warning for faults, operation of the battery energy storage system above 'normal'/safe parameters, smoke, off-gassing, and fire.	This requirement is aligned with design requirements/commitments for a BESS (i.e. monitoring, detection and fire prevention systems) and will be included as part of the fire protection system.
-A minimum distance of 10 m is to be established between the battery storage systems and any vegetation.	This requirement is aligned with commitments provided in the BFAR and will be included as part of the fire protection system.
v. A 10 m Asset Protection Zone (APZ) must be maintained between the solar arrays and the perimeter fence. Grass in the APZ must be kept to less than 100 millimetres in height.	This is aligned with commitments provided in the BFAR (i.e. managing perimeter APZ with grass kept below 100 mm).

Table 4.6 Murrumbidgee Council recommended conditions of consent and response

Recommended conditions of consent	Response
d. An Emergency Management Plan is to be developed and submitted to Council and the local RFS that includes:	An Emergency Management Plan is proposed and can be submitted to Murrumbidgee Council and RFS.
i. A facility description, including infrastructure details, operations, number of personnel, and operating hours.	This information can be included in the Emergency Management Plan.
ii. A site plan depicting infrastructure (solar panels, inverters, battery energy storage systems, generators, substations, grid connection points, transmission lines, dangerous goods storages, buildings, bunds), site access points and internal roads; fire services (water tanks, pumps, booster systems, fire hydrants, fire hose reels); drainage; and neighbouring properties.	This information can be included in the Emergency Management Plan and is likely to align with consent requirements for final layout plans.
iii. An emergency response procedure for each credible emergency event and scenario, based on a comprehensive risk management process.	This information can be included in the Emergency Management Plan.
iv. Up-to-date contact details for facility personnel, and any relevant off-site personnel that could provide technical support during an emergency.	This information can be included in the Emergency Management Plan.
v. Evacuation procedures and where appropriate, shelter-in-place procedures for facilities at-risk of bushfire or grassfire, if it is too late to evacuate.	This information can be included in the Emergency Management Plan. The amended BFAR includes commitments for the provision of a safe refuge space at the accommodation facility.
vi. Details of emergency resources, including fire detection and suppression systems and equipment; gas detection; emergency eye-wash and shower facilities; spill containment systems and equipment; emergency warning systems; communication systems; personal protective equipment; and first aid.	This information can be included in the Emergency Management Plan.
vii. A manifest of dangerous goods (if required under the Dangerous Goods (Storage and Handling) Regulations 2022).	This information can be included in the Emergency Management Plan.

3. Traffic – Recommended Condition of Consent
The transport mitigation measures listed under Table 6.23 are to be included in the proposed Construction Traffic Management Plan and are to be undertaken and completed at the full cost of the developer.
That the Construction Traffic Management Plan include provisions for the inspection, in conjunction with representatives of Murrumbidgee Council, of all roads proposed to be utilised by the developer during construction and operational phases, to determine the current conditions of these roads in order that these roads will either be kept in an acceptable condition during the construction period or returned to a satisfactory condition post construction.

Murrumbidgee Council's comments regarding traffic management are acknowledged. It is Spark Renewables' intention to manage traffic in accordance with the measures listed in the amendment report (Section 6.7.4) and the amended Traffic Impact Assessment (Appendix D.5 of the amendment report).

Spark Renewables agrees to include a protocol for the inspection of road condition of Bundure Road in conjunction with Murrumbidgee Council prior to and at completion of construction. Operational traffic impacts are not expected to be material and ongoing inspections of the road network are not considered to be necessary during operation.

A road maintenance strategy will be developed in consultation with Murrumbidgee Council and will be included in the project's construction traffic management plan. The strategy will include a commitment for pre- and post-construction dilapidation surveys along the affected section of Bundure Road.

4. Accommodation Camp – The EIS states that a 400 person accommodation camp is to be constructed as part of the early stages of the project, however does not appear to reference the design, required approvals or any proposed management of this camp.
Recommended Condition of Consent
The developer is to submit details of the proposed 400 person accommodation plan, including but limited to, site layout and design, numbers and types of facilities and amenities, waste water management, potable water sources, general waste management, off street car parking, certification of buildings, fire protection services and evidence of approval under the Local Government Act 1993 and Environmental Planning & Assessment Act 1979.

Approval for the accommodation facility to be constructed as part of the project is sought as part of the development application for the Dinawan Solar Farm. Any development consent issued for the Dinawan Solar Farm would therefore constitute approval under the EP&A Act.

The accommodation facility is described in Section 3.3.7 of the EIS as part of the project description. Section 3.3.7 of the EIS includes a description of the accommodation facility, including intended capacity, key components and location. Section 3.3.9 of the EIS describes the accommodation facility's requirements including water, telecommunications, sewage treatment, electricity, diesel, grease and waste management. The impacts of the accommodation facility are assessed in the EIS.

The footprint of the worker accommodation facility has been increased to align with the location of the accommodation facility for the proposed Dinawan Wind Farm (which is subject to a separate development application). No increase to the project's construction workforce is proposed; if the full extent of the footprint is not required for the accommodation facility, it will be used for solar array infrastructure for Dinawan Solar Farm. Spark Renewables will provide details of the accommodation facility to Murrumbidgee Council once further detailed design is completed, including:

- design and site layout
- details of facilities and amenities
- water sources
- waste water management
- general waste management
- parking
- fire protection measures
- requirements for building certifications
- any other approvals.

Spark Renewables will develop and implement an accommodation facility management plan in consultation with Murrumbidgee Council prior to commencement of construction to ensure the accommodation facility complies with relevant standards and requirements.

5. Waste – The management of waste from the development under Section 6.13 and the Concept Waste Management Plan as provided under Appendix F of the EIS, is to be undertaken in accordance with Council's existing Policy that prohibits any waste generated by renewable energy development from being disposed of in any landfill within the Murrumbidgee Council area.
Recommended Condition of Consent
The developer is [to] make arrangements for the disposal of all waste generated during the construction and the operation of the proposed solar farm outside of the Murrumbidgee Council area.

Murrumbidgee Council's comments regarding waste management are acknowledged. It is Spark Renewables' intention to manage waste in accordance with the Concept Waste Management Plan as provided under Appendix F of the EIS.

4.7 NSW Rural Fire Service

The NSW Rural Fire Service (NSW RFS) raised no objections to the proposal proceeding, noting that any approval issued should be consistent with the recommendations of the Bushfire Assessment Report accompanying the EIS. Matters for consideration in future planning were recommended by NSW RFS.

NSW RFS noted that the proposed development creates an asset with an extensive perimeter that may exceed the current capacity of local firefighting resources. Servicing and infrastructure delivery for the proposal should include the consideration of operational response for emergency services. In considering future operational firefighting infrastructure, the proponents should:

- identify what proposed servicing arrangements are required for operational response;
- identify whether proposed servicing arrangements are practical;
- present the proposal to the Mid Murray Zone Bush Fire Management Committee and discuss any impacts on the combat agencies operational capacity.

An addendum bush fire assessment report has been prepared and accompanies the amendment report (Appendix D.7). The recommendations from NSW RFS are addressed in the addendum bush fire assessment report.

The following combination of bush fire mitigation measures are proposed to address the risk of bushfire caused by the project and to demonstrate compliance with *Planning for Bush Fire Protection* (RFS 2019):

- provision of APZs for infrastructure including solar panels, BESS, staff offices, temporary worker accommodation facility and maintenance sheds, in accordance with Appendix 4 of *Planning for Bush Fire Protection* (RFS 2019)
- buildings within 100 m of bush fire prone vegetation are constructed to comply with AS 3959:2018 – Construction of buildings in bushfire-prone areas
- provision of a safe refuge within the accommodation facility to ensure radiant heat thresholds of <10 kW/m2 using Table A1.12.1 of *Planning for Bush Fire Protection* (RFS 2019); this is a new measure that has been proposed in the addendum bush fire assessment report
- provision of access and water supply in compliance with *Planning for Bush Fire Protection* (RFS 2019)
- maintenance and housing of infrastructure so that it will not create a source of ignition to the surrounding vegetation and grassland

- preparation of an Emergency Management Plan
- preparation of a Fire Management Plan in consultation with the NSW RFS District Office for the Mid Murray Zone and Argoon Rural Fire Brigade.

In addition to the above and in response to comments made by the authorities in their review of the EIS and further engagement with Argoon Rural Fire Brigade, Spark Renewables will:

- investigate options for firefighting training for construction and operational personnel, as well as opportunities to incentivise workforce participation in Argoon Rural Fire Brigade
- in addition to the static water supply requirements, provide for two mobile water supplies with a minimum capacity of 500 L each (e.g. tanks on utility vehicles or standalone tankers) which will be made available on-site during construction and operation
- continue to consult with Argoon Rural Fire Brigade around specific weather conditions that may require works to temporarily cease during construction
- the fire management plan will include activities that are exempt from Total Fire Ban days and consider the Grain Harvesting and Fire Safety guide.

4.8 Transgrid

Transgrid provided a submission identifying recommended conditions approval relating to working collaboratively on siting of transmission infrastructure, and consideration of potential cumulative impacts.

Spark Renewables must consider the design and planning of the Transgrid VNI West project and work collaboratively with Transgrid to ensure the design of the Dinawan Solar Farm does not preclude the VNI West project from being developed and the greatest net benefit (or least net costs), to the National Electricity Market thereby realising best benefit to electricity consumers.
Transgrid respectfully requests that the Department consider including the following conditions of approval for the Dinawan Solar Farm EIS, as follows:

- Spark Renewables and Transgrid must work collaboratively with each other in relation to electricity transmission network requirements as part of the planning, design, construction, and commissioning of the project and work with Transgrid to ensure any necessary easements are created to facilitate the construction of a 500 kV double circuit transmission line, should the preferred route fall on Spark Renewables proposed development area.
- Spark Renewables must give due consideration to potential cumulative environmental impacts.

Spark Renewables has engaged with Transgrid regarding potential interactions with transmission projects including VNI West and Project EnergyConnect. Discussions since 2021 have included an initial project briefing, project updates and ongoing discussions about potential interactions with Transgrid projects.

Spark Renewables has also engaged with Elecnor Australia (formerly SecureEnergyJV), which is working on the construction of Project EnergyConnect, to discuss potential areas for collaboration in delivery of South West REZ projects. Valuable feedback has been received on several aspects of project planning including community engagement, stakeholder mapping, local employment strategies, regional conditions and constraints, construction timing and coordination.

The preferred draft route for the proposed Victoria to NSW Interconnector (VNI) West project was published by Transgrid on 26 March 2024. The draft route is immediately adjacent to the northern boundary of the Dinawan Solar Farm project area. A scoping report dated May 2024 for the VNI West project become publicly available in July 2024. Spark Renewables continue to engage closely with the VNI West project to minimise potential conflicts between this project and the Dinawan Energy Hub. Recent engagement in June and July 2024 indicates that the proposed Dinawan Solar Farm infrastructure would not impact on the preferred route for VNI West.

Cumulative impacts of the VNI West project were considered in Section 6.14 of the EIS to the extent practical, noting there is no detailed information in the public domain on the project's proposed impacts. Spark Renewables will collaborate with Transgrid during detailed design and project planning to ensure that cumulative impacts are minimised and managed appropriately.

4.9 Transport for NSW

TfNSW provided comments on the traffic impact assessment submitted as part of the EIS (Appendix E.7 of the EIS). The TIA has been amended in response to the TfNSW comments and is provided in Appendix D.5 of the amendment report.

Discussion

- The proposed direct site access points on either side of the Kidman Way (approximately 1.6 km north of the Bundure Road / Liddles Lane 4-way intersection) would introduce new vehicle conflict points on a high-speed State road. In addition to the proposed channelised right turn lanes, there may be risks arising from cross-traffic movements (between the west and east sites), U-turn movements, left-turn-in movements, and right-turn-out movements in the high speed zone. It should be demonstrated that alternate access via the Bundure Road and Liddles Lane intersection (only) is not the preferred scenario on the grounds of safety and practicability, as the site already has frontage to those local roads, and

This item was discussed with TfNSW on 14 March 2023 and a justification for the new intersections and site access points is provided in Section 2.2.3 of the Amended TIA.

As discussed with TfNSW, opportunities for heavy and OSOM vehicles to access the eastern part of the site (i.e. east of Kidman Way) via Bundure Road are affected by the Coleambally Irrigation Channel. Existing bridges across the Coleambally Irrigation Channel, which vehicles would need to traverse to access the site, have load limit restrictions and are not considered suitable to carry all project-related traffic. This limits the ability of Bundure Road to provide access to larger project-related vehicles. Therefore, a new site access point is required directly from Kidman Way.

The western part of the site (i.e. west of Kidman Way) requires a new site access point from Kidman Way, as no alternative access points are proposed from Liddles Lane. Liddles Lane is not proposed to be used by project-related traffic.

- If alternative access via Bundure Road or Liddles Lane cannot be obtained, then a strategic design of the proposed dual access intersection arrangements (at both Bundure / Liddles and the location 1.6 km to the north) are required to be provided to TfNSW for review as a part of the RtS.

Strategic concept designs are provided in Attachment D of the Amended TIA.

- The TIA states that project traffic will be prohibited from using Liddles Lane (west of Kidman Way). applicant proposes to prohibit access by project traffic via Liddles Lane (west of Kidman Way), however TfNSW has concerns this restriction would not be practicable to communicate and enforce (including employees and contractors) over the life of the development. This could especially be of concern upon cumulative traffic increases with development of the surrounding Renewable Energy Zone. The TIA and strategic designs (if necessary) are required to be revised to address compliance with this commitment, as a part of the RtS response.

As discussed with TfNSW, no project-related traffic will travel via Liddles Lane. The development footprint is set back from Liddles Lane and no site access points are proposed from Liddles Lane, therefore there would be no opportunities for vehicles to access the project.

- Intensification of traffic at the Bundure Road / Liddles Lane 4-way junction may result, and due to the high-speed environment, may give rise to unacceptable safety risks. The safety risks associated with the retention of the existing four-way intersection in the current formation will need to be addressed as a part of the revised TIA.

A strategic concept design for the Kidman Way/Bundure Road/Liddles Lane intersection is provided in Attachment D of the Amended TIA.

To improve safety, BAL and CHR(s) turn treatments will be provided on the north and south approaches on Kidman Way. The proposed turn treatments have considered baseline and project-related vehicle movements.

Prior to the implementation of the proposed intersection upgrades, Spark Renewables will consult with DPHI, TfNSW and Murrumbidgee Council to confirm the status of other local developments and ensure the proposed intersection design is consistent with relevant road design guidelines.

- In relation to the two points above regarding the prohibition on use of Liddles Lane and the increased safety risk due to the intensification of this intersection, TfNSW requests the consideration of a percentage of the total volume utilising the Liddles Lane/Kidman Highway to access the project site. This may assist in alleviating the requirement to provide a new four way intersection to access the western section of the project from the Kidman Way. Instead, TfNSW requests the applicant assess and include provision for project vehicles safely using Liddles Lane for occasional movements as well, in all turning movement directions at the intersection.

As discussed with TfNSW, no project-related traffic will travel via Liddles Lane. The development footprint is set back from Liddles Lane and no site access points are proposed on this road. Therefore, no allowance for project-related traffic has been included for Liddles Lane. The strategic design provided in Attachment D of the Amended TIA includes upgrades to the initial 50 m of Liddles Lane to ensure road safety at the intersection in accordance with relevant design guidelines.

- To address the safety risk at the proposed and existing intersection Liddles/Kidman Way and Bundure Road, then the following points should be considered as a part of the revised strategic design (s):
  - Realignment of 4-way intersections to staggered-tee configurations with sheltered turn lanes as recommended in Austroads Guide to Road Design, especially for the new intersection,

As discussed with TfNSW, the strategic design for the new site access intersection has been amended to a staggered tee intersection (refer Attachment D of the Amended TIA) to address TfNSW's concerns.

The existing 4-way intersection (Kidman Way/Bundure Road/Liddles Lane) will not be realigned. No vehicles were recorded travelling between Liddles Lane and Bundure Road as part of intersection counts conducted at this intersection. Sight line distances at this existing intersection meet the minimum requirement (300 m) as stipulated in the Austroads Guide to Road Design.

- use of infrastructure to prevent cross traffic and right turn out movements, and provision of U-turn facilities to allow traffic to use the two intersections together for improved safety. Such an analysis should consider travel time inconvenience and likely driver desire lines or risk of illegal movements occurring despite the restrictions.

As discussed with TfNSW, the strategic design for the new site access intersection has been amended to a staggered tee intersection (refer Attachment D of the Amended TIA), and U-turn facilities are not required. All site access points will be clearly signposted.

No project-related vehicles will use Liddles Lane and no cross traffic (i.e. vehicles travelling from Bundure Road onto Liddles Lane) was recorded as part of intersection counts. With the exception of the turn treatments and signage shown in Attachment D of the Amended TIA, no further amendments are proposed at the existing intersection of Kidman Way/Liddles Lane/Bundure Road.

Requested information

1. The strategic design drawings are requested for upgrade of the two intersections of Bundure Road / Liddles Lane and the private accesses 1.6 km north, along with traffic engineering commentary on how the two intersections would interact to provide for safe circulation of vehicles in connection with the project, the broader REZ, and regional traffic more generally.

Strategic concept designs are provided in Attachment D of the Amended TIA.

The new staggered tee intersection on Kidman Way is proposed as the primary site access intersection. As discussed in Section 4.2.6 of the Amended TIA, the majority of project related light and heavy vehicles, and all OSOM vehicles, will use this intersection.

The Kidman Way/Bundure Road intersection will be used as a secondary access point, with some light vehicles and selected heavy vehicles able to use the alternative access points on Bundure Road to access the eastern section of the site.

Vehicles that enter the primary site access intersection on Kidman Way will also be able to cross the Coleambally Irrigation Channel via two existing bridges (one on private land within the development footprint and one on Bundure Road). Load limit restrictions will affect the use of the existing bridges; however, these bridges may reduce the number of project-related vehicles travelling on Kidman Way between Bundure Road and the new site access intersection.

2. Show existing cadastral boundaries, and if land dedication for road widening acquisition is required it should be indicated on the strategic drawings.

Existing cadastral boundaries are shown in Attachment D of the Amended TIA. All proposed works will occur within the designated road reserve and no acquisition of private land is required.

3. Given the higher potential hazard for cross-traffic movements at high-speed junctions, discussion around the appropriateness and feasibility of realigning the 4-way intersection approaches is requested, for example to ‘staggered tee-intersections’.

As discussed with TfNSW, the strategic design for the new site access intersection has been amended to a staggered tee intersection (refer Attachment D of the Amended TIA).

No project-related vehicles will use Liddles Lane and no cross traffic (i.e. vehicles travelling from Bundure Road onto Liddles Lane) was recorded as part of intersection counts. With the exception of the turn treatments and signage shown in Attachment D of the Amended TIA, no further amendments are proposed at the existing intersection of Kidman Way/Liddles Lane/Bundure Road.

4. For guidance on TfNSW strategic design requirements please refer to our fact sheet: https://www.transport.nsw.gov.au/system/files/media/documents/2022/strategic-design-fact-sheet-02-2022.pdf

Strategic concept designs are provided in Attachment D of the Amended TIA and have been prepared in accordance with TfNSW's requirements.

5. Discussion is also requested as to whether the restriction of cross-traffic movements between the side roads, and/or right turn movements out from the side roads onto the State Road, provision for U-turn movements, and/or provision of works to reinforce and provide for safe movements in accordance with relevant standards, are reasonable and feasible to reduce potential risk of collisions. Inconvenience to existing traffic movements should be avoided or minimised so far as is practicable, and if there are to be any substantial changes to public traffic circulation they should be publicly exhibited.

The strategic design for the new site access intersection has been amended to a staggered tee intersection (refer Attachment D of the Amended TIA). As discussed with TfNSW, an acceleration lane is not required and no U-turn movements are proposed. All site access points will be clearly signposted.

No project-related vehicles will cross between Liddles Lane and Bundure Road and the proposed turn treatments at the existing intersection will reduce potential risk of collisions and limit inconvenience to existing through traffic movements on Kidman Way.

No substantial changes to public traffic circulation are proposed.

6. If similar intersection improvements (CHR) at this location may be proposed or required under the latest Yanco Delta Wind Farm SSD documentation, coordination of works proposals and management of cumulative traffic demands is to be considered.

Appendix 7 of Yanco Delta Wind Farm's development consent (SSD-41743746) lists the strategic concept design requirements for the Kidman Way/Liddles Lane/Bundure Road intersection. The strategic concept design is not publicly available and it is unclear at what point this design will be prepared.

The strategic concept design for the Kidman Way/Liddles Lane/Bundure Road intersection provided in Attachment D does not consider Yanco Delta Wind Farm's construction or operational vehicles; however, does provide BAL and CHR(s) turn treatments on both the north and south approaches on Kidman Way.

Due to the uncertainty of the timing of construction of Dinawan Solar Farm and Yanco Delta Wind Farm, it is unclear whether there will be a requirement to coordinate works proposals at the Kidman Way/Liddles Lane/Bundure Road intersection. Prior to the implementation of the proposed intersection upgrades, Spark Renewables will consult with DPHI, TfNSW and Murrumbidgee Council to confirm the status of other local developments and ensure the proposed intersection design is consistent with relevant road design guidelines.

7. Update the turn warrants assessments for each left turn into side roads because of any changes to above movements (including cumulative impacts with REZ projects already approved or under assessment). Are Auxiliary Left (AUL) turn lanes warranted at either location?

Turn warrant assessments have been updated in Section 5.4 of the Amended TIA. Based on the outcomes of the turn warrant assessments, AUL turn lanes are not warranted at either Bundure Road or Liddles Lane. Short AUL turn lanes will be provided on both the north and south approach at the new site access intersections.

8. In addition, the swept paths, and strategic designs for the additional intersection scope of the road upgrades to facilitate the high-risk heavy vehicles requiring escort are required to be provided as a part of the RtS response.

Strategic concept designs are provided in Attachment D of the Amended TIA and include consideration of OSOM vehicles entering the site via the new site access intersections on Kidman Way.

No OSOM vehicles will turn into/out of Bundure Road from Kidman Way.

9. Strategic designs will be required for any road infrastructure upgrades required to facilitate the high-risk heavy vehicles requiring escort, that have been identified at any pinch points, that have been identified within the route assessment.

Existing road network deficiencies have been identified on the proposed OSOM routes from Port of Newcastle (Figure 4.13 in the Amended TIA) and Port Kembla (Figure 4.14 in the Amended TIA).

The OSOM route assessment (Attachment F of the Amended TIA) has identified deficiencies in the existing road network that would need to be addressed prior to being used by the project's OSOM vehicles. These deficiencies are summarised in Table 4.12 (Port of Newcastle) and Table 4.13 (Port Kembla) in the Amended TIA and labelled on Figure 4.13 (Port of Newcastle) and Figure 4.14 (Port Kembla) in the Amended TIA. Works will be subject to further consultation with DPHI, EnergyCo and TfNSW.

A decision on the project's OSOM route is subject to further consultation with relevant road authorities (including TfNSW and local councils) and EnergyCo prior to a NHVR application. The selection of a transformer model will determine the exact dimensions of components requiring transport and subsequent road upgrades needed between the site access points and the relevant port to facilitate deliveries.

10. Clarify whether certain classes of heavy vehicle or OSOM will be restricted from using certain intersection turning movements, and how (with works) this could be achieved.

The traffic management plan will include a driver code of conduct that is to be read and signed by all light and heavy vehicle (including OSOM) drivers prior to operation of vehicles and will include detail on the approved route for project-related vehicles (including restrictions for intersection turning movements from port to site).

11. All permanent or temporary works required along the State road network to facilitate OSOM movements will require specific TfNSW approvals under the Roads Act. Works required at layover areas, key intersections and pinch points (including property boundaries) should be at least identified on strategic sketches as part of the SSD application, even if such works are planned to be constructed or funded by others or the NSW Government as part of the broader REZ development. For example, specific consideration of the Sturt Highway and Kidman Way intersection for OSOM movements was not found in the EIS documents.

The OSOM route assessment (Attachment F of the Amended TIA) has identified deficiencies in the existing road network that would need to be addressed prior to being used by the project's OSOM vehicles. These deficiencies are summarised in Table 4.12 (Port of Newcastle) and Table 4.13 (Port Kembla) in the Amended TIA and labelled on Figure 4.13 (Port of Newcastle) and Figure 4.14 (Port Kembla) in the Amended TIA. Works will be subject to further consultation with DPHI, EnergyCo and TfNSW.

A decision on the project's OSOM route is subject to further consultation with relevant road authorities (including TfNSW and local councils) and EnergyCo prior to a NHVR application. The selection of a transformer model will determine the exact dimensions of components requiring transport and subsequent road upgrades needed between the site access points and the relevant port to facilitate deliveries.

12. The strategic design drawings are required to be revised to increase the design deceleration lengths for turn lanes to include Storage (S) provision for the design truck.

Strategic concept designs are provided in Attachment D of the Amended TIA and turn lanes have been provided in accordance Austroads requirements which includes deceleration and storage.

13. Reconfirm the swept paths at an appropriate design speed not less than 20 km/h unless vehicles are moving from yield points. Crimps in some of the swept paths shown on drawings in the TIA suggest a 'turn from stopped' setting may have been used. Show 0.5 m buffer lines offset from the swept wheel paths.

As discussed with TfNSW, the swept path assessments used a vehicle speed of 15 km/h.

A 500 mm clearance has been provided in the strategic concept designs in Attachment D of the Amended TIA.

14. Strategic designs for public road upgrades should show sealing of local roads for an appropriate distance on approaches to enable safe deceleration and prevent tracking of gravel, dust and debris onto the Kidman Way. New private property access junctions should also be sealed between the State Road and the property boundary at minimum.

Strategic concept designs are provided in Attachment D of the Amended TIA and identify the proposed sealed area on local roads.

15. For the unsealed hardstand areas required to accommodate OSOM wheel movements, please provide further details on how these areas will be designed to minimise misuse by public traffic in the long term when OSOM transport is not underway. Short-cutting corners or stopping within areas that may obscure sight lines should be actively prevented or discouraged, for example through the provision of permanent or removable features such as traversable table drains, windrows, guideposts, bollards or boulders, in combination with other line markings and signage if required. Pavement seal edge support should also be considered at high traffic wear locations.

As discussed with TfNSW, guideposts will be provided on relevant hardstand areas to prevent vehicular usage of these areas when there are no OSOM vehicles.

TfNSW are yet to provide guidance on pavement seal edge support required for the hardstand areas. This will be discussed with TfNSW post approval and incorporated into the design prior to construction.

16. Within the footprint of intersection upgrades, confirm that clear zone requirements under Austroads Guide to Road Design AGRD06-2010 Table 4.1 will likely be met as part of the finished works (consistent with the requirements of current TfNSW Supplement to AGRD06).

During a meeting with TfNSW in March 2024, it was confirmed that this matter was relevant to the design of safety barriers. Safety barriers are not required for the proposed intersection upgrades and have not been included in the strategic concept designs in Attachment D of the Amended TIA.

17. Update the concept-level details of all line markings and signage at the upgraded intersections, including advance warning signage on all approaches.

Strategic concept designs are provided in Attachment D of the Amended TIA and identify the proposed line markings and signage at the upgraded intersections, as well as advance truck warning signage on all approaches.

18. Provide a minimum 1.0 m wide sealed shoulder at widened road sections, plus 0.5 m unsealed (verge).

Strategic concept designs are provided in Attachment D of the Amended TIA and have been designed in accordance with Austroads requirements and provide a minimum 1-m-wide sealed shoulder at widened road sections plus a 0.6 m verge.

19. While firm quantities and commitments to construction traffic management measures such as shuttle bus and private vehicle pooling quotas may be deferred to post-SSD approval phases (such as a Construction Traffic Management Plan), more specific commitments are requested prior to SSD determination to ensure that the applicant will minimise private vehicle trips so far as is practicable, and in line with or better than the estimated numbers of movements offered in the Traffic Impact Assessment (TIA, EMM, October 2023). Such commitments may include qualitative and quantitative principles on how the minimum number of 'seats' provided by shuttles and pool vehicles should be determined, in consultation with affected Council/s and TfNSW. What strategies, incentives and enforcement measures will be in place to ensure compliance with the commitments? Roads authorities may impose management measures under any SSD consent and the relevant Roads Act provisions for traffic management.

As discussed with TfNSW, this assessment is based on a worst-case scenario and assumes that:

- 75% of the peak construction workforce (i.e. 300 people) will reside in the accommodation facility and travel to/from the facility via 12-seater shuttle buses
- 25% of the peak construction workforce (i.e. 100 people) will drive to and from site each day in their own vehicle.

The use of larger shuttle buses and/or carpooling throughout construction will reduce the number of vehicles on the public road network.

The project's CTMP will aim to minimise the impact of construction vehicle traffic on the operation of the road network and the driver code of conduct will outline the disciplinary framework proposed to address non-compliance with traffic-related commitments.

20. Please reconcile discrepancies for the numbers of light vehicle, heavy vehicle, and shuttle bus movements stated between the EIS (Tables 6.20 and 6.21) and TIA (section ES3 at pg ES.1, Tables 4.1 to 4.4 for which the totals are also requested to be shown in columns, and Section 7 Conclusion at pg 74).

The amended TIA is summarised in Section 6.7 of the amendment report.

The daily and peak hourly construction trips for months 10 and 21 are consistent between Section 6.7 of the amendment report and Chapter 4 of the amended TIA.

21. Please confirm whether occupation of the accommodation facility is proposed to be a condition precedent to the commencement of the main construction phase, or if not and it will be completed after construction starts in the main, assess what the implications for the classified road network may likely be if there is instead regionally dispersed traffic generation by 100% of the commuting workforce.

The construction sequencing of the project will be determined as part of detailed design; however, it is anticipated that the accommodation facility will be installed as part of the first stage of construction (i.e. as part of site preparation works) and following completion of the required site access works. A list of site preparation activities is provided in Section 3.4.1 (i) of the EIS and includes:

- public road upgrades
- site survey to confirm infrastructure placement
- construction of access tracks
- installation of boundary fences
- establishment of temporary construction areas, including:
    - construction compound(s)
    - worker accommodation facility
    - laydown and parking areas
    - construction materials storage areas
    - installation of temporary construction offices and buildings
    - additional geotechnical investigations to confirm ground conditions.

The accommodation facility is therefore expected to be established prior to the commencement of the main construction phase. Additional assessments of traffic from a regionally dispersed workforce are not required.

22. Due to the length and low travel speed of the OSOM required, safe potential layover/pullover locations along the Sturt Highway and Kidman Way should be identified and should provide the sufficient width and length to permit the OSOM vehicles alongside the approximate travel distances and times between each potential layover.

Parking areas that can accommodate OSOM vehicles have been identified along the assessed routes and are summarised in Table 4.10 (Option 1) and Table 4.11 (Option 2) and labelled on Figure 4.13 (Option 1) and Figure 4.14 (Option 2) in the Amended TIA. The closest suitable parking areas to the site are:

- Gillenbah, Sturt Highway – approximately 110 km
- Sandigo Rest Area, Sturt Highway – approximately 130 km.

Travel times between these parking areas and the site will vary depending on vehicle speeds.

23. Please provide more detail around the proposed electricity crossing of the Kidman Way. Will new vehicular accesses be required at this location either permanently or temporarily to enable the works, and if so, what are the expected hourly and total traffic volumes? What are the proposed height clearances for cables above the State road carriageway? Support pylons should be located outside the road reserve and outside the roadside hazard clear zone where practicable (in accordance with TfNSW Supplement to Austroads AGRD06). Concurrence to the detailed design must also be obtained from TfNSW under Roads Act and/or Electricity Supply Act processes.

The eastern and western sections of PV module arrays will be connected via an underground or overhead line crossing of Kidman Way. The indicative location of this crossing is shown in Figure 1.3 of this submission report. A conceptual representation of the transmission line crossing Kidman Way is shown in Figure 1.4 of the Amended TIA.

As shown in Figure 1.4 of the Amended TIA, no permanent infrastructure will be required within the Kidman Way road reserve. A minimum 10 m clearance will be provided at the lowest point of any overhead transmission line traversing Kidman Way.

Concurrence will be sought from TfNSW following detailed design, and prior to construction.

24. The traffic count survey was not undertaken for a full day or at the key intersection of Liddles Lane and Kidman Way. The traffic count survey should be revised to address the matter and background traffic volumes updated accordingly.

A 24-hour traffic count has been conducted at Kidman Way/Liddles Lane intersection (refer to Attachment A of the amended TIA).

4.10 Biodiversity, Conservation and Science Group

BCS considers that the EIS meets the SEARs requirements for flooding, however it does not meet the SEARs requirements for biodiversity.
To meet the SEARs for biodiversity, we recommend the following key tasks be completed prior to project determination:

- avoid potential Serious and Irreversible Impacts (SAII) to Plains-wanderer and additional surveys for assumed SAII threatened flora
- include documented biodiversity specific mitigation measures
- complete additional assessment of matters of national environmental significance
- create separate Biodiversity Assessment Method Calculator (BAM-C) child cases for each proposed project stage

A summary of our issues and recommended actions on biodiversity is provided in **Attachment A**, while our detailed comments and advice are provided in **Attachment B**.

A response to each of the matters raised by BCS is provided below and an amended BDAR is included as Appendix D.1 of the amendment report.

1. Ensure important mapped habitat for Plains-wanderer is avoided and not isolated.

Recommended actions:

1.1 Either:

- Include all indirectly impacted areas of the important mapped habitat for the Plains-wanderer in the development footprint within the BAM-C as loss of habitat or
- Consider changing the north-eastern boundary of the development footprint so the Plains-wanderer important mapped areas are outside of the development footprint and security fence.

1.2 Explain why areas mapped as 'No Go' in the constraints mapping have been included in the development footprint.

The project will not result in direct impacts to important mapped habitat for Plains Wanderer and areas of important mapped habitat will not be isolated by the project. As discussed in Section 6.3.2 of the amended BDAR (Appendix D.1 of the amendment report), gates and perimeter fencing will not be required to the north and north-east of the important mapped habitat as this section of the development footprint is for vehicle access only and follows an existing farm track that crosses the Coleambally Irrigation Channel via an existing bridge. As the important mapped habitat will not be surrounded by project infrastructure or perimeter fencing, connectivity will still be retained to the north and north-east and indirect impacts substantially mitigated.

Chapter 5 of the EIS BDAR and amended BDAR aims to demonstrate the methods of avoidance and minimisation of impacts on native vegetation and biodiversity values from project conception and early designs through to the development footprint presented in the amended BDAR. As discussed in Section 5.2 of the amended BDAR, the initial constraints and opportunities assessment for the project was prepared using primarily desktop data. Figure 12 of the EIS BDAR, which presented the preliminary constraints used to inform project design, included areas of PCT 26 intact and small wetlands within the development footprint as 'no go' areas. Following fieldwork to verify identified constraints, it was determined that some of the preliminary constraints were inaccurate and, subsequently, some of these areas were downgraded to a 'high' constraint. The constraints model was not re-run following field verification and therefore the figure was not updated as part of the EIS BDAR. In response to the matter raised by BCS, Figure 12 has been updated as part of the amended BDAR.

2. Serious and Irreversible Impacts (SAII) to Plains-wanderer are underestimated and assumed presence for Austral Pillwort requires survey effort.

Recommended actions:

2.1 Complete targeted surveys for assumed Austral Pillwort to inform an updated SAII assessment.

2.2 Update the SAII assessment to include all impacts to Plains-wanderer. Or, alternatively, change the north eastern boundary of the development footprint so the important mapped areas are outside of the development footprint and security fence.

Further targeted surveys were undertaken in November 2023 for Austral Pillwort within suitable gilgais and other areas of moist microhabitats, and similarly for other species such as A spear-grass and Claypan Daisy. Rainfall requirements and conditions on ground were considered suitable for this survey period, in conjunction with survey that was conducted in November 2022. No individuals were detected. Chapter 4 and Section 8.2 of the amended BDAR (Appendix D.1 of the amendment report) have been updated.

The project will not result in direct impacts to important mapped habitat for Plains Wanderer and areas of important mapped habitat will not be isolated by the project. The project's potential indirect and prescribed impacts on Plains Wanderer are considered in Section 6.3.2, Section 8.2 and Appendix 5 of the amended BDAR. Connectivity will be maintained to the north and north-east of the important mapped habitat and indirect and prescribed impacts will be adequately managed and mitigated. The credit liability for Plains Wanderer that was presented in the EIS BDAR has therefore been removed.

3. The flora survey method used is inconsistent with the *Biodiversity Assessment Method* (BAM) guidelines which may mean flora species are under-surveyed.

Recommended actions:

3.1 Complete flora surveys as per the BAM 'Surveying threatened plants and their habitats' guide or further consult with BCS to seek endorsement to use a different approach.

3.2 Remove driven transects from candidate flora survey effort and reassess completed and required survey effort for each candidate species.

3.3 Complete supplementary survey effort for candidate flora species in the required survey months for each species to meet minimum survey effort requirements.

Further targeted threatened flora surveys were completed in November 2023 and survey methods and results are provided in Section 4.3.1 of the amended BDAR (Appendix D.1 of the amendment report).

Surveys were required across a very large area, nearly all of which contains native vegetation, making the implementation of surveys in strict accordance with the guidelines problematic. Biosis consulted with BCS regarding an appropriate survey methodology for the project including by facilitating a site visit in June 2023 and providing detailed justification for the methodology employed prior to submission of the EIS.

Extensive threatened flora surveys have been carried out providing a high level of certainty as to the species present within the amended development footprint. Across two years and four survey periods, over 850 person hours of threatened flora surveys have been undertaken for the project. This coverage is illustrated in Figure 10.2 of the amended BDAR.

It is difficult to separate the smaller areas of driving transects from those completed by foot; however, reliance on these driven portions in terms of total survey effort is negligible, as it relates to more easily identifiable flowering species, such as the targeted Swainsona species. A conservative estimate of the total effort represented by slow driving transects has been excluded from the survey calculations presented in Section 4.3.1 of the amended BDAR. It is maintained that this method of survey is useful for certain species, particularly trees, shrubs and bright flowering species that are easily initially spotted and noted for further detailed investigations and transects on foot. It is acknowledged that acceptance of survey methods utilising driving transects will be extremely unlikely and, therefore, these have been removed from calculations presented in the amended BDAR. Improved methods of GPS track data collection will also be employed to satisfy BCS's expectations on spatial data to support survey effort.

As shown in Table 23 of the amended BDAR, the threatened flora survey effort achieved for the project, though not aligned with the 100 m x 100 m grid methodology stated by the guidelines, has achieved a similar area of total coverage within the amended development footprint. This is based on survey effort achieved by a combination of both grid searches and transects and has excluded the estimated amount of slow driving transects.

Noted limitations in 2022 occurred due to flooding in some sections of the development footprint and are discussed throughout the amended BDAR; however, the extensive threatened flora surveys completed provide a comprehensive understanding of species present. The survey approach implemented has been informed by the relevant guidelines and has responded to the specific conditions encountered on-site including the homogeneous nature of threatened species habitat within the vast majority of the development footprint. Smaller microhabitats with a greater likelihood for threatened flora species to be present were targeted and where species were recorded, microhabitats were thoroughly searched.

An adaptive biodiversity management plan will be implemented to protect biodiversity values. This will include measures to address any unexpected instances of threatened flora found to be present during construction or operation. The biodiversity management plan will include an incidental threatened species finds protocol to identify the avoid and/or minimise and/or offset options to be implemented if additional threatened species are discovered on-site. This risk would remain even with surveys completed in strict accordance with the survey guidelines.

4. Prescribed and indirect impacts are underestimated.

Recommended actions:

4.1 Update the prescribed impacts section to assess all prescribed impacts, including but not limited to impacts to the movement of Southern Bell Frogs, Plains-wanderer, and Superb Parrots.

4.2 Discuss and justify (using evidence) the low and negligible impact ratings given to Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) listed Weeping Myall Threatened Ecological Community (TEC), Natural Grasslands TEC, Swainsona murrayana, Plains-wanderer, Southern Bell Frog and Superb Parrot.

4.3 Include observations of Superb Parrots and other threatened fauna to inform prescribed impacts including flight paths for the Superb Parrot.

The project's prescribed impacts have been updated in Section 6.3 of the amended BDAR (Appendix D.1 of the amendment report). Further information has also been provided to support impact ratings for EPBC Act listed communities and species in Chapter 6, Section 10.1 and Appendix 6 of the amended BDAR. Observations of Superb Parrots and other threatened fauna are shown on Figure 10.1 and indicative flight paths are shown on Figure 16 of the amended BDAR.

5. Mitigation measures lack the necessary detail.

Recommended actions:

5.1 Provide specific detail for each mitigation measure in accordance with section 8.4 of the BAM, so these can be incorporated into the relevant post approval plans.

5.2 Identify measures for which there is risk of failure and evaluate the risk and consequence of any residual impact. Where impacts cannot be mitigated, consider the need for an adaptive management plan in accordance with section 8.5 of the BAM.

5.3 Where impacts cannot be mitigated, consider the need for an adaptive management plan in accordance with section 8.5 of the BAM.

The proposed mitigation measures have been updated in the amended BDAR to respond to the matters raised by BCS (refer Table 58 of Appendix D.1 of the amendment report). Further details around triggers and SMART (specific, measurable, achievable, relevant and time bound) actions will be implemented in consultation with BCS. The amended BDAR also includes further discussion on groundcover and adaptive management in Chapter 7.

6. Matters of National Environmental Significance (MNES) requires further assessment.

Recommended actions:

6.1 Provide detail on how the proponent proposes to avoid MNES.

6.2 Include the requested MNES tables within the BDAR.

Since project inception, avoidance and minimisation of direct impacts to MNES has been a key driver in both site selection and project refinement. Chapter 5 of the amended BDAR (refer Section 5.4 of Appendix D.1 of the amendment report) has been updated to include further information on the avoidance of impacts to MNES (namely Commonwealth EPBC Act listed species and communities).

Section 10.1 of the amended BDAR includes the requested tables summarising the project's potential impacts on MNES (refer Table 73 and Table 74 of Appendix D.1 of the amendment report).

7. There is insufficient information in the BDAR about the management approach to ensure the loss will be only partial.

Recommended actions:

7.1 Either

- Update the BDAR to use a total loss assessment approach, which will require the BDAR to be revised to remove all references to partial loss, including Tables 45 and 49, and the partial loss BAM Credit Summary reports to avoid any confusion around the credit requirement or
- Provide more information on the management actions that will be put in place to ensure the loss is only partial, making sure all actions are SMART (specific, measurable, achievable, relevant and time bound).

To further avoid impacts to PCT 26, the feasibility of retaining native groundcover within the solar array areas of the development footprint has been investigated further as part of the amended BDAR (refer Section 6.4 of Appendix D.1 of the amendment report). Based on these investigations, the project will take the following steps to further minimise impacts to native groundcover within PCT 26:

- adoption of practical construction methods to minimise removal of native groundcover
- implementing a monitoring program post-construction to confirm that vegetation integrity predictions are met
- preparation of a groundcover management plan that details actions that will be taken to maintain integrity of native groundcover within the solar array areas.

A reduced credit requirement has been calculated for impacts to PCT 26 DNG and PCT 26 sparse canopy, reflecting a portion of this PCT as subject to a partial loss of biodiversity values. This approach is reflective of the potential for the solar arrays to continue to support biodiversity values as a result of the retention of native groundcover below and between rows of PV modules, and incentivises the retention of native vegetation groundcover within the solar array areas.

Measures that will be implemented to promote the retention of native groundcover will be developed within a groundcover management plan (a component of the biodiversity management plan) following detailed design and contractor/infrastructure procurement. Adoption of practical construction methods to minimise removal of native groundcover will be a key feature. The groundcover management plan will be developed in consultation with BCS and will include an adaptive management framework, including specific targets and triggers to ensure intervention would occur if the areas nominated as partial loss fall below specific key indicators during ongoing management. A draft partial loss monitoring and adaptive management plan is provided in Table 56 of the amended BDAR (Appendix D.1 of the amendment report), which has been developed with reference to the BAM and the NSW Biodiversity Conservation Trust's *Ecological Management Module* (BCT 2022). It includes measures that will promote the successful retention of biodiversity values within the solar arrays during construction, operation and decommissioning, and will be further developed in the preparation of the project's groundcover management plan.

8. Proposed credit stages are not in separate child cases in the Biodiversity Offsets and Agreement Management System (BOAMS).

Recommended actions:

8.1 Create a separate BAM-C child case for each project stage.

Child cases for each of the proposed offset stages have been updated and are explained in detail in Chapter 11 of the amended BDAR (Appendix D.1 of the amendment report).

9. The vegetation integrity (VI) plot placements are biased to vegetation zone edges.

Recommended actions:

9.1 Collect additional VI plots for '26_Sparse Canopy' and '26 DNG' in accordance with section 4.3.4(3) of the BAM to cover previously unsurveyed parts of these vegetation zones.

Six additional plots have been completed and are discussed in Chapter 3 of the amended BDAR (Appendix D.1 of the amendment report), including three plots in PCT 26 DNG and three plots in PCT 26 sparse canopy). The additional plots are 'DEH_S_90' to 'DEH_S_95'. Vegetation integrity scores and the project's ecosystem credit liability have been updated accordingly.

10. Several limitations, assumptions and predictions are not documented.

Recommended actions:

10.1 Document and discuss any limitations, assumptions and/or predictions made throughout the BDAR.
10.2 Provide justification for each different species polygon buffer and how these were applied.

Additional information has been provided within the amended BDAR (Appendix D.1 of the amendment report) to address species assumptions and predictions made, particularly around indirect and prescribed impacts.

Table 36 of the amended BDAR (Appendix D.1) provides details of threatened species impacted by the project and outlines the attributes that comprise the threatened species polygons.

5 Response to public submissions

As outlined in Section 2.1, 82 submissions were made by individuals and organisations from the public. An additional submission from the public was received after the public exhibition period. Responses to key matters raised, as summarised in Section 2.4, are provided in the relevant sections below.

5.1 The project

5.1.1 Site suitability

Four submitters commented on site suitability, raising general objections to the placement of a solar farm in the "beautiful Riverina countryside." One submitter highlighted that rooftop solar panels and battery facilities could be installed in urban areas to prevent environmental impacts in rural areas.

The project area is ideally located for the development of a solar farm and BESS for the following key reasons:

- location with the South West REZ – the project area is in a REZ formally declared by the NSW Government for significant investment in renewable energy generation, storage and transmission projects
- proximity to approved transmission infrastructure – the project area is adjacent to Project EnergyConnect's Dinawan Substation site, which can export the electricity generated by the project directly into the grid
- proximity to major transport networks – the project area can be accessed from Kidman Way, an approved B-Double route, with access to the Sturt and Newell highways, with further access from Bundure Road
- few surrounding receptors – the land surrounding the project area is sparsely populated with only two non-associated residences within 5 km (R036 and R049 on Figure 1.2)
- strong solar resource – the project area is relatively flat and has a very good solar resource
- compatible surrounding land use – the existing agricultural land use within and surrounding the project area is compatible with large-scale solar energy generation and storage and sheep grazing is intended to continue throughout operations
- high potential to avoid and minimise impacts – the project area has allowed for the refinement of the development footprint within the project area and for impacts to be avoided and minimised as much as possible.

Additionally, Spark Renewables has further maximised the avoidance of potential environmental impacts through the preparation of an amendment report. The amended project avoids and minimises the following impacts:

- avoidance of a further 653 ha of NSW listed (42% reduction) and 110 ha of Commonwealth listed (74% reduction) TECs
- biodiversity offsets required for the project have been further reduced by 12,663 (88% reduction) for species credits and 19,244 (48% reduction) for ecosystem credits
- avoidance of a further three additional Aboriginal heritage sites (DEHS-2023-IF3, DEHS-2023-AS3 and DEHS-2023-AS8).

- avoidance of up to 707 ha of agricultural land.
- increased buffer distance between PV modules and nearby private and public receptors (including R036, R049, Liddles Lane and Kidman Way) to further minimise visual impacts of the project.

The EIS and amendment report have identified that any residual impacts can be appropriately managed and/or offset in accordance with NSW Government policy.

It is acknowledged that small-scale renewable electricity generation and storage in urban areas are an important part of the national energy market (NEM); however, as outlined in the Australian Energy Market Operator's (AEMO) *Draft 2024 Integrated System Plan* (ISP) (AMEO 2023), growth is required in both consumer-owned and utility-scale renewable electricity generation and storage to meet the growing demand for electricity as coal generation retires. AEMO predicts that the total capacity of utility-scale wind and solar will need to increase by seven-fold by 2050, from 19 GW to 126 GW. The project will help meet energy demands by providing up to 800 MW of renewable electricity to the NEM.

5.2 Procedural matters

5.2.1 Assessment process and guidelines

One submitter commented on the assessment process and guidelines, noting that developments should be in line with the new renewable energy guidelines.

The EIS was prepared in general accordance with the *State significant development guidelines – preparing an environmental impact statement* (DPE 2022a) and the *Large-Scale Solar Energy Guideline* (DPE 2022b), which are the most relevant and latest guidelines for a large-scale solar farm. The EIS describes the project, the existing environment, planning considerations and the statutory context for the project, potential impacts (during construction, operation and decommissioning of the project), mitigation measures, residual impacts and a description of the community engagement undertaken and outcomes. It is informed by the technical assessments contained in the appendices and provides an overview of these assessments. It addresses the requirements of the SEARs issued by DPHI and the appended agency requirements. A summary of how the SEARs have been addressed is provided in Appendix A of the EIS. The EIS was accepted by DPHI as adequately meeting the SEARs.

The methodology for each of the technical assessments is provided in the corresponding reports (Appendix E.1 to Appendix E.12 of the EIS).

5.2.2 Inadequate engagement

Three submitters commented that there was inadequate engagement with the community on the project, summarised as follows:

- Community engagement has had too much emphasis on small group meetings rather than open forum presentation and has not generated the necessary local interest in the project.
- Submitter feels vulnerable to 'push over tactics' of the proponent.
- There has been a lack of consultation with the project landowner and that they are not aware of the full extent of the contract they have signed.
- There is a lack of transparency from the developer to the public and external stakeholders.

Spark Renewables recognises the importance of stakeholder engagement to the success of the project. Consultation and engagement with affected parties, stakeholders, and the broader community has been an integral part of the development of the project. Engagement has been undertaken by Spark Renewables in accordance with the requirements of *Undertaking Engagement Guidelines for State Significant Projects* (DPHI 2024b) (SSD Engagement Guidelines) and the SEARs. Engagement for the project is discussed in Chapter 5 of the EIS, which included letters, face-to-face meetings (including with nearby landholders), community information sessions and project communication channels. Engagement was consistent with the community participation objectives in the SSD Engagement Guidelines, as shown in Table 5.6 of the EIS.

Since September 2021, Spark Renewables have been actively engaging with the local community. The project team engaged in a range of activities, including setting up a temporary office in Coleambally and Jerilderie during the public exhibition of Dinawan Solar Farm EIS, hosting several community drop-in sessions, pop-up stalls at regional events and meeting with neighbouring landholders and local stakeholders in-person and online to build and maintain genuine, trusting relationships.

Early project and scoping phase engagement commenced in 2021. Following the launch of the project in September 2021, newsletters were delivered to 25 residences within a 5 km radius of the project investigation area for the project in October, calls were made and emails were sent to those residences, a media release was issued, advertisements were published in the newspaper and a campaign was run across four radio stations.

Scoping phase engagement in 2022 included briefing meetings with First Nations people, business groups and landholders. Spark Renewables also engaged with Murrumbidgee Council, Edward River Council, and local Members of Parliament (MPs). At the recommendation of the community, Spark Renewables presented about the project at various community groups and local service provider meetings during this phase.

The engagement program continued during the preparation of the project EIS and the Dinawan Wind Farm EIS in 2023 and 2024. This included engagement with government agencies, Murrumbidgee Council, Edward River Council, EnergyCo, nearby landholders, First Nations representatives, service providers, local businesses and the broader community.

Six rounds of community information sessions have been completed to provide information to the community and seek feedback about the project:

- In December 2021, the first community information sessions were held at the Coleambally Bowling Club and Jerilderie Council Hall.
- In October 2022, Spark Renewables provided a project update and engaged further with the community with a market stall at the Taste Coly Festival in Coleambally.

- In August 2023, Spark Renewables held a series of three workshops at the Coleambally Community Club, Jerilderie Civic Centre and the Darlington Point Sports Club. The workshops provided a project update and sought feedback on the project's community benefit sharing program.
- In November and December 2023, Spark Renewables set up temporary offices in Coleambally and Jerilderie for four weeks during the public exhibition of the Dinawan Solar Farm EIS. The community were given the opportunity to 'drop in' and discuss any questions relevant to both Dinawan Solar Farm and Dinawan Wind Farm, including general project information and outcomes of environmental assessments.
- In May 2024, Spark Renewables hosted an information session for members of the Argoon Rural Fire Brigade, many of whom are neighbouring landowners. During the session, Spark Renewables shared the findings of select technical assessments, listened to feedback and provided an update on the community benefits fund.
- In July 2024, Spark Renewables hosted information sessions in Jerilderie and Coleambally to provide an update on both the project and Dinawan Wind Farm. An additional meeting was also held with representatives from Bundure Argoon Rural Fire Brigade and Bundure landowner group to provide a project update, listen to feedback and provide a further update on the community benefits fund.

Spark Renewables received feedback from neighbour landowners that they were unsatisfied with community engagement completed by other developers in the local area and wished for increased transparency and for Spark Renewables to ensure that landowners nearby the project are made aware of and kept up to date with the project status.

Aligned with this feedback, Spark Renewables has established clear channels of communication and has engaged in targeted consultation with all neighbours to the Dinawan Energy Hub and has undertaken significant consultation with this group of stakeholders. Over approximately the last year (2023 and 2024), Spark Renewables has completed 11 site visits to engage and consult with the local community, neighbouring landowners, and First Nations groups (April 2023, June 2023, July 2023, August 2023, October 2023, November 2023, January 2024, February 2024, April 2024, May 2024, June 2024).

Feedback from the community has been broadly supportive of the project with many excited by the community benefits sharing program. There has been enthusiasm for the economic opportunities the project would create for the local area particularly local employment. One of the main concerns raised by the community during consultation has been the bushfire risk and ensuring there are proper mitigation methods in place.

The feedback received on the project has been constructive and key stakeholders have responded positively to early engagement. The main areas of interest raised by the community and stakeholders include:

- mitigating bushfire risk
- opportunities for community benefit sharing
- opportunities for local workforce participation, supplies and services from local business
- visual amenity impacts to nearby towns and natural parks
- the necessity for meaningful engagement with local First Nations communities regarding cultural heritage and opportunities for participation and benefit-sharing
- impacts on agricultural productivity within and around the project area
- impacts to birds and bats associated with native vegetation and wetlands across the broader region

- concerns about traffic impacts and transport routes during construction
- availability of construction workforce accommodation and coordination with other major projects.

These keys issues were considered and addressed through consultations and preparation of the Project's development application. Spark Renewables have engaged closely with key stakeholders to ensure that key issues raised by the community are well understood and impacts can be avoided.

5.3 Environmental, social and economic impacts

5.3.1 Biodiversity

i General impact on flora and fauna

Six submitters raised concerns about the project's potential impact on the region's unique biodiversity, particularly the destruction and fragmentation of habitat for native flora and fauna.

The BDAR prepared for the EIS (Appendix E.1 of the EIS) and the amended BDAR prepared for the amendment report (Appendix D.1 of the amendment report), define the 'subject land' as the area where biodiversity impacts from the project are predicted to occur. The subject land consists of the development footprint, where direct impacts are predicted, and a buffer area, where indirect and prescribed impacts are predicted.

The subject land contains native vegetation in the form of native grasslands (natural and derived), Weeping Myall woodland, Black Box woodland and wetlands and drainage systems that support seasonal and semi-permanent wetland habitats.

The iterative project design process avoided the highest quality plant community types (PCTs) and threatened species habitat within the subject land to the extent possible, resulting in the irregular shape of the development footprint.

The EIS acknowledged that residual impacts to biodiversity included the removal of:

- 2,477 ha of native vegetation requiring offsets (approximately 99% of which is Weeping Myall woodland in various condition states), including:
  - 1,571 ha of a NSW *Biodiversity Conservation Act 2016* (BC Act) listed threatened ecological community (TEC)
  - 148.8 ha of Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) listed TECs
- 337.8 ha of confirmed threatened species habitat requiring offsets
- 450 ha of habitat for threatened species assumed to be present (for which surveys are yet to be completed)
- 15 hollow bearing trees.

Following the exhibition of the EIS, Spark Renewables amended the development footprint to further avoid and minimise impacts to biodiversity. As outlined in Appendix D.1 of the amendment report, the amended development footprint has been reduced by 28% to 1,792 ha and avoids impacts to a further:

- 694.2 ha of native vegetation requiring offsets (28% reduction), including:
  - 651.4 ha of a BC Act listed TEC (41% reduction)

- 146.6 ha of two EPBC Act listed TECs (99% reduction)

- 210.1 ha of confirmed threatened species habitat requiring offsets (62% reduction)
- 14 hollow bearing trees (93% reduction).

Residual impacts to biodiversity will include removal of:

- 1,782.8 ha of native vegetation requiring offsets (approximately 99% of which is Weeping Myall woodland in various condition states), including:
  - 919.6 ha of a BC Act listed TEC
  - 2.2 ha of two EPBC Act listed TECs
- 127.7 ha of confirmed threatened species habitat requiring offsets
- one hollow bearing tree.

Woody vegetation in the subject land is largely cleared/fragmented and does not form part of a recognised wildlife corridor. Heavily modified areas previously cleared of woody vegetation contain juvenile and immature vegetation and provides some level of connectivity. Retained woody areas within and surrounding the subject land, create stepping stones for mobile fauna to actively move through the subject land, as well as promoting movement of genetic floristic material into adjacent areas of habitat such as riparian areas, retained grassland areas and roadside vegetation. Mature woody vegetation within the subject land has been prioritised for avoidance.

While the project will diminish local connectivity, this is unlikely to prevent genetic exchange of the threatened entities known to be inhabiting the subject land and broader area.

Two submitters raised concerns regarding the proposed offset strategy, stating that offsets are not secured and that offsets will not bring back species which will be significantly impacted.

The offset strategy has been developed consistent with the requirements of the BAM (DPIE 2020), which identified three main options to offset residual biodiversity impacts that cannot be avoided:

- payment to the Biodiversity Conservation Fund managed by the Biodiversity Conservation Trust
- purchase of credits from the open market
- establishment of a biodiversity stewardship site(s) to generate credits for offsetting the project specifically.

Spark Renewables has progressed investigations into the establishment of local biodiversity stewardship sites. Five properties with a total of 11,785 ha have been subject to desktop and on-ground assessment to determine their suitability for establishment of biodiversity stewardship sites. This has included background research, field investigation, credit calculations and suitability assessment. Field investigations have confirmed the presence of nine different PCTs across the five properties, including four of the six PCTs that require offsetting as part of the project (refer Table 67 of Appendix D.1 of the amendment report). Threatened species habitat has also been assessed and habitat has been recorded for species expected to require offsets as a result of the project.

The EIS outlined the credit requirements generated by the project, including 40,229 ecosystem credits to compensate for impacts to native PCTs and ecosystem credit species; and 14,462 species credits for impacts to threatened species.

Following the public exhibition of the EIS and as described in Section 3.1, the development footprint has been amended to further reduce biodiversity impacts. The amended project requires 20,985 ecosystem credits to compensate for impacts to native PCTs and ecosystem credit species (a 48% reduction). The amended project also requires 1,799 species credits (reduced from 14,462) for impacts to threatened species (an 88% reduction).

Further investigations will be undertaken during appropriate seasons to determine the presence of threatened species at the subject properties. The stewardship site investigations completed and resulting biodiversity credit estimates prepared demonstrate that the subject properties could satisfy the majority of offsets required for the project (refer Section 9.3 of Appendix D.1 of the amendment report).

Management actions that would be required to be undertaken following the establishment of a biodiversity stewardship site across the subject properties have been identified and no significant constraints to the establishment of a biodiversity stewardship site within each property have been identified. The establishment of a biodiversity stewardship site would have strict requirements around other permitted uses of that land. For example, public road corridors and electricity transmission line easements would be excluded from biodiversity stewardship sites due to ongoing access and maintenance requirements.

Spark Renewables will continue to investigate the feasibility of establishing biodiversity stewardship sites during the assessment process.

Within the amended BDAR, the development footprint has been broken up into three areas to facilitate the staged retirement of the project's biodiversity credit liability, should it be required (refer Section 9.4 of Appendix D.1 of the amendment report). Prior to works commencing in each area, the biodiversity offset associated with that area will be secured. The nominated offset areas could provide discrete packages for staging of offset obligations. Spark Renewables will confirm the offset staging plan with DPHI prior to the commencement of construction.

ii Impact on birds

Two submitters raised concerns that solar farms kill or disorient birds, with one submitter referencing research on bird mortality from solar farms in the US and the 'Lake Effect Hypothesis.'

The 'lake effect' is the hypothesis that birds mistake the reflective surface of solar panels for the surface of water and strike the solar panel at a high velocity (i.e. anticipating it to be water rather than a solar panel).

Bird deaths due to the 'lake effect' are most likely to occur among large-bodied aquatic birds such as ducks, geese, grebes, pelicans, cormorants or swans. No threatened species of large-bodied aquatic birds are likely to utilise the project area. The lake effect is not likely to impact terrestrial threatened bird species, as these birds do not typically land on water.

Recent research indicates that the 'lake effect' is most prevalent in arid conditions where there are few water bodies available and mostly affects water-obligate species that cannot take off from land. Further, where detailed surveys of behaviour of aquatic birds at PV solar facilities have been undertaken, changes in behaviour of aquatic birds flying near the facilities occurred infrequently and therefore were difficult to detect.

The 'lake effect' is unlikely to impact birds that utilise the project area and surrounds.

iii Impact on biodiversity of neighbouring properties

Three submitters raised concerns that the project will impact the biodiversity of neighbouring properties, with one submitter noting that their property holds biodiversity conservation trust agreements. One submitter raised concerns that fencing associated with the project will push kangaroos onto neighbouring properties.

The BDAR prepared for the EIS (Appendix E.1 of the EIS) and the amended BDAR prepared for the amendment report (Appendix D.1 of the amendment report), define the 'subject land' as the area where biodiversity impacts from the project are predicted to occur. The subject land consists of the development footprint, where direct impacts are predicted, and a buffer area, where indirect and prescribed impacts are predicted. The definition of the subject land is consistent with the BAM (DPIE 2020). Parts of the subject land occur outside the project area, on adjoining landholdings and public road corridors.

The potential indirect and prescribed impacts from the project within the subject land have been assessed in the amended BDAR (Section 6.1 of Appendix D.1 of the amendment report). Biodiversity conservation trust agreements on neighboring properties will not be impacted by the project.

A full list of potential indirect impacts is provided in Section 6.2 of the amended BDAR (Appendix D.1 of the amendment report). Indirect impacts relevant to this submission are:

- inadvertent impacts on adjacent habitat or vegetation
- reduced viability of adjacent habitat due to edge effects
- transport of weeds and pathogens from within the development footprint to adjacent vegetation
- fragmentation of movement corridors (including potential for perimeter fencing to disturb the movement of larger ground dwelling fauna such as kangaroos and emus).

Impacts to adjacent vegetation during construction and operational phase will be prevented or minimised through appropriate exclusion fencing, implementation of a biodiversity management plan (BMP) and construction environmental management plan (CEMP) detailing best practice environmental protection measures, strict water quality practices and stormwater controls, and by ensuring any lighting is directed towards the developed area, rather than towards adjacent retained habitat. Additionally, mitigation measures will be implemented in the BMP to ensure retained adjacent habitat does not decline or is subjected to adverse impacts. With the implementation of these mitigation measures, these impacts have been assessed in the BDAR as low likelihood of occurrence and low consequence.

iv Impact on threatened species and ecological communities

Eight submitters raised concerns over the level of impact that the project have on threatened species and threatened ecological communities, with one submitter concerned that the project will have a significant impact on some species. Submitters specifically raised concerns regarding impacts to Weeping Myall Woodland, and impact to habitat for Plains Wanderer, Superb Parrot, Slender Darling Pea, Australasian Bittern, Australian Painted Snipe, and Bush Stone Curlew. Regarding Plains Wanderer, submitters commented that the project will contribute to ongoing habitat loss, with one submitter commenting on the noise from the BESS will displace Plains Wanderer. One submitter raised concerns over biodiversity surveys for endangered flora species being interrupted by flooding.

Throughout the preparation of the EIS, the iterative project design process avoided the highest quality PCTs and threatened species habitat within the subject land to the extent possible, resulting in the irregular shape of the development footprint.

It is acknowledged that due to flooding events in November 2022, two endangered flora species could not be fully surveyed. This was identified in Section 4.3.1 of the BDAR prepared for the EIS (Appendix E.1 of the EIS). These species were:

- A spear-grass (*Austrostipa wakoolica*) – listed as endangered under the BC Act
- Austral Pillwort (*Pilularia novae-hollandiae*) – listed as endangered under the BC Act and the EPBC Act.

In the BDAR, these species were assumed to be present within areas of potentially suitable habitat, in accordance with the Biodiversity Assessment Method (BAM) (DPIE 2020), and species credit offset requirements were calculated based on these assumptions. The BDAR outlined that additional surveys would be completed in November 2023 as per discussions with BCS.

Following the exhibition of the EIS, Spark Renewable amended the development footprint to further avoid and minimise impacts to threatened species and TECs in response to agency and community concerns. Additional surveys for A spear-grass and Austral Pillwort were conducted in November 2023 and no individuals were detected.

The residual impacts of the amended project on threatened species and TECs have been assessed in the amended BDAR (Chapter 6 of Appendix D.1 of the amendment report) and are summarised in Section 6.1.3 of the amendment report.

A summary of the residual impacts to TECs and threatened species identified as being of concern by submitters is provided below:

- Weeping Myall Woodland – impacts to up to 919.62 ha of Weeping Myall TEC listed under the BC Act and 0.48 ha of Weeping Myall TEC listed under the EPBC Act. Of this, 533.1 ha of BC Act listed Weeping Myall TEC (i.e. 60% of PCT 26 sparse canopy within the solar array area) will be subject to partial loss. This approach is described in detail in Section 6.4 of the amended BDAR (Appendix D.1 of the amendment report) and is reflective of the potential for the solar array areas to continue to support biodiversity values as a result of the retention of native groundcover below and between rows of PV modules.
- A spear-grass – not recorded during targeted survey and therefore no direct impacts.
- Austral Pillwort – not recorded during targeted survey and therefore no direct impacts.

- Plains Wanderer – mapped important habitat for this species has been avoided by the project and it has not been recorded during targeted surveys. The project will impact areas of PCT 26 and PCT 46 that may have provided suitable habitat in the future due to the dynamic nature of grassland communities within the region. Indirect impacts are considered unlikely to substantial.
- Superb Parrot – recorded foraging on-site during incidental surveys. The project will result in direct impacts to 0.71 ha of foraging habitat and indirect impacts to 89.30 ha of foraging habitat. Significant impacts are unlikely.
- Slender Darling Pea – recorded during targeted survey and impacts to 5.5 ha (made up of small, isolated individuals and patches) will be offset as part of the project.
- Australasian Bittern – there is no optimal habitat for Australasian Bittern within the project area. It is very unlikely that this species would occur within the project area, other than rare transient use or during increased seasonal flooding events and on a short-term, temporary basis.
- Australian Painted Snipe – whilst suitable habitat is available within the project area, this species was not recorded during surveys and significant impacts are unlikely.
- Bush Stone Curlew – whilst suitable habitat is available within the project area, this species was not recorded during surveys and significant impacts are unlikely.

Concerns were raised that noise from the operation of the BESS will displace Plains Wanderer. Plains Wanderer calls have an extremely low frequency range and this species has a narrow range of hearing, making them especially tolerant of loud noise. University researchers have observed Plains Wanderers remaining calm and continuing to feed in a noisy university animal house despite clanging of pans, vocalisations of sheep and bats and constant vehicle traffic.

The measures proposed to mitigate residual impacts to biodiversity are provided in Section 6.1.5 of the amendment report. This includes the development of a biodiversity management plan (BMP) to provide the framework for biodiversity management during the construction and operation of the project.

Direct impacts on biodiversity that cannot be avoided will be offset, as described in Chapter 9 of the amended BDAR (Appendix D.1 of the amendment report) and summarised in Section 6.1.4 of the amendment report and Section 5.3.1i of this report.

5.3.2 Agricultural land

Twenty-three submitters commented on the loss of agricultural land, summarised as follows:

- The project will occupy prime agricultural land.
- There will be a loss of agricultural productivity during operations, and potentially after decommissioning due to compaction and contamination of soils.

Spark Renewables acknowledge that land within the development footprint will be temporarily unavailable during construction and partially unavailable during operations, for the current land use of sheep and cattle grazing.

An assessment of the existing land and soil capability (LSC) of the development footprint was completed in accordance with the *Land and Soil Capability Assessment Scheme* (OEH 2012) in Section 6.4 and Appendix E.4 of the EIS. LSC assessments evaluate the capability of land, using LSC 'classes', to sustain a given land use under specific land management practices, in a manner that minimises soil and land degradation and adverse impacts on receiving environments.

The NSW *Large-Scale Solar Energy Guideline* (DPE 2022b) (Solar Guideline) defines important agricultural land as "land mapped as biophysical strategic agricultural land (BSAL) or a critical industry cluster (CIC), land of LSC classes 1–3 and farmland mapped as state or regionally significant on the north coast."

The land occupied by the project is categorised as LSC Class 4 (moderate capability land), Class 5 (moderate–low capability land) and Class 6 (low capability land). As the project will not impact BSAL, CICs, LSC classes 1–3, and is not located on the NSW north coast, it is not defined as important agricultural land.

Impacts to agricultural productivity during operations will be mitigated where practical by utilising the land within the development footprint for sheep enterprises (e.g. grazing), often referred to as 'agrisolar' practices. The development footprint is at the southern extent of two large landholdings; the project will not fragment existing agricultural landholdings or enterprises undertaken by the landholders. The existing agricultural land uses will continue on land adjacent to the development footprint during construction and operations.

Residual impacts to agriculture from the project are minor, temporary, and limited to the development footprint.

At the end of the project life, the development footprint will be rehabilitated to a condition as near as practicable to the condition that existed prior to construction of the project and in consultation with the landowners. During rehabilitation, construction management measures for soil handling and erosion prevention will be implemented to ensure soil and erosion is suitably managed during this stage.

Mitigation measures will be implemented as part of the CEMP to avoid soil compaction. Concerns regarding contamination have been addressed in Section 5.3.7.

5.3.3 Landscape and visual

Thirteen submitters raised concerns regarding the visual amenity impacts of the project, and the disruption to the landscape character of the area, summarised as follows:

- Large solar farms are not visually appealing and ugly.
- Industrial developments including renewable energy and transmission lines contribute to a loss of natural landscapes.
- It is incorrect to think the project will have a low visual impact.
- Visual glare from panels along Liddles Lane and Bundure Road both east/west is understated in the EIS.
- Neighbouring properties have not been adequately considered in the assessment of visual impacts and compensation payments should be provided.

It is acknowledged that the project will introduce new infrastructure elements into the landscape that will be visible from the surrounding area.

A substantial site selection process was undertaken by Spark Renewables, during which visibility was a key consideration. As documented in Section 2.3 of the EIS, the land surrounding the project area is sparsely populated; there are two non-associated residences within 5 km (R036 and R049, see Figure 1.2), with the closest nearby townships approximately 30 km away (Jerilderie and Coleambally).

Further, as part of the project refinement process during the preparation of the EIS, the design and location of the development footprint within the project area went through a number of revisions in response to stakeholder engagement and environmental constraints identification. This included:

- retention of the existing vegetation within and around the project area where possible to maintain the existing level of screening and to reduce the overall visual impact
- consideration of the colour of ancillary structures to ensure minimal contrast and to help blend into the surrounding landscape to the extent practicable
- incorporation of setbacks from viewpoints including:
    - placement of the BESS, substation and switchyard infrastructure in the northern part of the development footprint and away from nearby residences
    - a 100-m setback of the development footprint from local roads (Liddles Lane and Bundure Road)
    - a setback distance of up to 100 m from Kidman Way depending on the selected module configuration to the closest PV module to minimise visibility of project infrastructure.

A landscape and visual impact assessment (LVIA) was prepared in Appendix E.5 of the EIS in accordance with the methodology outlined in the Solar Guideline and the *Technical Supplement – Landscape and Visual Impact Assessment* (DPE 2022c) (Technical Supplement).

This included a wireframe assessment for five viewpoints from the public road network and two private viewpoints (R049 and R036). This involved preparing panoramic images of the existing views and a wireframe diagram of the project for each viewpoint. A grid was then overlayed on the wireframe and a visual magnitude rating was determined based on the number of cells occupied by the project, as prescribed in Table 4 of the Technical Supplement. The visual magnitude rating was then combined with a visual sensitivity rating for each viewpoint to produce a visual impact rating, in accordance with Table 9 of the Technical Supplement. The results of the wireframe assessment are shown in Appendix B of the LVIA in Appendix E.5 of the EIS. The wireframe assessment found that only R049 had a 'moderate' visual impact rating, with 17 cells occupied by the project, while all other viewpoints receiving a 'low' visual impact rating. A photomontage assessment was prepared for R049 to verify the results of the wireframe analysis. The assessment found that existing vegetation would screen most of the project, leaving up to five cells occupied by the project, and R049 received a 'low' visual impact rating. The results of the photomontage assessment are shown in Appendix C of the LVIA in Appendix E.5 of the EIS.

The glint and glare from the solar arrays and project infrastructure was assessed in Appendix D of the LVIA (Appendix E.5 of the EIS). The yellow glare assessment was based on a worst-case scenario and does not account for intervening elements such as vegetation and built structures. It was found that there is:

- no potential for yellow glare for non-associated residences
- potential for approximately 26.2 hours of yellow glare per year on Bundure Road between 5:00 pm and 7:00 pm
- potential for approximately 35.9 hours of yellow glare per year on Liddles Lane between 5:00 pm and 7:00 pm.

Mitigation measures are required to manage glint and glare impacts on sections of Bundure Road and Liddles Lane. Mitigation measures (refer to Section 6.5.5 of the EIS) will include operational management techniques such as altering normal tracking operations, which involves adjusting the angles at which PV modules follow the sun's movement through the day to minimise the reflection of sunlight off the panels that could create glare and disrupt nearby receptors. Glare modelling found that with the implementation of mitigation measures, there is no potential for yellow glare along Bundure Road and Liddles Lane.

Following the public exhibition of the EIS, the development footprint was amended. Amendments include a reduction in the overall development footprint, and in particular, removal of areas of the development footprint adjacent to Kidman Way and Liddles Lane, increasing set back distances to 6.7 km from R036 and 0.6 km from R049. The impact of the amendments on the outcomes of LVIA have been addressed in a technical memo prepared by Moir (Appendix D.3 of the amendment report). The amended project has reduced the potential visibility of project infrastructure from nearby non-associated residences and further reduced the potential for 'yellow' glare on Liddles Lane.

5.3.4 Noise

Four submitters raised concerns regarding the noise impacts of the project, with one submitter raising concerns that neighbouring properties have not been properly remunerated or considered and one submitter raising concerns surrounding construction noise.

The noise impact assessment for the project (Appendix E.6 of the EIS) included an assessment of construction noise, operational noise and cumulative noise in accordance with relevant guidelines and policies. The noise impact assessment concluded the following:

- Construction noise will typically not adversely impact non-associated residences.
- There is potential for the closest non-associated residence, R049, to be within a noise affected area, as defined by the *Interim Construction Noise Guideline* (DECC 2009), during some construction stages under specific meteorological conditions. Where this is the case, construction noise management measures will be implemented to minimise noise impacts. Consultation with R049 will include providing information on the construction program, implementing a complaints management protocol and implementing all feasible and reasonable measures to address the noise generating activity that has resulted in the complaint.
- Operational noise is predicted to satisfy the Noise Policy for Industry (EPA 2017) project noise trigger levels for all non-associated residences.

Noise mitigation measures are proposed to further minimise the potential for noise impact from the project, as outlined in Section 6.6.4 of the EIS.

5.3.5 Traffic

Five submitters raised concerns that increased traffic volumes from the project will damage already poorly maintained roads and increase travel times for locals and travellers.

Some submitters raised concerns regarding who will pay for upgrading roads during construction and maintaining roads after construction, with concerns from one submitter saying that ratepayers and the general public will ultimately be responsible.

One submitter raised specific concerns around the use of Cadell Road for light vehicles.

All traffic associated with the project is expected to travel along Kidman Way and a small section of Bundure Road. The project will be accessed via a new intersection on Kidman Way, and two site access points on Bundure Road accessed via the intersection of Bundure Road and Kidman Way. As site access points are on or near Kidman Way, the traffic generated by the project will be directed to existing major roads. The local road network is not predicted to be adversely impacted.

Cadell Road is not likely to be utilised for this project, however, may be used to access Dinawan Wind Farm, an adjacent development proposed by Spark Renewables. Dinawan Wind Farm is subject to a separate SSD application (SSD-50725708) and has been assessed separately to Dinawan Solar Farm. The EIS and traffic impact assessment for Dinawan Wind Farm is accessible here: www.planningportal.nsw.gov.au/major-projects/projects/dinawan-wind-farm.

A traffic impact assessment was prepared as part of the EIS and has been amended in response to comments from Transport for NSW (Appendix D.5 of the amendment report). Modelling to determine the potential for congestion on Kidman Way from the project found that the level of service (LOS, a qualitative measure used to describe operating conditions) of this road will not be impacted, remaining at LOS A at construction peaks and operating at LOS B under cumulative conditions. The performance of three intersections was also modelled, namely Kidman Way/Dinawan Solar Farm Western Access, Kidman Way/Kidman Way Eastern Site Access and Kidman Way/Bundure Road/Liddles Lane. The intersections were determined to have significant additional capacity to accommodate additional traffic, and all were predicted to operate at LOS A, even with the development and cumulative traffic from other projects.

As such, traffic congestion on regional roads as a result of the project is not anticipated.

To accommodate the construction traffic movements associated with the project, the following intersection and road upgrades are proposed (Table 5.1).

Table 5.1 Proposed intersection and road upgrades

Road/intersection	Proposed upgrade	Description
Kidman Way	Intersection – new staggered intersections for site access points	• Left turn bays and right turn bays on both approaches on Kidman Way. • Seal access roads within 50 m of Kidman Way. • Signposting and line marking as described in Attachment D of the traffic impact assessment. • Intersection upgrades to accommodate 26 m long B-double truck and to allow the passage of the largest OSOM vehicle.

Table 5.1 Proposed intersection and road upgrades

Road/intersection	Proposed upgrade	Description
Kidman Way/Bundure Road/Liddles Lane	Intersection – upgrade of existing intersection	• Right turn bay on both approaches on Kidman Way. • Widened shoulder for left-turning vehicles on both approaches on Kidman Way. • Signposting and line marking as described in Attachment D of the traffic impact assessment. • Intersection upgrades to accommodate 26-m long B-double truck turning into Bundure Road only.
Bundure Road	Road upgrade – between Kidman Way and site access points	• Sealing of Bundure Road from Kidman Way to the Bundure Road Eastern Site Access. • Widening of Bundure Road from Kidman Way to Bundure Road Eastern Site Access according to the relevant ARRB rural road design guidelines.
Bundure Road	New intersections – site access points	• Access upgrades to suit 26 m long B-double truck.

The costs associated with the public road upgrades listed in Table 5.1 will be borne by Spark Renewables. Spark Renewables will not generate substantial traffic beyond the construction period. Ongoing maintenance of the road network will continue to be the responsibility of the existing road authorities. Further, in relation to ongoing road maintenance, Spark Renewables will enter into a VPA with Murrumbidgee Council, the purpose of which is to support the cost of maintenance of services such as local roads.

Spark Renewables will develop a construction traffic management plan (CTMP) to ensure effective traffic management measures are put in place to avoid and mitigate potential impacts. The CTMP will be developed in consultation with TfNSW and Murrumbidgee Council prior to the commencement of road upgrades and construction of the project.

The CTMP will address the safety of workers and road users within the vicinity of the development footprint and will aim to:

- minimise the impact of the construction vehicle traffic on the overall operation of the road network
- ensure continuous, safe and efficient movement of traffic for both the general public and construction workers
- provide a description of the construction vehicles and the volume of these construction vehicles accessing the development footprint
- provide a description of the proposed external routes for vehicles including the construction vehicles accessing the development footprint.

5.3.6 Water

Two submitters commented on residual impacts to water, with one submitter requesting more information regarding the water source for the project.

Further detail on the water supply strategy for the project is provided in Section 4.3 of this report. This section provides an overview of the available water supply infrastructure, assesses the impact of using infrastructure to meet project water demands and any licensing requirements.

As described in Section 4.3, groundwater bores associated with the Delta Park and Hawks Nest properties will serve as the primary source of non-potable water for Dinawan Solar Farm.

There were no identified receptors, adjacent to the existing water supply bore locations, that may be at risk due to the groundwater drawdown created by the proposed water supply activities required by the project. The nearest groundwater user outside of the project area and within the same source as the bores proposed to be used by the projects is more than 3 km away. Based on the resultant drawdown depth from past pump testing, it is unlikely that the proposed water supply activities are going to impact on other users, based on the peak average water demand and a 3 km radius.

The project design minimises impacts to water resources by avoiding watercourses, infrastructure associated with Coleambally Irrigation Co-operative Limited to the extent practicable, flood prone areas and groundwater receptors. Project activities are not anticipated to intersect the regional water table and groundwater availability for existing users is not expected to be impacted. Potential construction phase impacts, including degradation of surface water quality, physical impacts to watercourses, and altered water quantity from increased site runoff, will be avoided or minimised through the implementation of mitigation measures listed in Appendix C of the amendment report.

Residual flood risks will be managed through construction phase planning. The majority of the solar array and infrastructure areas have been sited so that they avoid areas of flood risk or are subject to low flood hazard that is generally safe for people, vehicles and buildings.

5.3.7 Contamination

Seventeen submitters raised concerns around potential contamination of soil and water resulting from the leaching of chemicals from solar panels and BESS following damage from hail stones, fire or across the lifetime of the project. Submitters suggested that contamination of these resources would directly impact the agricultural productivity of the surrounding environment.

The project will use modern crystalline solar panels (either monocrystalline silicon or polycrystalline silicon), which are not toxic and are not expected to physically degrade over time or leech hazardous materials.

There are three predominant types of solar panels: monocrystalline silicon, polycrystalline silicon and amorphous silicon (“thin-film”). Thin film solar panels make up approximately 2.5% of solar panels globally (Fraunhofer ISE 2024), and may contain small amounts of cadmium telluride (CdTe), which was referenced as a contaminant of concern in some of the submissions and subsequent community engagement. Spark Renewables is committed to only considering monocrystalline silicon or polycrystalline silicon solar panels for the project. As Spark Renewables is not using thin film solar panels, there is no risk to neighbouring landowners or their livestock from cadmium telluride leeching from the project’s solar panels.

All of the monocrystalline or polycrystalline PV panels being considered by Spark Renewables for the project are manufactured by tier one suppliers, which make products meeting all the relevant international and domestic standards. Solar panel production, installation and performance will be closely monitored. The modules are not anticipated to physically degrade over the project’s lifetime and are accompanied by the manufacturer’s warranty. Although the performance of the panels (i.e. the electrical output) will slightly decrease over their lifetime (referred to in the industry as ‘degradation’), they are not anticipated to physically degrade. With appropriate management and maintenance, PV panels would not release any materials that present a risk to the environment.

Crystalline silicon solar panels are designed with multiple layers of protective materials, including tempered glass and polymeric encapsulants. The solar cells are placed between two layers of tempered glass and then heated and compressed in a laminator, encapsulated by non-toxic tough glue, creating a durable, airtight and watertight seal. These layers prevent the leaching of potentially harmful substances into the environment. The encapsulation process ensures that even in the case of panel breakage, the risk of hazardous material release is minimal. This is supported by research that shows that the likelihood of significant toxic material release from broken solar panels is extremely low. Studies that exposed solar panels to flames have shown little in the release of harmful toxins due to the ethylene vinyl acetate encapsulation on the glass, which melts together, trapping almost all the toxins within it before they can be released. Within the NSW *Large-Scale Solar Energy Guideline's* (DPE 2022b) frequently asked questions, it is noted that:

> …the use of metals in solar panels has not been found to pose a risk to the environment. To readily release contaminants into the environment, solar panels would need to be ground to a fine dust.

At the end of the project life, the solar panels will be decommissioned and sent to a solar panel recycling facility where most of the materials will be separated and reused. The solar panels will not remain on-site at the end of the project life, nor will they be disposed of within Murrumbidgee Council's waste facilities. Spark Renewables has a partnership with Australian solar panel recycling company, PV Industries, and has sent damaged panels from Bomen Solar Farm to be recycled at this facility. Recycling technology is continuing to improve and create more environmentally friendly uses for the materials. For example, the glass from the solar panels may be used to make cement, replacing fly ash from coal in this process.

The collector substations and components within the BESS may contain some heavy metals or other potential contaminants (e.g. nickel, manganese, cobalt, iron, copper). Similar to the PV panels, this equipment will be manufactured by reputable manufacturers meeting all relevant international and domestic standards. The substation and BESS facilities will be designed and constructed by tier one contractors and will incorporate sufficient bunding/storage capacity to contain any potential spills. With appropriate management and maintenance, these components are not expected to release any materials that present a risk to the environment.

In relation to the BESS, there are appropriate measures in place to ensure that chemicals within the battery cells are contained and will not contaminate the surrounding environment. These measures include:

- an energy management system, which monitors the health of the BESS down to a cell level, ensuring the system is operated in a safe manner
- gas and temperature sensors, which monitor the enclosures and will detect any abnormalities
- fire suppression systems as a part of the enclosures
- multiple levels of physical separation between chemicals within the cells and the environment (i.e. the cells will be housed within a module, which will likely be stacked in an enclosure).

Appropriate spill prevention and management measures will be developed as part of the CEMP, which will include spill clean-up procedures which would be implemented during construction and throughout the project's operations.

In summary, infrastructure containing heavy metals will be contained and will not come into direct contact with soils. Therefore, it is considered that the risk of contamination from the project and subsequent impacts on agricultural productivity and the surrounding environmental are low.

Prior to the commencement of construction, Spark Renewables will commission soil samples within the development footprint to confirm soil chemistry and the presence or absence of heavy metals and contaminants.

5.3.8 Bushfire

i General fire risk

Twelve submitters raised concern about fire risk associated with the project, including concern that the project would start or propagate a grass and/or bushfire, concern about the risk for fire from the BESS, concern around the cumulative effect of multiple developments on fire risk and concern regarding potential release of hazardous/toxic smoke from a fire associated with the project.

It is acknowledged that bushfire risk is a serious concern within the surrounding community.

A bushfire assessment report was prepared in Appendix E.10 of the EIS. The guideline *Planning for Bush Fire Protection* (RFS 2019) was considered in the preparation of the bushfire assessment. Mitigation measures have been identified to minimise the chance of bushfire ignition due to the project, and to reduce the severity of potential impacts if a bushfire occurs within the site. Mitigation measures included:

- provision of APZs for infrastructure including solar panels, BESS, staff offices, temporary worker accommodation facility and maintenance sheds, in accordance with Appendix 4 of *Planning for Bush Fire Protection* (RFS 2019)
- buildings within 100 metres of bush fire prone vegetation are constructed to comply with AS3959:2018 – Construction of buildings in bushfire-prone areas
- provision of access and water supply in compliance with *Planning for Bush Fire Protection* (RFS 2019)
- maintenance and housing of infrastructure so that it will not create a source of ignition to the surrounding vegetation and grassland
- preparation of an Emergency Management Plan
- preparation of a Fire Management Plan in consultation with the NSW RFS District Office for the Mid Murray Zone.

The assessment found that with the application of these mitigation measures, bushfire risk will be reduced to an acceptable level and comply with the aims, objectives and specific performance criteria of *Planning for Bushfire Protection* (RFS 2019).

With regards to fire risk from the BESS, a preliminary hazard analysis was prepared in Appendix E.9 of the EIS, which included an analysis of the severity of the consequences for fire in accordance with the following guidelines:

- *Hazardous and Offensive Development Application Guidelines: Applying SEPP 33* (DoP 2011c)
- *Hazardous Industry Planning Advisory Paper No. 6 Hazard Analysis and Multi-Level Risk Assessment* (DoP 2011d)
- *Hazardous Industry Planning Advisory Paper No. 4 Risk Criteria for Land Use Safety Planning* (DoP 2011e).

Since the exhibition of the EIS, the project has been amended. The development footprint has been reduced from 2,499 ha to 1,792 ha, predominately in the western portion, and as a result, the westernmost BESS, substation, switchyard and construction compound locations has been removed. The bushfire assessment report has been amended to align with the project amendments and further consultation outcomes with NSW RFS and is included in Appendix D.7 of the amendment report. The reduction in the development footprint and removal of a BESS location has not materially altered the assessment outcomes. Additional mitigation measures proposed in the amended bushfire assessment due to consultation with RFS and Argoon Rural Fire Brigade include:

- provision of a safe refuge within the accommodation facility to ensure radiant heat thresholds of <10 kW/m2 using Table A1.12.1 of *Planning for Bush Fire Protection* (RFS 2019)
- investigating options for firefighting training for construction and operational personnel, as well as opportunities to incentivise workforce participation in Argoon Rural Fire Brigade
- in addition to the static water supply requirements, provision of two mobile water supplies with a minimum capacity of 500 L each (e.g. tanks on utility vehicles or standalone tankers) which will be made available on-site during construction and operation
- continue to consult with Argoon Rural Fire Brigade around specific weather conditions that may require works to temporarily cease during construction
- the fire management plan will include activities that are exempt from Total Fire Ban days and consider the Grain Harvesting and Fire Safety guide.

Concerns relating to lithium-ion battery fires and the risk these may pose to people in the vicinity of a fire, if such an event were to occur, were raised, and concerns are acknowledged by Spark Renewables. To inform whether the consequence of a hazardous event at the BESS, including a fire, has the potential to impact off-site receptors, separation distances from the proposed BESS locations to the nearest sensitive receptors were assessed in the preliminary hazard analysis (Appendix E.9 of the EIS) and used to determine off-site impact. The nearest townships are Coleambally and Jerilderie, located approximately 30 km from the project. There are two non-associated residences within 5 km of the development footprint, with the closest residence to a BESS component being 2.3 km. The preliminary hazard analysis considered the release of toxic and/or explosive combustion products from a BESS fire. The assessment concluded that no off-site (i.e. outside the development footprint) impact would occur, given the large separation distance between the proposed BESS locations and the nearest sensitive receptors.

The detailed design for the project will be conducted in accordance with the relevant standards and guidelines for hazardous industry, which specify strict separation distances to onsite and off-site receptors to prevent fire propagation. Spark Renewables has committed to conducting a comprehensive fire safety study and emergency plan, which would meet the operational requirements of FRNSW (see Section 4.5 of this report), and the preparation of plans in consultation with NSW RFS (see Section 4.7 of this report). It is envisaged that the requirement for a fire safety study and fire management plan would comprise conditions of consent for the project and, therefore, the project would not proceed without endorsement of these documents from FRNSW and NSW RFS, respectively.

Concerns regarding the cumulative bushfire risk from multiple projects has been addressed in Section 5.3.13.

ii Firefighting methods

Three submitters raised concerns on firefighting methods, stating that the project will reduce access of emergency services to attend fires, with one submitter stating that there is an over-reliance on the RFS.

Access to the project for firefighting operations will be from project access points at Kidman Way and Bundure Road. An internal network of access tracks will be established within the development footprint to enable emergency services to access all areas of the facility, including fire service infrastructure (water tanks), buildings, BESS and related infrastructure. Access roads will comply with the property access road requirements as outlined in Table 7.4a of *Planning for Bush Fire Protection* (RFS 2019).

NSW RFS and Argoon Rural Fire Brigade have been consulted on the project, during and following preparation of the EIS. NSW RFS comments are addressed within this report in Section 4.7.

Spark Renewables are committed to working with the local RFS to ensure the project provides suitable facilities, controls and procedures to effectively manage fire within the site and its surrounds. The project will take several steps to prevent the ignition and spread of bushfire including:

- preparing a detailed Fire Management Plan in consultation with RFS and Argoon Rural Fire Brigade
- establishing APZs around all assets where vegetation will be kept to a low height throughout the life of the project
- provision of static and mobile water supply and firefighting equipment on-site
- investigating options for firefighting training for construction and operational personnel to provide initial response to a fire within the site and opportunities to incentivise workforce participation in Argoon Rural Fire Brigade
- establish site access tracks throughout the site including a perimeter track and new site access points from Kidman Way
- including activities that are exempt from Total Fire Ban days in the fire management plan and considering the Grain Harvesting and Fire Safey guide (refer Appendix 3 of the amended bushfire assessment report).

With the incorporation of these mitigation measures, the project will comply with the *Planning for Bush Fire Protection* (RFS 2019) performance criteria for access, as outlined in Section 6.2.3 of the amended bushfire assessment report (Appendix D.7 of the amendment report).

5.3.9 Social

i Benefits not felt by the local community

Three submitters raised concerns relating to ongoing benefits to the local community, summarised as follows:

- Once construction is completed there will be no ongoing employment opportunities for local people.
- Nearby communities will not receive any funding from community benefit sharing, as it will be spent by council away from the project.

Spark Renewables is committed to delivering a project that provides a positive legacy for the local community.

During the preparation of the EIS, Spark Renewables had been working towards an agreement on a community benefit sharing program to be predominantly delivered in partnership with Murrumbidgee Council through a VPA (Section 5.7 of EIS).

Following the public exhibition of the EIS, the key terms of the community benefit sharing program and VPA have been agreed upon with Murrumbidgee Council. The total fund amount will be split between funding administered by Murrumbidgee Council and by Spark Renewables as follows:

- 70% of the funding will be provided to Murrumbidgee Council for projects identified in Murrumbidgee Council's approved Development Contributions Plan or Community Strategic Plan.
- 15% of the funding will go to a Community Benefit Fund to be administered by a committee of Murrumbidgee Council, which will provide annual grant funding to initiatives that are put forward by and benefit the local and broader community.
- 15% of the funding will be administered by Spark Renewables (or the project owner) and will go to initiatives to share project benefits with the neighbouring community and local Aboriginal and Torres Strait Islander communities.

The terms of the VPA are listed in full in Section 4.6 of this report.

The Community Benefit Fund will prioritise funding for suitable projects located closer to the project and be used for environmental programs, enhancing local biodiversity, recreational facilities, education programs, arts or cultural programs and other initiatives that benefit the local community.

The potential positive social impact of the project, in terms of employment and direct and indirect jobs and supply chain opportunities, will be enhanced through implementation of participation plans. An industry participation plan will be developed and implemented, which will identify the approach to opportunities for supply of goods and services, employment and training, including Aboriginal participation, as well as sustainable procurement. An Aboriginal participation plan will also be developed and implemented in consultation with First Nations stakeholders to optimise local capacity and aspirations through targeted participation initiatives within the regional area. This would include setting targets for First Nations participation in the project workforce and procurement.

It is acknowledged that while the majority of employment opportunities from project are short-term (associated with construction), the combined projects in the REZ will offer many years of employment opportunities.

ii Community relationships

Eight submitters raised concerns that the project will fracture community relationships, summarised as follows:

- The project will cause a political divide within the community and contribute to a loss of social cohesion.
- There is no social licence for the project.

Spark Renewables' communication and stakeholder engagement objectives for the project are to:

- deliver an honest, innovative, flexible and transparent community engagement process
- engage with, and inform, local residents, the broader community and other stakeholders about the project, its benefits and potential impacts by providing timely and ongoing access to project information
- develop relationships with the community and other stakeholders to facilitate positive outcomes through the project for the community.

Spark Renewables acknowledges concerns regarding the impact on community cohesion. Spark Renewables is committed to a range of mitigation and management measures to minimise the social impacts of the project.

Through various mechanisms including the community benefit sharing program delivered in partnership with Murrumbidgee Council, Spark Renewables seeks to ensure that financial and non-financial benefits are distributed to the broader community and other local and regional stakeholders. Spark Renewables aims to do so in a way that drives sustainability, community resilience to change and distributive equity.

Additionally, through the payment of South West REZ access fees Spark Renewables will make significant financial contributions to the NSW Government to be directly invested into communities within the South West REZ.

iii Competition for employees

One submitter raised concerns that the project will create competition with existing industries for employees.

The project will generate employment opportunities and other indirect economic benefits. As outlined in the EIS, direct employment opportunities generated by the project will include up to 400 temporary construction jobs during peak construction and up to 10 full time jobs and varying numbers of contractors during operations.

It is acknowledged that a large percentage of the construction workforce will come from outside of the area, due to the specialist skills required, and therefore the project is not anticipated to have a significant impact on the availability of local employees for other industries.

iv Increase in population

Four submitters raised concerns that the project will increase number of people within the local community, referencing the capability of the local community services and the impacts on security.

A temporary worker accommodation facility for non-local construction employees (where skills cannot be sourced locally) will be established as part of the early stages of the project's construction. The facility will accommodate up to 450 workers.

It is expected that the majority (approximately 75%) of the project's peak construction workforce will stay at the accommodation facility. The facility will principally accommodate employees and long stay contractors. Visitors and short stay contractors may also be accommodated.

A social impact management plan (SIMP) will be implemented, which will include a community engagement plan and worker code of conduct. This will include engagement with community services, such as police and emergency services, to familiarise relevant services with the project in case of an incident.

Spark Renewables will undertake regular engagement (to be defined in the SIMP) with local businesses to advise of construction periods and the potential increase in trade or patronage. This will provide these businesses with an opportunity to plan as required to maximise benefits of increased demand, and its associated revenue.

Spark Renewables will engage with Murrumbidgee Council to identify potential service limitations and implement measures such as provision of on-site medical facilities and identification of preferred telehealth providers to reduce competition for services, such as medical and general practitioner services, closest to the site.

v Lifestyle and community

Four submitters raised concerns that the project will impact the current lifestyle, daily operations and cultural values of the community.

The project has been designed to minimise amenity impacts on the surrounding community including:

- incorporation of setbacks from public roads and private viewpoints
- inclusion of an accommodation facility to minimise impacts on local housing availability and short-term accommodation providers
- design of construction traffic routes to avoid potential conflict with road users on local roads and minimise vehicle movements on the public road network to the extent practicable
- maximising distance between potential noise-generating infrastructure (including the on-site substations and BESS) and the closest residences.

Further, Spark Renewables will provide ongoing benefits to the local community as part of the community benefit sharing program and through the payment of South West REZ access fees which will be directly invested by the NSW Government into communities within the South West REZ.

The SIMP will include methods for engaging various stakeholders, including local businesses, and local workforces, on their key interests to manage impacts, enhance benefits, and provide suitable mechanisms for project feedback. A publicly available complaints and grievance procedure will be included as part of the SIMP.

vi Mental health

Three submitters raised concerns of how the project will impact the mental health and wellbeing of neighbouring landholders.

Spark Renewables acknowledges that the planning and development stage of any major project can cause stress for local communities and landholders, especially associated with uncertainty over the project's potential impacts, and in the broader context of renewable development in the South West REZ.

Studies have been undertaken relating to the stress and anxiety of major developments, especially coal mining and coal seam gas. These studies recognise that health and well-being impacts need to be considered at a community level. In a study of the health of Hunter Valley communities close to coal mining and power generation, where there is a significant concentration of such activities, Merritt et al. (2013) found that:

> There were no significant differences in management rates of mental health conditions in the Hunter Valley region compared with the rest of rural NSW. Management rates of depression and anxiety were not higher, nor were prescription rates of antidepressants.

This indicates similar levels of anxiety are experienced in the Hunter Valley region compared to rural NSW as a whole, although the causes of anxiety may vary between regions.

The social impacts and benefits of the project are discussed in Section 6.11 of the EIS, acknowledging that the project may generate feelings of stress and anxiety in landholders and the broader community. Mitigation measures proposed in Section 6.11 of the EIS also addresses several community concerns related to the project, which should reduce uncertainty, and consequently, mental health and/or stress associated with the project.

The positive regional benefits of the project, including employment opportunities and flow-on economic effects, will help to reduce mental health stress on some members of the community by improving resilience in times where agricultural production is jeopardised by climatic or economic uncertainty.

5.3.10 Economic

i Property values

Four submitters raised concerns that the project could devalue neighbouring properties.

Concerns regarding property values are acknowledged. There is no significant research on the impact of solar farms on neighbouring property values in an Australian setting.

A wide range of factors affect property values over time. The NSW Government Valuer General identifies factors that influence rural land value such as land classification, soil type, land size, access, location, permitted uses, land productivity, property market conditions and value as a lifestyle block (NSW Government Valuer General 2017). Sale prices reflect other considerations (in addition to land value) such as improvements to a property (stock, crops, plant and equipment, buildings and structures, water values and other improvements). As part of the EIS, a detailed landscape and visual impact assessment and noise impact assessment have demonstrated that the project would have only minimal impacts to local amenity. The location of the project is distant to surrounding residences and the project is not expected to have long-term visual, noise or vibration impacts at neighbouring dwellings. The project will not directly impact the factors which contribute to land value and sale prices.

ii Local economy and businesses

Seven submitters raised concerns of the potential impact that the project will have on the local economy and businesses, including comments that neighbouring properties have not been properly remunerated.

The project will generate an alternative revenue stream for associated landholders through landholder agreements. Associated landholders will receive financial payments from Spark Renewables under the provisions of the relevant landholder agreement. Income diversification will assist associated landholders to sustain their livelihoods now and into the future.

To a lesser extent, neighbouring properties will benefit from the project through Spark Renewables' community benefit sharing program. This program is designed to ensure that non-associated landholders, who may be adversely impacted by the project, benefit from a share of the project opportunities.

Construction phase project procurement activities have the potential to deliver economic benefits to businesses within the local and regional area. Local procurement may also enable flow-on economic impacts, which would be realised in the regional area. To maximise local procurement benefits derived from the project, Spark Renewables will engage Murrumbidgee and Edward River Councils, local businesses and the Coleambally Chamber of Commerce, as part of the industry participation plan, to inform an understanding of opportunities and limitations for procuring local goods and services, as well as aspirations amongst local businesses.

Spark Renewables will undertake regular engagement (to be defined in the SIMP) with local businesses to advise of construction periods and the potential increase in trade or patronage. This will provide these businesses with an opportunity to plan as required to maximise benefits of increased demand, and its associated revenue.

Spark Renewables will also identify measures in the SIMP to encourage the project workforce, particularly during the construction phase, to support and contribute to the local and regional community through local spending. This may be done through project provided vouchers at local businesses, and promoting the local offering, such as on notice boards at the accommodation facility.

iii Insurance costs

Two submitters raised concerns that the project will increase the public liability insurances costs for nearby properties.

The Insurance Council of Australia has provided guidance on this issue in a key message published on 14 May 2024, stating that:

> Current information indicates that insurers generally do not have specific concerns related to a property hosting transmission lines or neighbouring energy infrastructure. At the time of writing, the Insurance Council is not aware of any instances where Insurance Council members have been unable to provide insurance or have increased premiums as a result of a farm (or a neighbouring property) hosting energy infrastructure (ICA 2024)

In an article published by the Australian Broadcasting Corporation (ABC) on 12 June 2024, on similar concerns regarding the Culcairn Solar Farm, the Insurance Council of Australia provided the following statement:

> Solar farms are not currently impacting or influencing the price of insurance. … Premiums are rising because of the escalating costs of natural disasters, the increasing value of homes and vehicles making them more expensive to replace, and inflation pushing up building and vehicle repair costs. (Slack-Smith 2024)

Given the above, the project is not expected to alter the ability of neighbouring properties to obtain cost-effective insurance premiums.

5.3.11 Greenhouse gas

Seven submitters queried whether the project would reduce greenhouse gas emissions, with concerns around the embedded greenhouse gas emissions to produce PV panels.

With respect to climate change and GHG emissions, the project will contribute to renewable energy supply in NSW, supporting the Commonwealth and State governments in achieving their respective renewable energy and GHG emissions reduction targets.

Once operational, the project will reduce greenhouse gas emissions by an equivalent of approximately 1.5 million tonnes of GHG annually.

The GHG emissions associated with the resources required to produce materials for the project are classified as 'Scope 3 emissions', which are indirect emissions of the project but are from sources not owned or operated by Spark Renewables. Notably, these emissions are accounted for by the producers of the material in their Scope 1 emissions.

All power generation technologies, regardless of whether they are renewable such as wind and solar, or fossil fuel based technologies such as coal plants and gas plants, require resources to be mined and extracted for the manufacture of the required equipment (e.g. steel for the boilers and concrete for the cooling towers in a coal plant). Whilst a full comparison of the lifecycle resource requirements of these different technologies is outside of the scope of the EIS and is not a planning consideration under the NSW planning framework, there is a significant body of literature that demonstrates that the total lifecycle GHG emissions of solar PV electricity generation is much lower than the total lifecycle GHG emissions of electricity generation from coal (Burkhardt et al. 2012; Whitaker et al. 2012).

5.3.12 Decommissioning and waste

Fourteen submitters commented on the decommissioning plan for the project, summarised as follows:

- Requests for additional detail about the decommissioning plan and methods, including waste disposal, workforce and schedule.
- Concerns that the material used in the solar panels would be considered hazardous and therefore, the land within the project area will not be returned to original condition for agricultural use.
- Concerns regarding decommissioning waste, including:
  - Recycling of PV panels is not economically viable.
  - Whether PV panels can be recycled and if they will instead be landfilled.
  - The volumes of waste are not acceptable.
  - Waste from manufacturing of PV panels is not discussed.

At the end of the project life, the development footprint will be rehabilitated to a condition as near as practicable to the condition that existed prior to construction of the project, in consultation with the landowners.

As is typical for large scale solar farm developments in NSW, it is anticipated that any consent for the project will include conditions requiring that:

- a project decommissioning and rehabilitation plan be prepared prior to decommissioning, outlining the rehabilitation objectives and strategies for returning the development footprint to agricultural production or alternative uses as has been agreed with the project landholder
- the development be decommissioned, and site rehabilitated within a specific period and to the satisfaction of the Secretary of DPHI.

Initial rehabilitation will involve removal of any temporary infrastructure, such as construction phase laydown areas. Rehabilitation of the development footprint would occur following the cessation of operations. Rehabilitation would involve removal of the solar farm, BESS and ancillary infrastructure. It is possible that some infrastructure may be retained where it is agreed with the landowners to do so (subject to appropriate development consent). For example, some infrastructure may have alternative uses that support future grazing activities such as access roads, hardstand areas, sheds and tracks. Structures and equipment that cannot be reused or recycled will be disposed of at an approved waste management facility in accordance with the project's waste management plan.

Concerns that contamination of the project would limit the agricultural use of the land have been addressed in Section 5.3.7. Concerns regarding waste have been addressed below.

A conceptual waste management plan has been prepared in Appendix F of the EIS and will be updated during detailed design to form the project's waste management plan, which will be reviewed throughout the life of the project in consultation with DPHI and Murrumbidgee Council. A key objective of the plan is to ensure that any use of local waste management facilities does not disadvantage local businesses or the local community by exhausting available capacity at these facilities.

At the end of the project's operational life, the PV modules will either be reused or recycled. Solar panels are made of materials like aluminium, glass, silicon, silver, and copper, which can be recycled. Spark Renewables anticipates that at the time of decommissioning, there will be significantly more recycling options available within Australia. In 2016, the International Renewable Energy Agency reported that up to 85% of the material within PV modules is able to be recycled (IRENA 2016). However, there are some instances of much higher recovery rate, such as a Veolia facility in Rousset in the South of France which achieved a 95% recovery rate (ACAP 2024). There may also be opportunities to reuse the PV modules.

A research report prepared in March 2024 on the end-of-life management of solar panels in Australia by the University of New South Wales, Australian Centre of Advanced Photovoltaics and Neoen Australia provides an overview of the current PV recycling industry and future opportunities. The report found that on average, over $20 worth of materials can be recovered from a typical 20-kilogram solar panel. While there are currently barriers to recycling PV panels, such as logistical challenges, slim margins, and lack of large-scale recycling technology, the report provides an industry roadmap to address these challenges.

Spark Renewables is committed to minimising waste sent to landfill from the project and will attempt to recover/recycle all dismantled and decommissioned infrastructure and equipment. Manufacturers, distributors and installers of PV modules that are members of product stewardship schemes will be selected where possible.

5.3.13 Cumulative impacts

Four submitters raised concerns that the project will contribute to the cumulative impact of multiple renewable energy developments within the South West REZ, summarised as follows:

- The project will contribute to cumulative impacts to ecosystems.
- The biodiversity survey and bushfire assessment do not account for cumulative impacts across the region.
- The 400-person accommodation camp for the project will be close to the 300-person Project EnergyConnect accommodation camp, increasing the population and generating cumulative impacts for emergency services.

Cumulative impacts were assessed in accordance with *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPE 2022d) in Section 6.14 of the EIS. The screening process identified projects (proposed, approved, under construction and operational) within 50 km of the project which may plausibly contribute to cumulative impacts.

Cumulative impacts have been primarily considered in relation to potential overlaps in construction phases, as the ongoing impacts from operation of the project are expected to be minimal in comparison to construction impacts. In addition, the number of projects that will be built will be determined by DPHI's approval process, the outcomes of the competitive South West REZ access process and the successful construction of the approved project. It is highly unlikely that all these projects will be approved and built and therefore, the assessment of cumulative impacts is considered conservative.

Cumulative impacts on employment and workforce; housing and short-term accommodation; regional economy; agricultural production; population change; services; amenity; traffic; and biodiversity were assessed in Section 6.14 of the EIS.

There is potential for cumulative social benefits and impacts, primarily due to the influx of workers and increased economic activity associated with the simultaneous construction of multiple renewable energy projects. The project's proposed construction accommodation facility will minimise the contribution of the project to the negative cumulative impacts of projects in the region by ameliorating increased demand for labour and accommodation. It is acknowledged that the accommodation facility for the project will be nearby the accommodation facility for Project EnergyConnect. However, as construction of Project EnergyConnect is likely to be completed prior to construction commencement for the project, an overlap of construction for these projects is considered unlikely and no cumulative impacts are expected.

The low population density and traffic volumes around the project area will minimise the potential for cumulative amenity and traffic impacts.

The cumulative impact to biodiversity from the proposed and current renewable energy developments in the South West REZ is assessed in Section 6.5 of the BDAR (Appendix D.1 of the amendment report). Based on publicly available assessment documentation, 19 large-scale renewable energy generation, storage and transmission projects are identified in the South West REZ that will impact similar PCTs, habitats and threatened species to the project. The biodiversity impact of each project has been surveyed and assessed as per individual development applications separate to the project, which informed the cumulative assessment. Impacts from individual projects will be required to avoid, minimise and where necessary, offset residual impacts.

Cumulative impacts associated with bushfire were identified as a concern by several submitters. It is acknowledged that the potential risks associated with bushfire, interactions with renewable developments, as well as renewable developments being the source of fire in the region is a key concern. Individual projects will have stringent fire and emergency planning requirements. Furthermore, the improvement of access roads on large landholdings to support wind and solar farm developments, as well as the requirements for static and mobile firefighting water supplies, may provide some benefits to the local community during bushfire emergencies.

5.4 Justification and evaluation

Twenty-five submitters commented on the general justification and evaluation of the project, summarised as follows:

- Permanently destroying agricultural land is not acceptable for any reason. Doing so for unreliable and expensive energy sources is unethical.
- The project would have significant environmental impacts that should prevent the project from progressing.
- The project will cause wilful environmental harm & destruction.
- The project will result in the destruction of local homes and lifestyles.
- This project and many like it are an ecological, economic, food security, and national security disaster.

The project is consistent with relevant Commonwealth, State, regional and local strategic plans and polices, in particular the *NSW Electricity Infrastructure Investment Roadmap*, which sets out the plan to deliver REZs in NSW. The project will contribute to the energy generation and storage targets for the South West REZ, with an indicative capacity of around 800 MW and storage of up to 300 MW for a duration of up to two hours (600 MWh).

The South West REZ was selected by the NSW Government following a detailed state-wide geospatial mapping exercise to identify optimal locations to host renewable energy generation, including areas with strong renewable energy resource potential, proximity to the existing electricity network, and consideration of potential interactions with existing land uses, including agricultural lands and biodiversity conservation (EnergyCo 2023b).

The project area is favourable for the construction and operation of a solar and battery project due to the available solar resource, physical conditions (relatively flat topography and predominantly cleared, agricultural land), absence of biophysical strategic agricultural land and relatively few residences within close proximity. The project area adjoins the site of the Dinawan Substation, part of Project EnergyConnect, making it an optimal location for the export of electricity to the grid.

Spark Renewables has maximised the avoidance of potential environmental impacts throughout the project refinement process, including the application for an amendment to further reduce the development footprint. Project refinement has followed the principles of avoiding vegetation clearance where practicable, maximising use of previously disturbed land, limiting the footprint for project infrastructure to the minimum required, protecting significant heritage values and minimising impacts on neighbouring landholders.

The proposed development footprint is the most appropriate area for the project infrastructure based on inputs provided during consultation activities with regulatory and community stakeholders, environmental assessments and the functional requirements of project infrastructure. The irregular shape of the development footprint is a result of avoiding identified impacts (particularly higher quality native vegetation and threatened species habitat).

Were this project not to proceed, the project's benefits, including contributions to the generation of renewable energy and increased energy security, would not be realised. As renewable energy generation and storage projects are needed in NSW, not proceeding with the project in its proposed location may encourage development in a less favourable location, resulting in undesired outcomes, such as greater requirements for grid connection infrastructure and greater environmental and social impacts.

It is acknowledged that the project will have both impacts and benefits on the surrounding natural and built environments. The impacts have been assessed and can be adequately managed through the proposed design, mitigation, and management during construction and operation. On balance, it is therefore considered that the project is in the public's interest.

5.5 Issues beyond the scope

5.5.1 Impact of transmission lines

Three submitters commented on the environmental impact of transmission lines which are required for the distribution of electricity produced by the project, summarised as follows:

- Electricity should be generated where it is needed which negates the need for transmission lines ploughing through agricultural land.
- There are no guarantees that VNI west will ever be built, meaning this project should not be able to proceed at this time.

The project is proposed to connect to the Dinawan Substation, currently under construction as part of the Project EnergyConnect interconnector that will run between Robertstown in South Australia and Wagga Wagga in NSW. The substation and interconnector are a separate approved project that is being built by Transgrid.

The project is also close to the proposed Victoria to NSW Interconnector (VNI) West. The preferred route for VNI West was published by Transgrid on 26 March 2024, which is immediately adjacent to the northern boundary of the project area.

It is acknowledged that submitters want to reduce the environmental and social impacts associated with the transition to renewable energy by minimising the need for electricity transport.

The environmental, social and economic impacts, and justification of these transmission lines has been or will be assessed in separate development applications and are beyond the scope of this project.

The project is supported by Commonwealth, State, regional and local plans and policies (as described in Section 2.2.4 of the EIS) and will support meeting the Commonwealth and State governments' renewable energy generation targets and GHG emission reduction targets. Importantly, the project will contribute to the continued growth of renewable energy generation and storage capacity in the South West REZ.

5.5.2 Justification of renewable energy

Forty-four submitters disagreed with the benefits of renewable energy, as follows:

- Views that other alternatives should be considered for electricity generation such as coal, natural gas and nuclear.
- Comment that the emissions and use of resources is greater for wind and solar projects compared with conventional coal power plants.
- Views that there is no climate emergency, and that renewable energy is not required.
- Views that renewable energy is not reliable and therefore fossil fuel or nuclear power sources are required instead.
- Concern that the footprint and site degradation is greater for renewable projects compared with traditional power plants.

The project is consistent with the Commonwealth, State, regional and local strategic plans and polices outlined in Section 2.2 of the EIS, including *The Paris Agreement*, the *Large-scale Renewable Energy Target*, the N*SW Electricity Strategy* (DPIE 2019), the *Net Zero Plan Stage 1: 2020–2030* (DPIE 2020), and the NSW *Electricity Infrastructure Investment Act 2020*. The NSW Government has committed to halving its carbon emissions based on 2005 levels by 2030 and both the state and federal governments have pledged to achieve net zero emissions by 2050. The NSW Electricity Infrastructure Roadmap sets out the plan for how this will be achieved, primarily through the delivery of REZs in NSW.

The project will contribute to the electricity generation and storage targets for the South West REZ, with an indicative capacity of approximately 800 MW and storage of up to 300 MW for a two hour duration (600 MWh). The development and operation of the project, in conjunction with other large-scale renewable energy projects, will contribute to filling the need for replacement power as ageing coal-fired generators close.

While all sources of electricity result in some GHG emissions over their lifetime, renewable energy sources have substantially fewer emissions than fossil fuel-fired power plants (World Resources Institute 2020). Most of the lifecycle emissions from fossil generators occur from fuel combustion, which occurs at a high level throughout operations. Conversely, while the manufacture of solar panels requires substantial amounts of energy, studies have found that they offset the energy consumed in production within about two years of operation, depending on the module type (World Resources Institute 2020). The World Nuclear Association conducted a comparison of lifecycle greenhouse gas emissions of various electricity generation sources (World Nuclear Association 2011), which included the review of studies conducted by government agencies, universities and industry associations. The key outcome of the study is shown graphically in Figure 5.1, which identifies that renewable energy generation (solar and wind) produced significantly lower lifecycle greenhouse gas emissions compared with alternatives such as coal, oil and natural gas.

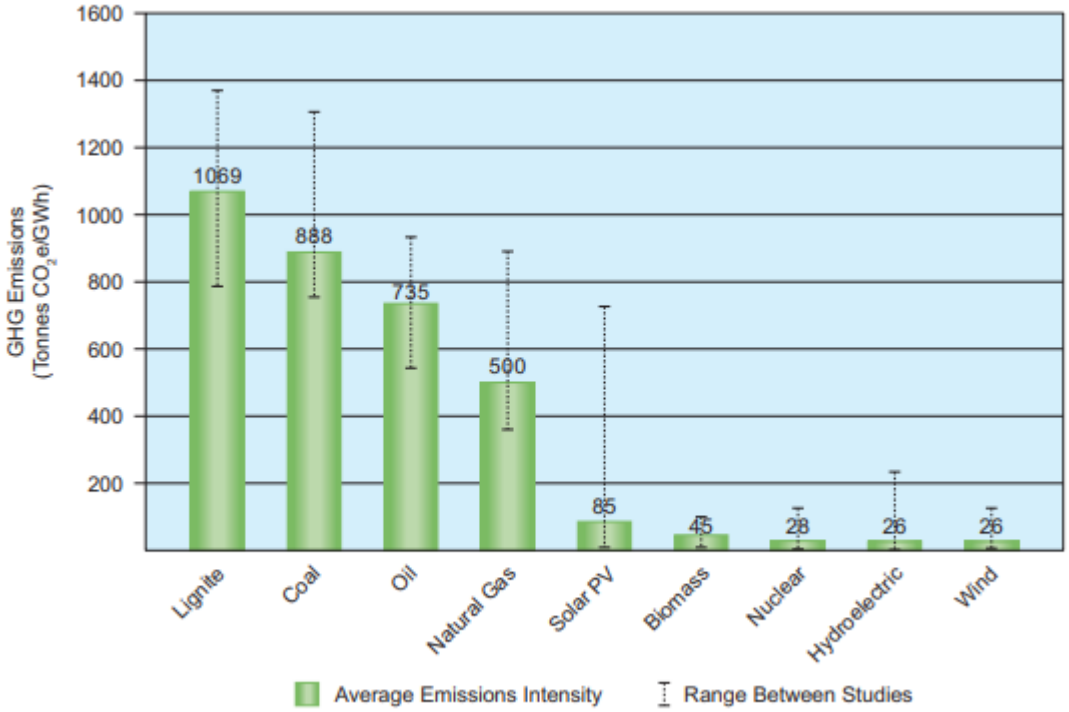

Figure 5.1 Lifecycle greenhouse gas emissions comparison

Source: World Nuclear Association 2011

All power generation technologies, regardless of whether they are renewable or fossil fuel-based, require resources to be mined and extracted for the manufacture of the required equipment (e.g. steel for the boilers and concrete for the cooling towers in a coal plant). A full comparison of the lifecycle resource requirements of these different technologies and a comparison of alternative power generation is outside of the scope of the EIS and is not a planning consideration under the NSW planning framework.

5.5.3 Cost of energy and cost benefit analysis

Seventeen submitters raised concerns regarding the cost of energy and the cost benefit analysis of the project, summarised as follows:

- The project is not affordable.
- The project will increase electricity prices.
- The project will not benefit the Australian economy and that the costs associated with the project outweigh the benefits.

The EIS considers the socio-economic impacts and benefits of the project.

The project is justified economically due to the significant economic benefits and stimulus it will provide to the local region and the State. The economic assessment (Appendix E.12 of the EIS) found that regionally, the project will contribute up to $191 million and 489 direct and indirect jobs during the peak 12 months of construction and up to $29 million and 34 direct and indirect jobs annually during operations. Across the State, the project will contribute up to up to $339 million and 973 direct and indirect jobs during the peak 12 months of construction and up to $49 million and 92 direct and indirect jobs annually during operations.

Potential cumulative benefits may also be associated with the high number of SSD projects in the local area, such as increased employment and economic opportunities for local businesses and suppliers.

The AEMO is responsible for developing the optimal path for the longer-term transition to the future energy system. The *Draft 2024 ISP* (AEMO 2023) recognises that the NEM is supporting a once-in-a-century transformation in the way electricity is generated and consumed in eastern and south-eastern Australia. Legacy power generation assets (such as coal fired power stations) will replace legacy assets with low-cost renewables, energy storage is being added as well as other new forms of firming capacity, and the grid is being re-configured to support two-way energy flow. Given the relative costs of different generation technologies and the outlook for continuing cost reductions in renewables and batteries, projects such as Dinawan Solar Farm form a key part of the future energy system of NSW. The *Draft 2024 ISP* (AEMO 2023) identifies REZs, as the proposed pathway to "support better grid reliability and security; reduce transmission, connection and operation costs for individual assets; and promote regional expertise and employment at scale."

The development of the South West REZ, of which the project is a key part, is part of the transformation of the NEM, of which the objective is to provide reliable, secure and affordable electricity to consumers. Once operational, the project will dispatch low-cost electricity into the NEM. Solar PV is now one of the lowest cost sources of energy in the world and in Australia (Brailsford 2018).

5.5.4 Supply chain

Eleven submitters raised concerns that the material required for the project will be unethically sourced and could involve slave labour.

The factory location for the PV modules which will be procured for the project will largely depend on the module provider selected for the project.

The Commonwealth *Modern Slavery Act 2018* requires entities based, or operating in, Australia, which have an annual consolidated revenue of more than $100 million, to report annually on the risks of modern slavery in their operations and supply chains, and actions to address those risks. Other entities based, or operating, in Australia may report voluntarily.

It is also noted that the Clean Energy Council has formed a Modern Slavery Working Group. The objectives are to facilitate the process of reporting under the *Modern Slavery Act 2018* and raise the standard of practice across the clean energy sector in Australia. It does this by providing a platform to discuss and consider collaboration on efforts to:

- identify and address risks of modern slavery within supply chains
- report under the national Modern Slavery Reporting Requirement.

In conjunction with the engineering, procurement, and construction partner, a Supplier Code of Conduct will be established for the project, which will include minimum requirements to be met by all suppliers to achieve the aims of the project and meet the requirements set by the government and Spark Renewables. The Supplier Code of Conduct will include requirements for suppliers to protect labour and human rights including the following:

- Comply with contractual requirements related to employment and participation.
- Comply with all relevant legislation related to labour participation and human rights.
- Declare any known risks within their supply chain that may contribute to Modern Slavery in a timely manner.

- Commit their suppliers and sub-contractors to meeting the standards of the Code of Conduct.
- Comply with ISO 45001 Occupational Health and Safety Management Systems Certification or Health & Safety Plan for the project

5.5.5 Location of renewable energy projects

Fifteen submitters commented on the location of the project within rural areas.

The project is within the South West REZ. Justification for the location of the South West REZ is outside of the scope of this project. Details on REZs in NSW, and specifically the South West REZ, are provided on EnergyCo's public website (https://www.energyco.nsw.gov.au/sw-rez).

6 Updated project justification

6.1 Strategic context

The project is consistent with relevant Commonwealth, State, regional and local strategic plans and polices, in particular the *NSW Electricity Infrastructure Investment Roadmap*, which sets out the plan to deliver REZs in NSW. The project will contribute to the energy generation and storage targets for the South West REZ, with an indicative capacity of around 800 MW and storage of up to 300 MW for a duration of up to two hours (600 MWh).

6.2 Site suitability

The South West REZ was selected by the NSW Government following a detailed state-wide geospatial mapping exercise to identify optimal locations to host renewable energy generation, including areas with strong renewable energy resource potential, proximity to the existing electricity network, and consideration of potential interactions with existing land uses, including agricultural lands and biodiversity conservation (EnergyCo 2023b).

The project area is favourable for the construction and operation of a solar and battery project due to the available solar resource, physical conditions (relatively flat topography and predominantly cleared, agricultural land), absence of biophysical strategic agricultural land and relatively few residences within close proximity. The project area adjoins the site of the Dinawan Substation, part of Project EnergyConnect, making it an optimal location for the export of electricity to the grid.

6.3 Design development

Spark Renewables has maximised the avoidance of potential environmental impacts throughout the project refinement process, during both the preparation of the EIS and the amendment report. This followed the principles of avoiding higher quality vegetation and threatened species habitat where practicable, maximising use of previously disturbed land, limiting the footprint for project infrastructure to the minimum required, protecting significant heritage values and minimising impacts on neighbouring landholders.

The development footprint presented in the EIS has been reduced by 28%, further avoiding and minimising environmental impacts, particularly biodiversity impacts. The amendments to the development footprint have resulted in avoidance of a further 653 ha of NSW listed (42% reduction) and 110 ha of Commonwealth listed (74% reduction) TECs. Biodiversity offsets required for the project have also been further reduced by 12,663 (88% reduction) for species credits and 19,244 (48% reduction) for ecosystem credits.

The proposed development footprint is the most appropriate area for the project infrastructure based on inputs provided during consultation activities with regulatory and community stakeholders, environmental assessments and the functional requirements of project infrastructure. The irregular shape of the development footprint is a result of avoiding identified impacts (particularly higher quality native vegetation and threatened species habitat).

Where potential impacts cannot be avoided, Spark Renewables have minimised environmental impacts and/or implement mitigation measures, to manage the extent and significance of residual impacts. Residual biodiversity impacts will be offset by establishing local biodiversity stewardship sites and payment into the Biodiversity Conservation Fund.

The placement of infrastructure and the extent of construction activities will be refined during detailed design prior to the commencement of construction to further maximise avoidance, consistent with the project's avoidance and minimisation objectives.

6.4 Conclusion

Were this project not to proceed, the project's benefits, including contributions to the generation of renewable energy and increased energy security, would not be realised. Renewable energy generation and storage projects are needed in NSW and the project is proposed in a highly suitable location that makes optimal use of existing transmission infrastructure and minimises the need for additional grid connection infrastructure. The environmental and social impacts of the project can be readily managed with the application of practical mitigation measures.

In summary, the project is considered to be justified and in the public interest.

Abbreviations

ABC	Australian Broadcasting Corporation
AC	alternating current
ACHA	Aboriginal cultural heritage assessment
AEMO	Australian Energy Market Operator
BC Act	NSW *Biodiversity Conservation Act 2016*
BCS	NSW DCCEEW – Biodiversity, Conservation and Science Group
BDAR	biodiversity development assessment report
BESS	battery energy storage system
BSAL	biophysical strategic agricultural land
CIC	critical industry cluster
CTMP	construction traffic management plan
DA	development application
DPE	NSW Department of Planning and Environment
DPHI	NSW Department of Planning, Housing and Infrastructure (formally DPE)
DPI Agriculture	Department of Primary Industries – Agriculture
EIS	environmental impact statement
EMM	EMM Consulting Pty Limited
EP&A Act	NSW *Environmental Planning and Assessment Act 1979*
EP&A Regulation	NSW *Environmental Planning and Assessment Regulation 2021*
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
FRNSW	Fire and Rescue NSW
GHG	greenhouse gases
GW	gigawatt
ha	hectares
ISP	Integrated System Plan
km	kilometres
LGA	local government area
LSC	land and soil capability
LVIA	landscape and visual impact assessment
MEG	Mining, Exploration & Geoscience
MW	megawatts
MWh	megawatt hours
NEM	national energy market
NSW DCCEEW	NSW Department of Climate Change, Energy, the Environment and Water

NSW RFS	NSW Rural Fire Service
NSW	New South Wales
O&M	operations and maintenance
PCT	plant community type
Planning Systems SEPP	State Environmental Planning Policy (Planning Systems) 2021
PV	photovoltaic
REZ	Renewable Energy Zone
SEARs	Secretary's Environmental Assessment Requirements
SIMP	social impact management plan
SIMP	social impact management plan
Spark Renewables	Spark Renewables Pty Limited
SSD	State significant development
TEC	threatened ecological communities
TfNSW	Transport for NSW
TIA	traffic impact assessment
VNI West	Victoria to NSW Interconnector West

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Appendix A
Submissions register

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Table A.1 Submissions register

Name	Location	Section where comments are addressed in submissions report
Public authorities & councils		
Department of Primary Industries – Agriculture (DPI Agriculture)	-	Section 4.4
NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW) – Heritage NSW	-	Section 4.2
NSW DCCEEW – Water NSW	-	Section 4.3
NSW DCCEEW – Biodiversity, Conservation and Science Group (BCS)	-	Section 4.10
Crown Lands	-	Section 4.1
Fire and Rescue NSW (FRNSW)	-	Section 4.5
Murrumbidgee Council	-	Section 4.6
NSW Rural Fire Service (NSW RFS)	-	Section 4.7
Transport for NSW (TfNSW)	-	Section 4.9
Mining, Exploration & Geoscience (MEG)	-	Section 4.1
Transgrid.	-	Section 4.8
Special interest groups		
Climate and Energy Realists Queensland (SE-66008962)	Bundall	Section 5.5.2, Section 5.5.4
Save Our Surroundings (SE-65610014)	Gulgong	Section 5.4, Section 5.3.8i, Section 5.3.4, Section 5.3.7, Section 5.3.12, Section 5.5.2, Section 5.3.5, Section 5.5.3
Save Our Woodlands (SE-65626526)	Yarrowyck	Section 5.5.2, Section 5.3.12, Section 5.1.1

Table A.1 Submissions register

Name	Location	Section where comments are addressed in submissions report
Public		
Andrew Browning (SE-65785464)	Jerilderie	Section 5.3.9v
Andrew Sleigh (SE-65867220)	Jerilderie	Section 5.3.1i, Section 5.3.1iv, Section 5.2.2, Section 5.3.3, Section 5.3.8ii, Section 5.3.7, Section 5.3.10i, Section 5.3.9vi, Section 5.3.8i, Section 5.3.13, Section 5.4
Anita O'Neil (SE-66029484)	Coolah	Section 5.5.4, Section 5.3.11, Section 5.3.12, Section 5.3.1ii, Section 5.3.1i, Section 5.3.7
Daniel Lablack (SE-66049459)	Augustine Height	Section 5.4, Section 5.5.2
David Leeds (SE-65841464)	Jerilderie	Section 5.3.1iv, Section 5.3.7
David Landini (SE-66019713)	Wakool	Section 5.4, Section 5.5.2
Elizabeth Schiemer (SE-65889223)	Anna Bay	Section 5.4, Section 5.3.7, Section 5.5.3
Emma Bowman (SE-65673460)	Dunedoo	Section 5.5.1, Section 5.3.2, Section 5.3.3, Section 5.5.5, Section 5.3.11, Section 5.5.2
Georgia Cronin (SE-65830723)	Jerilderie	Section 5.3.9ii, Section 5.4, Section 5.3.8ii, Section 5.3.3, Section 5.3.1i, Section 5.3.2
Helen Gooden (SE-65882957)	Cootamundra	Section 5.2.1, Section 5.3.12, Section 5.3.10ii
Howard Dewhirst (SE-65907707)	Burleigh Heads	Section 5.5.2, Section 5.5.3
Ian McDonald (SE-65620724)	Walcha	Section 5.3.7, Section 5.3.10iii
Janet Norton (SE-65675461)	Armidale	Section 5.3.2, Section 5.3.7, Section 5.3.12, Section 5.3.9i, Section 5.5.3, Section 5.5.2, Section 5.5.1
Jeanine Bird (SE-66022211)	Leeton	Section 5.5.3, Section 5.3.8ii, Section 5.3.7, Section 5.5.2, Section 5.3.1ii

Table A.1 Submissions register

Name	Location	Section where comments are addressed in submissions report
John McBratney (SE-65913465)	Lancefield	Section 5.5.2, Section 5.5.4
John Angelico (SE-65909709)	Narre Warren	Section 5.3.2, Section 5.5.3
John Angelico (SE-65931232)	Narre Warren Sou	Section 5.5.2, Section 5.5.3
Julie Sleigh (SE-65826957)	Jerilderie	Section 5.3.1i, Section 5.3.8i, Section 5.3.2, Section 5.3.10ii, Section 5.3.9vi
Michelle Park (SE-65626492)	Bendemeer	Section 5.1.1, Section 5.5.2, Section 5.3.12
Rick Martin (SE-65909960)	Ladysmith	Section 5.5.2, Section 5.3.12, Section 5.3.11
Sally Edwards (SE-65831215)	Coolah	Section 5.3.9ii, Section 5.3.1i, Section 5.3.2, Section 5.3.10ii, Section 5.3.10i, Section 5.3.10iii, Section 5.3.3, Section 5.3.9iii, Section 5.3.12, Section 5.5.2, Section 5.3.9iv
Stan Moore (SE-65913463)	Gundary	Section 5.3.12
SE-65789237	Barham	Section 5.3.2, Section 5.3.1iv, Section 5.5.2, Section 5.4
SE-65974717	Binnaway	Section 5.3.3, Section 5.3.10ii, Section 5.3.9ii, Section 5.5.5
SE-65977980	Binnaway	Section 5.3.9v, Section 5.5.5
SE-65977986	Binnaway	Section 5.4
SE-65977989	Binnaway	Section 5.3.3, Section 5.5.5
SE-65978000	Binnaway	Section 5.5.5
SE-65978006	Binnaway	Section 5.5.5
SE-65978012	Binnaway	Section 5.3.3, Section 5.5.5, Section 5.4
SE-65685469	Bundure	Section 5.5.2, Section 5.5.3, Section 5.3.1i

Table A.1 Submissions register

Name	Location	Section where comments are addressed in submissions report
SE-65799469	Bundure	Section 5.4, Section 5.3.10ii, Section 5.3.4, Section 5.3.3, Section 5.3.8i
SE-65818461	Bundure	Section 5.4
SE-65761754	Collaroy	Section 5.5.2, Section 5.5.5, Section 5.3.11
SE-65694986	Coolah	Section 5.3.5, Section 5.3.4, Section 5.3.7, Section 5.3.8i, Section 5.3.3, Section 5.3.2, Section 5.3.13
SE-65706957	Coolah	Section 5.4, Section 5.5.3
SE-65767477	Coolah	Section 5.4, Section 5.3.1iv, Section 5.3.1i, Section 5.3.2, Section 5.5.3, Section 5.3.9ii, Section 5.5.5
SE-65824735	Coolah	Section 5.5.2, Section 5.3.1iv, Section 5.3.4
SE-65826967	Coolah	Section 5.3.1i, Section 5.3.13, Section 5.4
SE-65974711	Coonabarabran	Section 5.3.9ii
SE-65977967	Coonabarabran	Section 5.5.2, Section 5.5.5, Section 5.3.3
SE-65670725	Dederang	Section 5.5.2, Section 5.5.4
SE-65638215	Dee Why	Section 5.5.2, Section 5.3.1i
SE-65767462	Dee Why	Section 5.5.3, Section 5.5.4, Section 5.5.2, Section 5.3.2, Section 5.3.1i
SE-65770985	Forestville	Section 5.5.2, Section 5.3.2, Section 5.3.7, Section 5.3.1i
SE-65627014	Gulgong	Section 5.5.3, Section 5.3.5
SE-65627017	Gulgong	Section 5.3.12, Section 5.5.3, Section 5.5.2
SE-65867975	Guyra	Section 5.5.2, Section 5.5.3, Section 5.3.2, Section 5.3.12

Table A.1 Submissions register

Name	Location	Section where comments are addressed in submissions report
SE-65750710	Jerilderie	Section 5.3.1iii, Section 5.3.1iv
SE-65756217	Jerilderie	Section 5.3.1iii
SE-65761739	Jerilderie	Section 5.3.9i, Section 5.3.5, Section 5.3.1i, Section 5.3.1iii
SE-65877961	Jerilderie	Section 5.3.10i, Section 5.3.1iv, Section 5.3.7, Section 5.2.2, Section 5.3.11, Section 5.5.2, Section 5.3.9iv
SE-65438708	Kanya	Section 5.3.2, Section 5.4
SE-65909723	Kooringal	Section 5.3.2, Section 5.3.8i, Section 5.5.4, Section 5.5.2, Section 5.3.9ii
SE-65889220	Lake Albert	Section 5.4, Section 5.5.3, Section 5.5.2, Section 5.5.4, Section 5.3.9ii
SE-65891957	Lake Albert	Section 5.3.2, Section 5.5.3, Section 5.5.2, Section 5.3.7, Section 5.5.4, Section 5.4
SE-66043214	Leeton	Section 5.5.3, Section 5.5.2, Section 5.3.7, Section 5.3.8i, Section 5.5.5
SE-65950460	Maxwell	Section 5.1.1, Section 5.3.2
SE-65764461	Mayfield West	Section 5.3.11, Section 5.3.3, Section 5.3.2, Section 5.5.2, Section 5.3.12
SE-65977960	Mendooran	Section 5.3.9v, Section 5.3.7
SE-65978460	Mendooran	Section 5.1.1, Section 5.3.3, Section 5.3.8i, Section 5.4, Section 5.5.5
SE-65167726	Mollyan	Section 5.3.7, Section 5.3.8i, Section 5.5.2
SE-65167755	Mollyan	Section 5.3.3, Section 5.5.2, Section 5.5.5, Section 5.3.7

Table A.1 Submissions register

Name	Location	Section where comments are addressed in submissions report
SE-65974726	Mollyan	Section 5.5.2, Section 5.3.9v, Section 5.3.9vi
SE-65977974	Mollyan	Section 5.5.5, Section 5.3.10ii, Section 5.5.2
SE-65826970	Murgheboluc	Section 5.3.2
SE-65977995	Neilrex	Section 5.3.10ii, Section 5.4, Section 5.5.5
SE-65760208	Old Toongabbie	Section 5.5.4, Section 5.3.12, Section 5.4
SE-65902463	Rapanyup	Section 5.3.2, Section 5.3.7, Section 5.5.2, Section 5.3.8i, Section 5.3.9ii, Section 5.5.1
SE-65836239	South Yarra	Section 5.3.2, Section 5.3.10i, Section 5.3.9iv, Section 5.3.1i, Section 5.3.8i
SE-65978708	Traynors Lagoon	Section 5.4, Section 5.5.2
SE-66050209	Tullakool	Section 5.2.2, Section 5.3.1iv, Section 5.3.2, Section 5.5.2
SE-65909719	Uarbry	Section 5.5.2, Section 5.4
SE-65888208	Walcha	Section 5.5.2, Section 5.4
SE-65889707	Walcha	Section 5.5.2, Section 5.4
SE-65866992	Warrawee	Section 5.5.2, Section 5.3.2, Section 5.3.12, Section 5.5.4, Section 5.3.9i, Section 5.3.8i
SE-64901487	Waverton	Section 5.3.11, Section 5.5.2
SE-65974723	Weetaliba	Section 5.4
SE-65764741	Yarrabin	Section 5.5.2, Section 5.3.2, Section 5.5.4
Amanda (submission received post exhibition)	Not provided	Section 5.3.5, Section 5.3.13, Section 5.3.9iv

Appendix B
Updated mitigation measures

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Note: New or updated mitigation measures as a result of the amendments have been **bolded**.

Table B.1 Summary of mitigation measures

ID	Mitigation measures
Biodiversity	
B1	Detailed design of the project will: • avoid and minimise the loss of native vegetation and habitat **(including the hollow-bearing tree and trees supporting nests)** • avoid and minimise impacts to breeding habitat for fauna, including threatened species to the extent possible.
B2	A BMP will be prepared by a qualified ecologist in consultation with BCS. The BMP will include: • a plan for adaptive management and implementing, evaluating and reporting on the effectiveness of all mitigation measures • figures showing areas to be cleared and areas to be protected, including exclusion zones, protected habitat features (particularly important mapped areas of Plains Wanderer), revegetation areas and retained tree hollows • pre-clearing survey requirements and clearing protocols (e.g. occupation surveys for 'no go' threatened flora areas, application of exclusion measures/deterrents prior to vegetation clearing/earthworks and works undertaken in presence of spotter/catcher) • **procedures for dewatering of farm dams and construction within waterbodies** • procedures for unexpected threatened species finds **(including stop work requirements and strategies to minimise, mitigate and potentially offset unexpected impacts to threatened species)** • procedures for monitoring of retained vegetation areas, including collection of plots prior to construction (if no baseline data is applicable) and at year 1, 3 and 5 post construction • procedures for fauna handling, monitoring and management, including identification and reporting of fauna mortalities • sub-plans for weed and biosecurity management, pest animal management and rehabilitation management • measures to reduce the risk of spreading weeds and pathogens, and other biosecurity items into or out of the development footprint, including: – collection of baseline weed and invasive pest data to determine if an increase of key emerging weeds or invasive pests occurs during construction or operations – ongoing consultation with Local Land Services **and relevant stakeholders** on fox **and other pest animal** control and baiting programs • **opportunities for nature positive measures to promote habitat clusters and connectivity within the development footprint** • training and education awareness for all staff on key threatened species, both flora and fauna, relevant to the region and project • monitoring of soil and water controls to prevent indirect impacts associated with water pollution to the Coleambally Irrigation Channel given the confirmed presence of Southern Bell Frog within this feature • performance targets, monitoring criteria, corrective actions, timing and responsibilities • annual reporting and consultation requirements.
B3	Adaptive management strategies within the BMP will consider any new and relevant data from ongoing assessment and monitoring. This will include measures to monitor predicted and uncertain impacts that will trigger adaptive management actions and allow for effective and quick responses.
B4	Noise during construction will be managed as part of the **construction** noise management plan.
B5	Shading and artificial light impacts will be minimised where possible through detailed design and lighting will be designed in general accordance with AS/NZS 4282:2019 Control of the obtrusive effects of outdoor lighting.
B6	Remnant vegetation and fauna habitat within or surrounding the subject land but outside the development footprint will be managed toward a benchmark state using improve and maintain principles.

Table B.1 Summary of mitigation measures

ID	Mitigation measures
B7	**A groundcover management plan will be prepared as part of the BMP and will:** – **include locations of baseline and control AM plots used for ongoing monitoring** – **list procedures to ensure that no more than 40% of the solar array areas within PCT 26 (sparse) and PCT 26 (DNG) are subject to complete loss of groundcover during construction** – **targeted weed management measures to control and prevent the spread of noxious weeds** – **describe the biannual (spring and summer) monitoring program to assess the condition of PCT26 within the solar array areas for the first three years following commencement of operations** – **list performance targets for PCT26 vegetation integrity within the solar array areas** – **include a trigger, action, response plan (TARP) that identifies steps to be taken in response to a deterioration in vegetation integrity of PCT26 within the solar array areas (including reference to adaptive management, such as adjustment of weed treatment, slashing regimes and direct seeding).** **The plan will be subject to an independent audit following the completion of three years of monitoring.** **If set targets are not achieved, the full credit liability will be required to be retired for the relevant zones (i.e. up to an additional 6,164 ecosystem credits).**
B8	**Suitable habitat for the relocation of Southern Bell Frog detected within the development footprint will be determined prior to clearing taking place.**
B9	**Perimeter fencing will include 'fauna friendly' components at select points (including egress points).**
B10	**Dust suppression will be undertaken as required.**
B11	**A vehicle strike protocol will be prepared and fauna species susceptible to vehicle strike will be included in project inductions to increase knowledge of on-site wildlife.**
Aboriginal Heritage	
AH1	Prior to commencement of construction, an Aboriginal Cultural Heritage Management Plan will be developed by a heritage specialist in consultation with DPE, the RAPs and Heritage NSW. The Aboriginal Cultural Heritage Management Plan will: • Include processes, timing, communication methods and project involvement (e.g. on site activities) for maintaining Aboriginal community consultation and participation during the project. This will include a grievance mechanism that is readily available and designed for use by the local Aboriginal community. • Detail methods for any additional investigative and/or mitigative archaeological actions that may be required prior to construction works commencing or during the project, including: – archival recording of all identified Aboriginal objects, sites and places – suitable recovery or relocation, documentation and analysis of any archaeological sites proposed for direct impacts, with consideration of the guiding principles for management of identified Aboriginal sites provided in the ACHA. • Describe actions to minimise any inadvertent impacts to identified Aboriginal objects and/or sites and areas of archaeological sensitivity outside of the development footprint, including: – cultural inductions for all personnel and subcontractors outlining their location and significance – fencing and clear marking of heritage sites and zones of interest in proximity to proposed works – any additional requirements identified by the Aboriginal community – a monitoring regime, including locations, methods, personnel and timing. • Describe methods for post excavation analysis and reporting of the archaeological investigations and activities implemented. For excavations, these will include suitable collection and processing of stone artefacts, and chronological, soil, and environmental samples. • Describe procedures for managing the unexpected discovery of Aboriginal objects, sites and/or human remains.

Table B.1 Summary of mitigation measures

ID	Mitigation measures
	• Describe procedures for the curation and long-term management of recovered or relocated cultural materials • Describe processes for reviewing, monitoring and updating the Aboriginal Cultural Heritage Management Plan as the project progresses and in response to any changes to the project and development footprint.
AH2	Consultation will be maintained with the RAPs during the finalisation of the assessment process and throughout the project.
AH3	A copy of the ACHA will be lodged with AHIMS and provided to each of the RAPs.
AH4	AHIMS Site Recording Forms for the newly identified Aboriginal objects and/or sites within and in proximity to the project area, including areas of archaeological sensitivity, will be submitted to the AHIMS database.
AH5	If the heritage consultant changes through the project, suitable hand over will be undertaken to minimise loss or mistranslation of the intent of the information, findings and future steps in heritage management.
AH6	A heritage interpretation strategy will be developed through an ongoing consultation process between Spark Renewables and the RAPs.
Historical Heritage	
HH1	Any unexpected finds or human remains discovered during construction will be managed through an unexpected finds protocol.
HH2	Prior to construction works in the vicinity of this site, construction personnel will be made aware of the location of DEHS001 and the western boundary of the site will be clearly demarcated and appropriate markers/signage put in place to create a barrier to entry to prevent any potential indirect impacts.
Land	
L1	Soil management measures to preserve soil resources will include: • assessing topsoil depths to be stripped prior to stripping to minimise the mixing of topsoil and subsoil • preserving as much topsoil as possible • aiming to strip and manage different soils orders or mapping units separately • avoiding mixing topsoil with subsoil during soil handling operations • managing subsoils in separate layers to minimise introduction of constraints higher into the soil profile where subsoils exhibit variance of constraints with depth • avoiding stripping, handling or compacting soil following heavy rain periods that leaves the soil structure saturated • avoiding compaction of soil during stripping and stockpiling operations • applying topsoil ameliorants and, where necessary, subsoil during stripping operations in accordance with a soil scientists' recommendations, with ameliorants applied prior to stripping each soil layer, to maximise mixing of the ameliorants during the stripping process • stockpiling topsoil separately from subsoil (where it is necessary to strip subsoil) • reinstating soil horizons in the correct order and depths, where possible • locating subsoils and topsoils so that stockpiled material is placed on the same underlying soil unit where practical and possible • protecting stockpiles from erosion using soil stabilising polymers, cover crops or other forms of stabilisation • stabilising long-term topsoil stockpiles with native plant community types or suitable cover crops to minimise stockpile waterlogging, the generation of anaerobic conditions, help maintain topsoil biological viability and nutrient cycling and to create a seed store • testing stockpiled subsoil and topsoil to determine amelioration requirements prior to reinstatement.

Table B.1 Summary of mitigation measures

ID	Mitigation measures
L2	Agrisolar activities will continue during the life of the project, including: • constructing and maintaining internal livestock fencing and other required infrastructure • grazing sheep between the panels where practical and subject to suitable conditions on-site. • monitoring agrisolar activities and adjust stocking rates to prevent land degradation.
L3	The following controls will be implemented to manage impacts associated with weeds, pathogens and pest species: • implementing hygiene and washdown protocols, including washdown and inspection of vehicles, plant and machinery when moving from areas with known populations of weed and pest species • removing identified weeds through methods such as herbicide spraying, scalping and hand-pulling • managing importation of gravel, crushed rock or soil to ensure that the material is free from noxious weed seed • 1080 poison baiting programs and ripping of rabbit warrens and fox dens within the project area and any established offset areas.
L4	The following erosion and sediment control measures and site rehabilitation and revegetation will be implemented in accordance with industry standard practice: • minimising the extent and duration of land disturbance • controlling water movement through the development footprint • minimising soil erosion • stabilising disturbed areas promptly • maximising sediment retention on site • maintaining drainage, erosion and sediment control measures • monitoring and adjust drainage, erosion and sediment control practices to achieve the desired performance standard • constructing suitable watercourse crossings.
Landscape and visual	
LV1	During periods of the day when glint and glare have the potential to occur, backtracking operations will be restricted to 5° or more to reduce glint and glare.
LV2	If a 2P module configuration is constructed, a PV module exclusion zone of up to 100 m from the Kidman Way road corridor will be implemented. If a 1P module configuration is constructed, the PV module exclusion zone will be reduced to up to 50 m.
LV3	The colour and height of ancillary structures will be considered in detailed design to minimise contrast with the surrounding landscape to the extent practicable.
LV5	External lighting associated with the project: • will be installed as low intensity lighting (except where required for safety or emergency purposes) • will not shine above the horizontal • will comply with Australian Standard/New Zealand Standard AS/NZS 4282:2019 – Control of Obtrusive Effects of Outdoor Lighting.
Noise	
N1	Construction work activities will be scheduled to minimise noise impacts, including: • construction will be undertaken during standard construction hours: – Monday to Friday 7 am to 6 pm – Saturday 8 am to 1 pm – no work on Sundays or public holidays

Table B.1 Summary of mitigation measures

ID	Mitigation measures
	• if works are necessary outside the recommended standard hours, it will be ensured that works fall within the categories provided in Table 4 of the noise impact assessment, and an assessment of these activities will be provided for approval by DPHI. • deliveries will be scheduled to the nominated standard hours to the extent practicable.
N2	Traffic noise will be minimised, including: • amalgamating vehicle loads (including trucks as well as passenger vehicles) to minimise noise and traffic on public roads • designating access routes and making drivers made aware of the requirement to use these routes.
N3	Construction work practices will minimise noise impacts by: • training workers and contractors regularly (such as at toolbox talks) to use equipment in ways to minimise noise • ensuring site managers periodically check for excessive noise generating activities so solutions can be applied quickly • including clauses that require noise to be minimised and compliance with directions from management in tenders, employment contracts, subcontractor agreements and work method statements • informing truck drivers of designated vehicle routes, parking locations, acceptable delivery hours or other relevant practices (for example, minimising the use of engine brakes, and not allowing extended periods of engine idling) • carrying out noisy fabrication work off site (for example, within enclosed factory premises) and then transporting these items to site.
N4	Consultation with noise-affected receivers (R049) will include: • providing information on the construction program • providing information on the project website, for example as a regular newsletter with project news, significant project events and timing of different activities, using a site information board at the site access points with the name of the organisation responsible for the site and their contact details, hours of operation and regular information updates • implementing a complaints management protocol • implementing all feasible and reasonable measures to address the noise generating activity that has resulted in the complaint.
N5	Noise from plant and equipment will be managed by: • using quieter methods, where possible, such as alternatives to diesel and petrol engines and pneumatic units • using quieter equipment by: – examining different types of machines that perform the same function and comparing the noise level data to select the least noisy machine – using super-silenced compressors, silenced jackhammers, and damped bits where possible – for rented equipment, selecting quieter items of plant and equipment where these will be acceptable for performing the required activity – for purchased equipment, selecting the most effective mufflers, enclosures and low-noise tool bits and blades • operating plant in a quiet and efficient manner, such as reducing throttle settings and turning off equipment when not being used to ensure they do not sit idle excessively • maintaining plant and equipment regularly to ensure it is in good working order. • using alternatives to reversing alarms by:

Table B.1 Summary of mitigation measures

ID	Mitigation measures
	– designing the site layout to avoid reversing, such as by including drive through parking and delivery bays – installing where feasible and reasonable less annoying alternatives to the typical 'beeper' alarms taking into account the requirements of the occupational health and safety legislation (e.g. smart alarms that adjust their volume depending on the ambient level of noise and multifrequency alarms that emit noise over a wide range of frequencies)
N6	The project has been designed and will be refined to minimise noise impacts by: • managing fixed plant locations by: – placing as much distance as possible between the plant or equipment and receivers – locating the site access points, construction compounds and parking areas away from receivers • maximising shielding by use of temporary site buildings and materials stockpiles as noise barriers to R049.
Transport	
T1	A detailed CTMP will be developed in consultation with TfNSW and Murrumbidgee Council prior to the commencement of works.
T2	**The Kidman Way site access point intersections will include:** • **dedicated turning bays for left-turning and right-turning vehicles from Kidman Way** • **upgrades on both the north and south approaches** • **upgrades designed for a 26m long B-double truck and to allow the passage of the largest OSOM vehicle.**
T3	**The Kidman Way/Bundure Road/Liddles Lane intersection will include:** • **a widened shoulder for left turning vehicles and dedicated turning bay for right turning vehicles from Kidman Way** • **upgrades to be applied on both the north and south approaches** • **upgrades designed for a 26 m long B-double truck turning into Bundure Road.**
T4	Relevant permits will be obtained from the National Heavy Vehicle Regulator (NHVR) to allow OSOM vehicles to use the road network as part of construction. Conditional approval will be requested for 26-m long trucks to access Bundure Road between Kidman Way and the eastern site access point (currently only approved for 19 m long heavy vehicles).
T5	Bundure Road will be widened between Kidman Way and the Bundure Road eastern site access point. The road widening will comply with the relevant ARRB rural roads design guidelines.
T6	Site access points will be constructed as per council's Rural Property Access standard to the satisfaction of TfNSW (Kidman Way) or Council (Bundure Road).
T7	As part of detailed design, measures will be considered to improve visibility on either side of the Bundure Road bridge where it crosses the Coleambally Irrigation Channel, such as: • raising the access road height to ensure driver's line of sight is above fencing/bridge parapet • adoption of safety measures in a Driver's Code of Conduct • implementing construction stage traffic management measures such as warning signs for trucks entering (sign no. T2-25, to be confirmed in the CTMP).
T8	A traffic management system will be implemented to allow trucks to cross the Bundure Road bridge in a single direction at any given time (e.g. "No overtaking or passing" signage (sign no. R6-1)). Westbound vehicles on Bundure Road will be required to give way to eastbound traffic to avoid queuing on Kidman Way.

Table B.1 Summary of mitigation measures

ID	Mitigation measures
Water	
W1	Measures to address risks to surface water and groundwater during construction that address key stormwater management principles will include: • siting of infrastructure within the development footprint to minimise disturbance to existing drainage lines and overland flow paths • designing earthworks to maintain the prevailing surface gradients and fall towards existing drainage lines, to minimise changes to existing flow paths • providing general surface drainage infrastructure comprising: – diversion of upslope runoff around infrastructure (excluding PV modules) – surface drainage measures as required to control runoff generated within the development footprint, minimise soil erosion potential and direct runoff towards receiving drainage lines. Sheet flow conditions will be maximised, and construction of diversion drains channels and table drains to be minimised to the extent practicable – suitable treatments, including rock rip rap where appropriate, will be used to armour earthwork batters and site drainage as needed for scour protection and to achieve stable waterways where flow concentrations cannot be avoided – retention of existing flow paths where possible and minimisation of catchment diversions, with the objective of minimising changes to flow regimes in receiving watercourses • stabilising disturbed areas and progressively rehabilitating soils as early as practicable • maintaining drainage, erosion and sediment control measures, including monitoring and adjustment to achieve the desired performance standard • capturing stormwater runoff from buildings in rainwater tanks for use on-site • implementing procedures for hazardous material storage and spill management as defined in applicable guidelines • maintaining spill kits on-site at all times during construction and operation • considering weather preparedness and response planning • monitoring and maintenance of water management and drainage systems.
W2	Specific stormwater management measures for the substation and switchyard areas will include: • diverting clean runoff away from potentially oil-contaminated areas • bunding potentially oil-contaminated areas • providing stormwater treatment device(s) to remove oil/grease, hydrocarbons and sediment from runoff prior to discharge to the downstream drainage system.
W3	Specific stormwater management measures for the BESS areas will include: • providing spill containment storage within or immediately downstream of the BESS area's drainage system to manage fire suppression runoff in the event of a fire within the BESS areas.
W4	Measures to address ongoing site-specific risks to surface water and groundwater during operations will include: • rehabilitating temporary works and construction disturbance areas not being utilised for operations • maintaining stabilised and vegetated surfaces, drainage and sediment and erosion control measures throughout operations.
W5	Erosion and sediment control measures and site rehabilitation and revegetation will be implemented in accordance with best practice comprising *Managing Urban Stormwater: Soils and Construction – Volume 1* (Landcom 2004) and Volume 2A (DECC 2008) and *Best Practice Erosion and Sediment Control* (IECA 2008).

Table B.1 Summary of mitigation measures

ID	Mitigation measures
W6	Progressive erosion and sediment control plans will be developed for all discrete disturbance areas.
W7	Flood management protocols will be developed and implemented in the event of flood events that could impact construction sites or access, including: • suitable early warning/prediction measures and communication • site preparedness activities and procedures • triggers for closure, evacuation and recovery • emergency response and support.
W8	Construction site planning at detailed design stage will consider flood risk and adopt appropriate placement of temporary works, plant, materials and workforce facilities, that gives due consideration to overland flow paths and mainstream flood risk and ensures that temporary works minimise off-site flooding impacts as far as practical.
W9	Permanent infrastructure will be designed and constructed to: • locate sensitive infrastructure (e.g. substations and BESS) on high ground above 1% AEP event flood levels (or other suitable level of flood immunity as may be determined during detailed design), and avoid or otherwise divert local overland flow paths around infrastructure • ensure finished ground levels are constructed at-grade and not materially higher than existing levels in areas subject to existing mainstream flooding, in order to minimise potential off-site flooding impacts as far as practical. Where a change in ground level is proposed in areas, as part of future design stages or refinements, assessment of the change should be quantified to confirm off-site flooding impacts do not occur. If changes in the project layout or changes in the landform are required and there is a risk of flooding, then flood modelling will be conducted to confirm the flood behaviour due to the project.
W10	Develop and implement flood management protocols will be developed and implemented for operations.
W11	Watercourse crossings and stormwater outlets will be designed and constructed to: • consider the appropriate level of serviceability and flood immunity required for the project • consider local hydraulic conditions and minimise scour potential • minimise local flooding impacts • be consistent with relevant guidelines outlined in the WRA (Appendix E.8).
W12	Removal of private irrigation infrastructure within the development footprint will be confirmed with the landowner. If infrastructure is removed for the project, it will be reinstated following the project, or as otherwise agreed with the landowner.
W13	Spark Renewables will continue to consult with CICL regarding cable crossings of the Coleambally Irrigation Channel during detailed design and will agree designs, construction methods and timing prior to their implementation.
W14	All required water licensing and approvals will be obtained for construction and operation water supply.
W15	Link water supply works approvals and water access licences: • apply for modification of nominated usage • operate bores in accordance with the conditions of the approval.

Table B.1 Summary of mitigation measures

ID	Mitigation measures
W16	Temporary and permanent on-site wastewater management and effluent reuse systems will: • be appropriate for each site based on consideration of the project layout, site conditions and relevant environmental constraints (e.g. sensitive surface or groundwater water features) • be designed, constructed, operated, maintained and decommissioned in accordance with best practise and relevant guidelines and standards and in consultation with Murrumbidgee Council.
Hazards	
HR1	BESS units will be certified to UL 9540A and installed in accordance with the manufacturer's instructions for best practice to prevent fires and mitigate fire propagation if one occurs.
HR2	The design, selection and procurement of electrical equipment will comply with relevant international and Australian standards to ensure that EMF will not exceed the ICNIRP occupational exposure reference level onsite and public exposure reference level offsite.
HR3	Security protocols, fencing, cameras and warning signs will be implemented to prevent members of the public entering the site and being exposed to EMF above occupational exposure reference levels.
HR4	Project design will include design controls to minimise the likelihood of fire events, and to contain fires if they occur, to minimise potential for escalated events.
HR5	The PHA will be reviewed if the BESS design is revised to ensure that the aspects considered (e.g. control measures, clearances between BESS units, separation distance to sensitive receptors) and assessments made remain applicable or the design will be refined accordingly.
Bushfire	
BF1	A Fire Management Plan will be prepared **in consultation with the Argoon Rural Fire Brigade, NSW RFS District Office for the Mid Murray Zone and Fire Rescue NSW** that addresses the following: • ongoing bushfire fuel management within the development footprint • site infrastructure plan • site access and internal road plan • water supply for firefighting • APZs and their continued maintenance • location of hazards that may impact firefighting operations • **activities that may be exempt on periods of Total Fire Ban days** • **the Grain Harvesting and Fire Safety guide (refer Appendix 3 of Appendix D.7)** • any such additional matters as may be required by the NSW RFS District Office for the Mid Murray Zone.
BF2	An **Emergency Management Plan** will be prepared in consultation with NSW RFS in accordance with Table 6.8d of *Planning for bushfire protection* (RFS 2019). It will be consistent with *A Guide to developing a bush fire emergency management and evacuation plan* (RFS 2014). A copy of the **Emergency Management Plan** will be provided to the local emergency management committee prior to the start of construction.
BF3	The development footprint will be maintained to the standard of an inner protection area (IPA) in accordance with the requirements of Appendix 4 of *Planning for bush fire protection 2019.* **A 10-m APZ will be maintained between the solar arrays and the perimeter fence.**
BF4	Buildings constructed within 100 m of bushfire prone vegetation will comply with Australian Standard *AS3959-2018 Construction of buildings in bushfire-prone areas* or the relevant requirements of the *NASH Standard – Steel framed construction in bushfire areas* (incorporating amendment A – 2015). New construction must also comply with the construction requirements in Section 7.5 of *Planning for Bush Fire Protection 2019*.

Table B.1 Summary of mitigation measures

ID	Mitigation measures
BF5	Access roads will comply with the property access road requirements as outlined in Table 7.4a of *Planning for bush fire protection*, with additional considerations as outlined in Section 6.2.3 of the bushfire assessment report.
BF6	The provision of water, electricity and gas will comply with *Planning for bush fire protection* (NSW RFS 2019). An adequate static water supply will be provided for firefighting purposes**, with the capacity to be determined as part of a Fire Safety Study**. **Static water tanks** will be located at the primary vehicle access point to the facility. **Other water supply requirements will be** determined in consultation with the **Argoon Rural Fire Brigade,** NSW RFS District Office for the Mid Murray Zone, and Fire and Rescue NSW at the detailed design stage. **In addition to static water supply requirements, two mobile water supplies with a minimum capacity of 500 L each (e.g. tanks on utes or standalone tankers) will be available on-site during construction and operations.**
BF7	**Spark Renewables will continue to consult with Argoon Rural Fire Brigade around specific weather conditions that may require works to temporarily cease during construction.**
BF8	**Spark Renewables will investigate options for firefighting training for construction and operational personnel, as well as opportunities to incentivise workforce participation in Argoon Rural Fire Brigade.**
Social	
S1	Develop and implement a post-approvals Social Impact Management Plan (SIMP). The SIMP would be adaptive and proportionate to project impacts. The SIMP would aim to: • Describe desired outcomes in social terms • Outline post-approval engagement activities, including timing and purpose • Describe a feedback procedure that will allow feedback and timely response throughout construction and operation • Define targets to monitor performance over time, identify monitoring responsibilities, and methods to share outcomes. The SIMP would include methods for engaging various stakeholders on their key interests to manage impacts, enhance benefits, and provide suitable mechanisms for project feedback. Key stakeholders include Murrumbidgee and Edward River Councils, landowners, broader community, First Nations stakeholders, services and utilities, local businesses, and local workforces. A publicly available complaints and grievance procedure will be included as part of the SIMP.
S2	Develop and implement an industry participation plan (IPP), which will identify: • the approach to opportunities for supply of goods and services, employment and training, including Aboriginal participation, as well as sustainable procurement • metrics to track goals and requirements for each identified opportunity • engagement with Murrumbidgee and Edward River Councils, local businesses and the Coleambally Chamber of Commerce to inform an understanding of opportunities and limitations for procuring local goods and services, as well as aspirations amongst local businesses • online and offline methods will be used to share and register interest in project opportunities.
S3	Develop and implement an Aboriginal participation plan (APP) in consultation with First Nations stakeholders to optimise local capacity and aspirations through targeted participation initiatives within the regional area. This would include setting targets for First Nations participation in the project workforce and procurement. Commitments will be measurable, and a report of progress to the local First Nations community will contribute to the measurement of outcomes.
S4	Undertake regular engagement (to be defined in the SIMP) with local businesses to advise of construction periods and the potential increase in trade or patronage. This will provide these businesses with an opportunity to plan as required to maximise benefits of increased demand, and its associated revenue.

Table B.1 Summary of mitigation measures

ID	Mitigation measures
S5	Identify measures in the SIMP to encourage the project workforce, particularly during the construction phase, to support and contribute to the local and regional community through local spending. This may be done through project provided vouchers at local businesses, and promoting the local offering, such as on notice boards at the accommodation facility.
S6	Engage with Murrumbidgee and Edward River Councils to identify potential service limitations and implement measures such as provision of on-site medical facilities and identification of preferred telehealth providers to reduce competition for GP services closest to the site.
S7	Prioritise use of the temporary worker accommodation facility and maximise recruitment of local residents for the construction workforce where possible.
S8	**Develop and implement an accommodation facility management plan in consultation with Murrumbidgee Council prior to commencement of construction to ensure the accommodation facility complies with relevant standards and requirements.**
S9	Develop and implement a comprehensive Community Engagement Plan and Worker Code of Conduct (as part of the SIMP) to address perceived privacy and public safety risk, including engagement with community services such as police and emergency services to familiarise relevant services with the project in case of an incident.
Economic	
ECON1	The employment of regional residents will be prioritised where they have the required skills and experience or training can be provided.
ECON2	Spark Renewables will participate, as appropriate, in business groups, events or programs in the regional community.
ECON3	Non-labour inputs to production will be sourced locally where local producers can be cost and quality competitive.
ECON4	A Community Benefit Fund will be established and will be managed through a VPA with Murrumbidgee Council.
ECON5	Lease payments will be paid to host landowners to provide an alternative drought proof income with potential flow-on benefits to the regional economy.
ECON6	Agricultural activities will continue during project operations and pre-project agricultural production will be reinstated following project decommissioning.
Waste	
WAS1	All waste will be managed in accordance with the requirements of the NSW *Protection of the Environment Operations Act 1997* and the NSW *Waste Avoidance and Resource Recovery Act 2001*.
WAS2	All wastes will be classified, stored and handled in accordance with the *Waste classification guidelines – part 1: classifying waste* (EPA 2014)
WAS3	Waste will be managed in accordance with the waste hierarchy, in order of preference: • reduce waste production • recover resources dispose of waste appropriately.
WAS4	The waste management plan will be implemented during construction, operation and decommissioning.
WAS5	As part of decommissioning, Spark Renewables will attempt to recover/recycle all dismantled and decommissioned infrastructure and equipment.
WAS6	General waste bins will be provided for disposal of materials that cannot be cost-effectively recovered/recycled.
WAS7	Manufacturers, distributors and installers of PV modules that are members of product stewardship schemes will be selected where possible.

Table B.1 Summary of mitigation measures

ID	Mitigation measures
WAS8	Manufacturers and distributors of PV modules and associated infrastructure will be contracted, where possible, to minimise non-recyclable packaging and maximise recyclable packaging components.
WAS9	Waste will be segregated into individual waste streams on-site, where possible, prior to transportation to waste management facilities.
WAS10	Recyclable materials will be sent to appropriate recycling facilities, where possible, to minimise waste sent to landfill.
WAS11	Local councils will be consulted to ensure impacts on local waste management facilities are minimised as far as practicable.
WAS12	Waste avoidance and reuse will be prioritised when developing and implementing waste management strategies, including 'second-life' options.
WAS13	Waste management providers that specialise in recycling end-of-life PV modules and associated infrastructure will be selected where possible.

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