Helen Mulcahy
Director
Independent Planning Commission
201 Elizabeth Street, Sydney, NSW 2001

7th February 2020

Dear Ms Mulcahy,

New England Solar Farm (SSD 9255)

UPC has prepared a response to the questions received from the Independent Planning Commission on 31 January 2020. These responses are presented at the bottom of this letter.

If you have any questions, please do not hesitate to contact me.

Kind Regards

Tim Kirk
Project Development Manager
UPC Renewables

Question number	IPC question (31 January 2020)	UPC response
1	Whether temporary height poles, which are comparable to the height of the proposed solar panels, could be installed as a visual reference for the site inspection on 12 February 2020?	UPC will install visual reference poles at the two locations proposed by the IPC prior to the IPC site inspection on 12 February 2020. The location of the poles and a proposed site tour map are attached as *Attachment A – Proposed Site Tour map*.
2	As discussed in the meeting, the Applicant is seeking approval for two solar panel design options, A and B. What is the difference between the solar array development footprint of options A and B?	Option A and B depict a two panels in portrait (2P) and a one panel in portrait (1P) tracker configuration, respectively. While the New England Solar Farm will likely use a 1P configuration for the design of the plant, a 2P configuration is still under consideration by UPC and it therefore may be utilised. UPC may also utilise a combination of the 1P and 2P configurations across the project site. For the purposes of the visual impact assessment a 2P configuration has been considered, which represents the maximum tracker height of the panels when fully tilted on the trackers, based on the technology under consideration by UPC. The land area required for Option A and B would be very similar with only minor differences based on the different geometry of the two systems requiring amendment to the layout of panels. An important consideration in solar farm design is Ground Coverage Ratio (GCR). We would expect this to remain constant between the two layouts, meaning any change in land area required would be negligible.
3	Can you confirm the solar array pylon spacing and depth by providing drawings of the typical layouts?	An indicative technical drawing depicting the typical pylon spacing for each row of trackers, the pitch (distance between each tracker) and the maximum tracker tilt heights for a 2P and 1P tracker structure is provided for illustrative purposes as *Attachment B – Tracker Dimensions*. In terms of the typical embedment depth, this will be determined once geotechnical investigations have concluded for the project site and structural design of the piles and trackers has occurred.

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		However, typically this depth ranges between 1.5 to 2.5 meters. The embedment depth of piles supporting a 2P tracker configuration will typically be at the higher end of this depth range, and conversely for a 1P tracker configuration, the typical embedment depth will be at the lower end of this range. It is also possible that if any areas with more reactive soils are encountered, the embedment depth will exceed this range.
4	Can you indicate what proportion of the workforce will be skilled and unskilled labour?	The exact proportion of the workforce that will be skilled and unskilled will not be known until the construction contractor commences its hiring program. Notwithstanding, UPC's preferred construction contractor has provided an indication of expected proportions based on its experience constructing large-scale solar farms in rural Australia. The following proportions of skilled and unskilled roles is expected during construction for the project: • Qualified (University or TAFE qualified (engineers, electricians, etc)): 35% • Specialised trained (machine operator, mechanical mounter, etc): 25% • Unskilled: 40% Training for many of the specialised trained roles can be undertaken locally to upskill potential employees to fill these roles.
5	Can you provide an estimate of the likely cost to remove all infrastructure as described in the EIS and decommission the Project in order to return the land to its pre-existing agricultural use. Where possible, provide an estimate of the volumes of waste material outlining any	It is difficult to estimate the net decommissioning and rehabilitation costs that may occur in thirty years, given that scrap value costs vary over time, and there is some uncertainty in labour and logistics costs. Notwithstanding this, UPC expects that the net cost of decommissioning and rehabilitation of the New England Solar Farm site will be to no more than 10% of the capital value of the plant. For illustrative purposes, when considering the value derived from scrap materials against the cost of labour, machinery and disposal, the project

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	opportunities for reuse and recycling?	could be decommissioned and rehabilitated for a net cost of approximately $39 million. The assumptions behind this indicative estimate are: 1. Manpower: estimated cost of $19.5m. This category of costs is attributed to labour and machinery hire for the dismantling and removal of all infrastructure on the site which includes PV modules, trackers, O&M building, and office facilities. The cost to regrade and revegetate the site is also considered under this category. 2. Recycling and disposal: estimated cost of $4.5m. There is an approximate scrap metal value of $4.6 million, which is offset by the cost to recycle panels, dispose of concrete, and package these materials for transportation. 3. Transport and logistics: estimated cost of $14.7m. Project managements costs and transportation costs to move project-related materials off the site to the relevant treatment facility have been accounted for. 4. Infrastructure below 500 millimetres is to remain in-situ following project decommissioning, as described in the EIS. If removal of this infrastructure is required, while there will be an increase in costs for excavation and transportation, there will be considerable value from the salvaged copper and aluminium power cables. An overview of the main equipment and materials to dispose or recycle during decommissioning the plant is outlined below.

<table>
<tr><th>Question number</th><th>IPC question (31 January 2020)</th><th>UPC response</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Equipment/Material</th><th>Quantity</th></tr>
<tr><td>PV modules</td><td>2,000,000</td></tr>
<tr><td>Piles</td><td>300,000</td></tr>
<tr><td>Torque tubes</td><td>25,000</td></tr>
<tr><td>Security fencing</td><td>50 km</td></tr>
<tr><td>Concrete</td><td>2000 m3</td></tr>
</table>

PV modules are highly recyclable, with a high proportion of the component materials such as glass, aluminium and semiconductors able to be recovered and reused. The decommissioning costs have assumed that the PV modules will be delivered to a panel recycling facility.

Piles, torque tubes, and security fencing are all recyclable steel. The project will likely send these items to a steel recycling facility for the metal to then be reused in other applications.

There are opportunities to recycle concrete used for the solar farm. Concrete can be crushed into smaller pieces, which has many applications including use as the lowest layer in a road, or as dry aggregate for brand new concrete. The costs for decommissioning has assumed the recycling of concrete.</td></tr>
<tr><td>6</td><td>In relation to condition 11 – Construction, Upgrading and Decommissioning Hours, could you please provide a list of the activities that could be undertaken outside of the normal work hours that would be inaudible at non-associated receivers?</td><td>Site preparation works and pile driving and foundations (as described in Table 6.1 of Appendix J of the EIS – refer Attachment C) have the most potential for noise impacts given that a number of plant are likely to be used simultaneously, their noise emission levels and duration and will be excluded from outside of standard construction hours.

UPC proposes to undertake the remaining activities identified in Table 6.1 of Appendix J of the EIS outside of standard construction hours (refer Attachment C).

The noise modelling presented in Appendix J of the EIS is considered conservative as it is assumed</td></tr>
</table>

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		equipment is operating simultaneously and at the nearest locations in the development footprint to the relevant residential dwellings. Additional refinements to the development footprint have also increased the distance to the closest non-project related residential dwelling (ie N1). UPC is confident that the impacts to the noise amenity at each receiver location will be negligible and therefore propose noise monitoring during construction activities outside of standard construction hours. Further to the noise monitoring program, UPC will also commit to the following: - mechanical works will not occur within 500 m of any identified sensitive receptors; - consultation will continue with neighbouring residents with the potential to be affected by the extended work hours; and - UPC or its nominated construction contractor will respond to and resolve all complaints received from neighbouring residents within a timely manner. If the construction contractor engaged by UPC elects to construct outside of standard construction hours, UPC proposes noise monitoring at the closest sensitive receptors during these periods for the duration of construction to ensure that LAeq15min noise levels from construction activities do not exceed the background noise level by more than 5 dB(A) or an LAmax level of 45dB(A), which is consistent with the *Interim Construction Noise Guideline* (DECC 2009). If monitoring at the receptor (ie dwelling) is not practically feasible, monitoring will be undertaken at the closest practical point (eg property fence lines), ensuring that a conservative approach is taken. Noise monitoring will also account for local environmental conditions such as prevailing winds and topography of the landscape.

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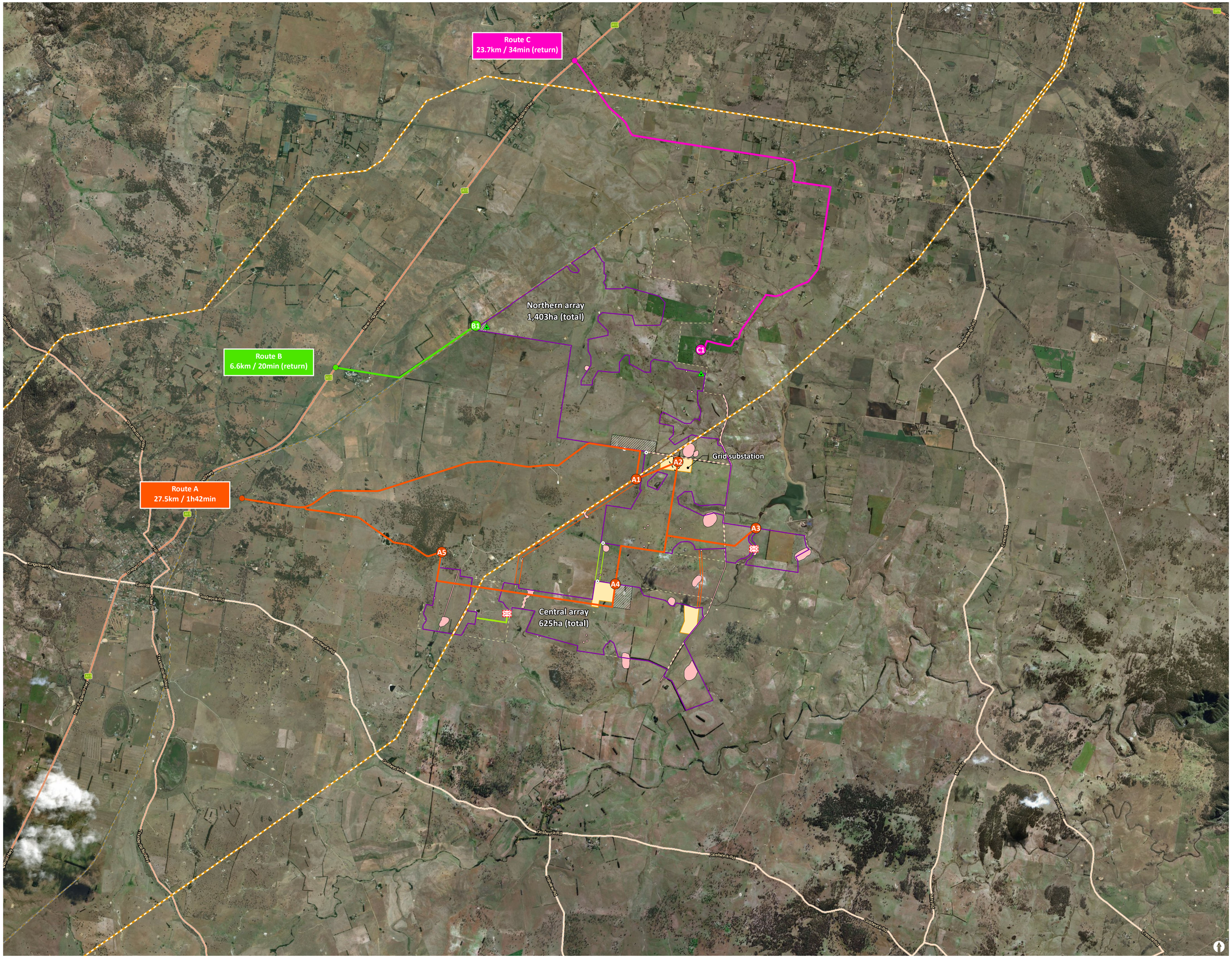
		This approach will allow construction of the project to continue outside of standard construction hours periods, thus helping to keep the total duration of the construction period to as short a timeframe as possible, while also ensuring that noise generated by the project does not impact neighbouring residents.

Attachment A – Site tour map



Legend

- Site access point
- Solar array extent
- Substation and BESS (EIS extent)
- Development constraints
- Potential creek crossing
- Laydown area or site compound
- Rail hardstand
- Transmission Easement
- Site access or underground cabling
- Site access or transmission easement
- Site access corridor
- Existing 330kV transmission
- Height simulation

Notes

1. Project features shown are preliminary only and subject to change.

2. Route times shown include 10mins spent at each waypoint location.

3. Total distance and time for return trip (A1 -> A1) is 138km / 4h38m.

Locality

Project

New England Solar Farm

Title

IPC Site Tour

Drawing no. NESF-015

Date 4/2/20

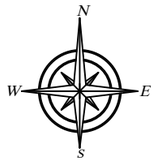
0 500 1,000 1,500 2,000 2,500 m

1:35,000 @ A1

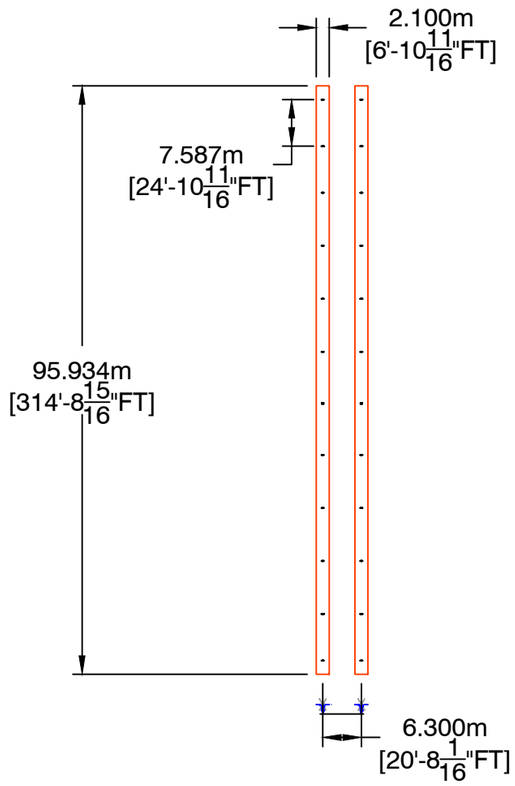
GDA 1994 MGA Zone 56

UPC Renewables™

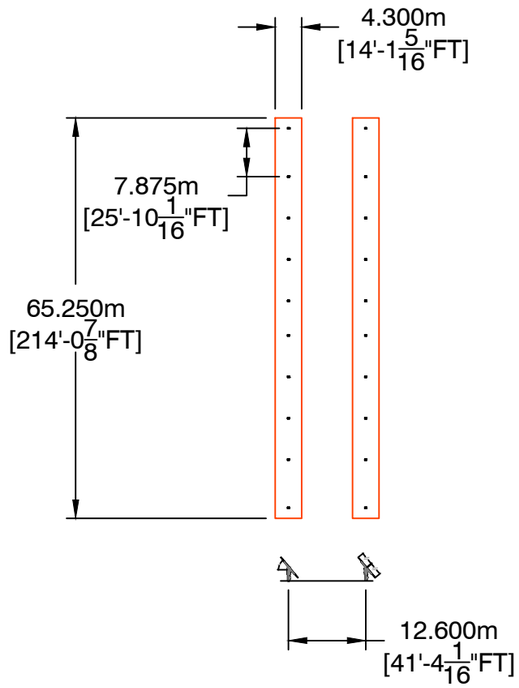
Attachment B – Tracker dimensions



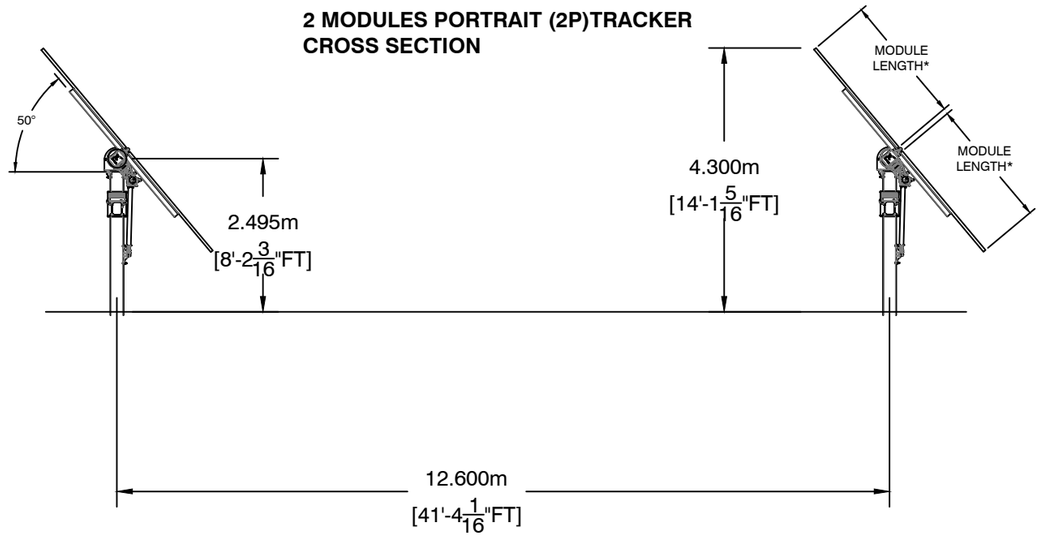
— 1X87 MODULES PORTRAIT HORIZONTAL TRACKER WITH (1P TRACKER)



— 2X56 (102) MODULE PORTRAIT HORIZONTAL TRACKER (2P TRACKER)



2 MODULES PORTRAIT (2P)TRACKER CROSS SECTION



1 MODULES IN PORTRAIT (1P)TRACKER CROSS SECTION

A	PRELIMINARY TRACKER DIMENSIONS	04/02/2020	VK	EOM
REV/REV	MODIFICATIONS/MODIFICACIONES	DATE/FECHA	DRAWN/DIBUJADO	CHECKED/COMPROB.

	PROJECT/PROYECTO: NEW ENGLAND SOLAR FARM	
CUSTOMER/CLIENTE:	UPC	PROJECT NUMBER/Nº PROYECTO: 685.19007
LOCATION/SITUACIÓN:	Uralla , NSW, Australia Latitude 30.6° S Longitude 151.61° E	
TITLE/TÍTULO:	Single Axis Horizontal Tracking System Preliminary Dimensions	DRAWING NUMBER/Nº PLANO:
DATE/FECHA:	04/02/2020	SCALE/ESCALA: na

Attachment C – Table 6.1 of the noise and vibration impact assessment (EMM 2018)

Table 6.1 Typical construction plant and equipment

Stage	Plant and equipment items	Quantity (worst case per 15-min period)[1]	A-weighted sound power level, dB
Site preparation works	Dump truck	2	108
	Grader	1	108
	Roller	1	116
	Compactor	1	112
	Crane	1	106
	Forklift	1	106
	Water truck	1	96
	Generator	2	98
Pile driving and foundations for substations, BESS(s) and the construction accommodation village (if required)	Piling rig	1	115[2]
	Road truck (deliveries)	1	103
	Crane	1	106
	Excavator	1	104
	Concrete truck (idling/driving)	1	105[3]
	Concrete truck (slumping)	1	113[3]
	Light vehicle	2	76
Underground cabling	Road truck (deliveries)	1	103
	Cable trenching and laying equipment	1	100
	Light vehicle	2	76
PV modules full installation	Powered hand tools	1	97
	Compressor	1	108
	Pneumatic wrench	2	104[2]
	Generator	1	98
	Crane	1	106
	Road truck (deliveries)	1	103
	Light vehicle	2	76
Installation of O&M buildings and the construction accommodation village (if required)	Crane	1	106
	Forklift	1	106
	Light vehicle	2	76
	Road truck	1	103
	Generator	1	98
Removal of temporary site compound and construction accommodation village (if required)	Crane	1	106
	Forklift	1	106
	Light vehicle	2	76
	Road truck (deliveries)	1	103

Notes: *1. Plant and equipment items have been assumed to operate continuously in any 15-minute period unless otherwise specified.*

2. These items are assumed to operate for 50% of the time in any 15-minute period.

3. The concrete truck is assumed to drive/idle on-site for 80% of the time and slump for 20% of the time in any 15-minute period.

4. Standard hours: Monday to Friday 7 am to 6 pm, Saturday 8 am to 1 pm and no construction work on Sundays or public holidays.