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Ref: 101  
28 October 2025

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## **Middlebrook Solar Farm – SSD-10455 Traffic and Transport Assessment**

Amber has been asked to provide a review of the traffic and transport matters associated with the proposed modification to the approved Middlebrook Solar Farm.

### **1. Project and Modification Background**

#### **1.1 General Changes**

The Middlebrook Solar Farm is a NSW State Significant Development (SSD-10455) which received Planning approval on 11 November 2024. The Project includes the construction, operation and decommissioning of a ground-mounted PV solar array which would generate approximately 320MW (AC) up to approximately 450MW (DC).

Middlebrook Solar Farm Pty Ltd as trustee for the MSF Project Trust (the Applicant) is preparing a Modification application under Section 4.55 1A of the Environmental Planning and Assessment Act 1979. It seeks to facilitate the following changes to the approved Project:

- Minor increases to the consented Development Footprint to:
  - Allow for the removal of a host landowner residence, and expand the solar array in this area (R2).
  - Expand temporary construction laydown areas, improving construction efficiency.
  - Expand the impact area for New England Highway / Middlebrook Road upgrades, to improve constructability.
- Change in security fencing design for substation to meet TransGrid requirements.
- Change to Goonoo Bridge assessment approach (Level 2 instead of Level 3), reflecting more recent assessments for this bridge.
- Increase of assumed substation infrastructure height (inclusion of new 30m poles).
- Relocation of an existing private landholder access within the consented Development Footprint, to allow them to access their property independent of the solar farm.
- Increase in BESS capacity and BESS area to:
  - 1606.5 MWh nameplate capacity (1450 MWh delivery capacity);
  - 4.5+ hours duration at the point of connection.

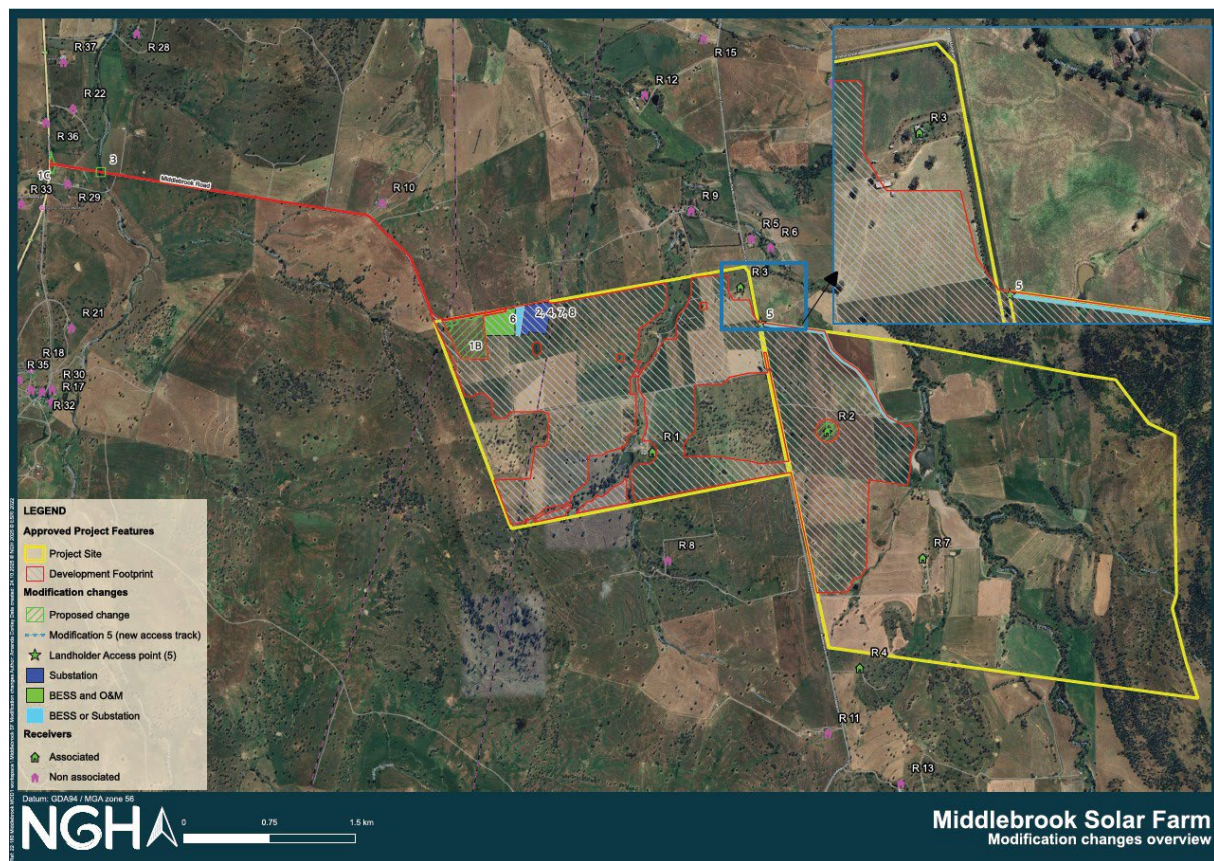
- Change in number and size of transformers at substation from two to three.
- Inclusion of blast walls around the transformers (noting this is to be confirmed at detailed design).
- Change to the definition of heavy vehicle requiring escort.

## 1.2 Traffic Matters

From a traffic and transport perspective the key changes include:

- An increase in the number of heavy vehicles requiring escort during construction from 6 to 12 as a result of some on-site components getting smaller but requiring more of them (e.g. the transformer). It is noted that it is proposed to change the definition of these vehicles to reflect the recent approach on similar projects.
- A new farm access is proposed in the location outlined within Figure 1. The access would not be used by Project traffic as its intended use is to allow the continued operation of the surrounding farmland.

Figure 1: Proposed Farm Access Location



Source: NGH

It is emphasised that:

- The modification does not propose an increase to the number of vehicle movements assessed as part of the previous Traffic Impact Assessment and as approved within the Development Consent. The previous assessment provided a conservative estimate of the number of traffic movements and even with the proposed changes to the Project the traffic volumes will remain within the permitted parameters. As a result, no assessment is required in relation to the traffic volumes associated with the modification as they have already been assessed as part of the approved Project.
- Whilst the number of heavy vehicles requiring escort is proposed to be increased, the size of the vehicles is expected to decrease and will be within the design parameters assessed as part of the



previous Traffic Impact Assessment. Therefore, no swept paths have been prepared for heavy vehicles requiring escort as part of this assessment.

- No change is proposed to the Strategic Design of the New England Highway / Middlebrook Road intersection.

Based on the above, the modification represents a minimal change to traffic and transport matters of the project with no increase in general traffic volumes and no increase to the size of vehicles previously assessed. The following provides a review of the increase in heavy vehicles requiring escort and the proposed farm access which are the only change to the traffic matters associated with the Project.

## 2. Heavy Vehicles Requiring Escort

### 2.1 Definition

Oversize/Overmass (OSOM) vehicles are governed by the National Heavy Vehicle Regulator (NHVR). OSOM vehicles are vehicle configurations which exceed general mass or dimension limits and are classified as *Class 1 vehicles* under the Heavy Vehicle National Law.

There are a range of Class 1 OSOM examples, including<sup>1</sup>:

- agricultural machines such as harvesters and grain augers,
- vehicle combinations carrying large indivisible items like mining and construction vehicles, and
- special purpose vehicles like mobile cranes, concrete pump trucks, and drilling rigs.

Given the variety of OSOM vehicles, there are a range of risk profiles for travel on the road network with management requirements increasing with the vehicle combination size and mass.

In NSW, the management requirements are outlined in the *National Heavy Vehicle Regulator's NSW Class 1 Load Carrying Vehicle Operator's Guide*. The guide outlines the requirements for pilots and escorts, which generally only apply to vehicle combinations exceeding 3.5 metres in width and or 26 metres in length but depend on precise details including exact size, mass, time of travel, and route.

More detail related to pilots and escorts is available in *Additional Access Conditions Oversize and Overmass Heavy Vehicles and Loads* (TfNSW, October 2022)<sup>2</sup>. Section 3.2.1 of this guide shows the way in which the requirements for pilots and escorts increase with vehicle size. The table shows how the requirements for pilots and escorts increase for combinations exceeding 3.5 metres in width and 26 metres in length as the road safety risks increase.

The relevant conditions of the Development Consent aim to limit the movement of high-risk vehicles to the site. However, the current wording of the condition covers an extensive range of vehicles, many of which are not high-risk. To address this issue, it is recommended that references to “heavy vehicles requiring escort” in the Development Consent be changed to “High-risk heavy vehicles requiring escort” with the following definition:

*A vehicle under escort identified as “high risk” as defined in Table 1 of the TfNSW Fact Sheet for Transport Management Plan*

Other lower risk OSOM vehicles are still defined as heavy vehicles and are managed under other relevant conditions. This approach is consistent with other similar renewable projects in NSW and would not be expected to result in any road safety risks.

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<sup>1</sup> <https://www.transport.nsw.gov.au/operations/roads-and-waterways/business-and-industry/heavy-vehicles/road-access/restricted-access-1>

<sup>2</sup> <https://www.transport.nsw.gov.au/system/files/media/documents/2022/osom-additional-access-conditions.pdf>



## 2.2 Vehicle Movements

OSOM vehicles will be required to deliver larger plant to the site such as the transformers. These vehicles are expected to exceed the Class 1 mass and/or dimension requirements and would be classified as heavy vehicles requiring escort based on the Development Consent definition (proposed to be classified as high-risk heavy vehicles requiring escort).

These vehicles are subject to Transport Management Plans (TMPs) which provide a comprehensive planning and execution focus to ensure that vehicle movements are carried out in a safe and responsible manner with reduced impact on other road users and road infrastructure. As their definition suggests, they also require pilot vehicle escort. They also typically travel outside of the peak periods and would be subject to mitigation measures as outlined within the previous Traffic Impact Assessment.

It is proposed to increase the number of high-risk heavy vehicles requiring escort during construction from 6 to 12 as a result of some on-site components getting smaller but requiring more of them (e.g. the transformer). It is emphasised that whilst the number of high-risk heavy vehicles requiring escort is proposed to be increased, the size of the vehicles is expected to decrease and will be within the design parameters assessed as part of the previous Traffic Impact Assessment. Therefore, no swept paths have been prepared for high-risk heavy vehicles requiring escort as part of this assessment.

The previous assessment provided within the Traffic Impact Assessment shows that the route is suitable to accommodate the high-risk heavy vehicles requiring escort. It is recommended that any OSOM movements be timed so they do not coincide with other OSOM vehicles within the surrounding area to limit the impact to the road network, which can be undertaken as part of the permit application. Given the proposed increase represents a minimal change when considering the length of the construction period, and the vehicles are subject to specific mitigation measures determined as part of the future permit application, it is considered that the increase is acceptable and would have a negligible change to the operation of the surrounding road network.

## 3. Farm Access

The modification proposes a new farm access on Middlebrook Road in order to allow the continued operation of the surrounding farmland. The access itself is expected to be built to accommodate the farm vehicles expected to utilise the gate and would be confirmed by the owner of the property. This assessment instead focuses on the suitability of the location of the access and provides a sight distance assessment to confirm that vehicles would be able to safely enter and exit the access.

*Austrroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections* specifies the Safe Intersection Sight Distance (SISD) as the minimum sight distance which should be provided along the major road at any intersection. Table 3.1 of the guide specifies the SISD required for various design speeds. The 85th percentile speed recorded on Middlebrook Road was 75km/hr based on the traffic count data provided by Tamworth Regional Council. Accordingly, a design speed of 80km/hr has been adopted which results in an SISD requirement of 181m. It is noted that this reflects the assumptions used in the previous Traffic Impact Assessment when assessing the Project accesses on Middlebrook Road.

The sight distance available at the access is shown within Figure 2. The figure confirms that the sight distance exceeds the Austrroads requirements given the straight and flat alignment of Middlebrook Road. As such, the location of the access is considered suitable with the layout of the access to be confirmed by the owner of the property.

**Figure 2: Sight Distance Assessment – Proposed Farm Access**



#### 4. Conclusion

Amber has reviewed the proposed traffic and transport matters associated with the proposed modification to the Middlebrook Solar Farm. The modification results in a number of minor changes to the size, scale, and layout of the Project but ultimately results in few changes to the traffic and transport matters of the Project. Key matters that do not change include:

- No change is proposed to the number of light and heavy vehicles expected to access the Project as permitted within the Development Consent.
- No increase is proposed to the maximum size of heavy vehicles or heavy vehicles requiring escort (now proposed to be high-risk heavy vehicles requiring escort) accessing the Project.
- No changes are proposed to the existing Project accesses.

As such, no assessment has been undertaken for the traffic capacity of the surrounding road network and no swept paths have been prepared for heavy vehicles and high-risk heavy vehicles requiring escort.

The key changes that have been assessed are:

- An increase in the number of high-risk heavy vehicles requiring escort during construction from 6 to 12 as a result of some on-site components getting smaller but requiring more of them (e.g. the transformer). It was concluded that:



- The change in definition to high-risk heavy vehicle requiring escort is consistent with other similar renewable projects in NSW and would not be expected to result in any road safety risks.
- The previous assessment provided within the Traffic Impact Assessment shows that the route is suitable to accommodate the high-risk heavy vehicles requiring escort.
- Given the proposed increase represents a minimal change when considering the length of the construction period, and the vehicles are subject to specific mitigation measures determined as part of the future permit application, it is considered that the increase is acceptable and would have a negligible change to the operation of the surrounding road network.
- A new farm access is proposed in the location outlined within Figure 1. The access would not be used by Project traffic as its intended use is to allow the continued operation of the surrounding farmland. It was concluded that:
  - The access itself is expected to be built to accommodate the farm vehicles expected to utilise the access and would be confirmed by the owner of the property. This assessment instead focuses on the suitability of the location of the access and provides a sight distance assessment to confirm that vehicles would be able to safely enter and exit the access.
  - The sight distance available at the access exceeds the Austroads requirements given the straight and flat alignment of Middlebrook Road.

Accordingly, based on the assessment above, the proposed modification represents a minimal change to the traffic and transport matters of the Project. The change in definition and increase in high-risk heavy vehicles requiring escort can be readily accommodated on the road network and the farm access is located in a suitable location to allow safe vehicle movement to/from the road network.

If you have any questions please feel free to contact the undersigned.

Yours sincerely  
**Amber Organisation**

Michael Willson  
**Director**