MEMORANDUM

TO	Angus Witherby, Murray Amos
FROM	Mark Vile
DATE	5 December 2018
SUBJECT	**Proposed concrete sleeper manufacturing facility | Pre-lodgement project brief**

Austrak Pty Ltd has submitted a tender to supply concrete railway sleepers for Inland Rail (Australia). The intention is to secure sleeper supply from 2019-2021. If Austrak Pty Ltd is successful in securing this tender, it proposes to manufacture the concrete railway sleepers on three potential sites within the Moree Plains Shire (as shown in Attachment 1), with Site 1 being the preferred site.

Project Summary

The proposed Concrete Sleeper Manufacturing Facility would include the following key components:

- Development and operation of a concrete batching facility.
- Sleeper mould handling area.
- Hardstand for sleeper storage and transport (road and rail).
- Access road, offices and amenities, carpark and other associated components.

The sleepers would be delivered by road and rail, and therefore access to existing rail and major roads is preferable. A conceptual facility layout will be provided prior to the pre-lodgement meeting.

Inland Rail request for proposal indicates a supply of 1.3 million railway sleepers is required over the 3 year period, with the potential for an additional year/s extension.

The development would employ approximately 36 direct staff and 6 indirect staff. The Facility will be proposed to operate up to 24 hrs per day Monday to Friday, with the possibility of some weekend works during peak periods.

Key environmental factors are considered to be traffic, noise and dust emissions. Each of these potential impacts has been considered and a summary of the likely impacts and mitigation measures follow.

Further details are provided in the following table.

Project Element	Description
Concrete Production	• A concrete batching plant would be developed onsite. • Cement will be delivered by pressurised road tanker and discharged directly into a storage silo. • The cement is transferred via a sealed air-slide conveyor delivery system to the cement weigh hopper. • Sand and aggregates are received in a damp condition (to minimise dust generation on site) and discharged direct from delivery trucks onto ground storage. • Aggregates are then transferred into the adjacent material bins of the batching plant material silos by mobile plant. • Dust created from ground store aggregates will be controlled by atomised water spray. • All the materials are mixed in a sealed pan mixer and discharged directly into a hopper. • The mixer pan is fitted with a discharge and bag filter to suppress the dust during the initial material charging process. • At the end of a bed production cycle, the pan mixer and hopper are washed down in a prepared area where the waste material is collected and stored. • The storage area will dry out the slurry and then be frequently carted from site with an arrangement via a local subcontractor. • The process water is recycled back into the batching and cleaning processes.
Concrete Sleeper Manufacturing Process	• Prestressed concrete sleepers are manufactured upside down in steel moulds in a long continuous line. • Prestressing cables are rolled out over the moulds and the anchor plates placed into the anchorage points at each end of the bed. • The cables are stressed by a hydraulic ram to a predetermined tension. • The moulds are raised into position and the bed is then ready for placing the concrete. • Steel moulds are lowered and the tension on the steel prestressing cables is released. • After removal of the sleepers from the prestressing bed, the moulds are prepared for the next concrete cast. • Any residue is removed with a broom, a releasing agent is sprayed onto the inside surface of the mould and the cast-in fittings are placed by hand and locked in position. • The cast sleepers are transported in one long string to a saw located at the end of the building. • A saw cuts through the concrete and the steel cables to separate the individual sleepers. • After separation, the sleepers are turned upright, inspected and transferred to the storage yard by forklift truck. • Sleepers are stored at 12 sleepers high by 12 wide (approximately 3.5m high)

<table>
<tr><th>Project Element</th><th>Description</th></tr>
<tr><td>Material Deliveries</td><td>The required raw material, finished product, and delivery methods are provided below based on 1660 sleepers/day.
<table>
<tr><th>Material</th><th>Tonnes / week</th><th>Delivery method</th><th>Deliveries / week</th></tr>
<tr><td>Sand</td><td>700</td><td>Dog & Trailer</td><td>16</td></tr>
<tr><td>Aggregates</td><td>780</td><td>Dog & Trailer</td><td>18</td></tr>
<tr><td>Cement & Flyash</td><td>405</td><td>B-Double Road pressure tanker</td><td>10</td></tr>
<tr><td>Prestressing wire</td><td>60</td><td>B-Double Road truck</td><td>2</td></tr>
<tr><td>Sleeper fittings</td><td>30</td><td>B-Double Road truck</td><td>1</td></tr>
<tr><td>Finished sleepers</td><td>2366</td><td>B-Double Truck</td><td>59</td></tr>
<tr><td>Finished sleepers</td><td>8256</td><td>43 Wagon Train</td><td>1</td></tr>
<tr><td>Total</td><td>12,597</td><td>Total</td><td>106</td></tr>
</table></td></tr>
<tr><td>Chemical Storage</td><td>In addition to the main materials listed in the table above, smaller quantities of various chemical products will be stored and used onsite, including:
Mould release agent – three intermediate bulk containers stored on site
Concrete Admixtures – two 10,000 L stored on site
Hydraulic oils – 200 L stored on site
Diesel fuel – 2 000 L bulk storage</td></tr>
<tr><td>Utility Requirements</td><td>Water:
All waters in the process are recycled and reused elsewhere in the production process and high strength concrete uses a smaller amount of water to conventional concrete mixes.
Potable water requirements for the water recycling system, wash-down and batching plant is approximately 16,000 litres per day
A water storage tank may be installed to manage the peak water demands.
Electricity:
The batch mixer and saw are driven by 55 kW motors.
The remaining motors on small equipment items are less than 15 kW in size.
The maximum power demand for the sleeper facility is approximately 500 kVA.</td></tr>
</table>

Project Element	Description

Environmental Factors	**Transport and traffic**
	• Truck movements are provided in the table above (Material Deliveries).
	• In addition to truck movements there would be light vehicle movement (mainly for staff), at approximately 32 vehicle movements per day.
	Air quality
	• There are no odorous compounds used at the plant or generated during the manufacturing process.
	• The major potential source of air emissions would be in the form of dust from raw materials, principally sand, cement and aggregate.
	• These materials will be delivered in bulk and transferred from the delivery vehicle onto ground storage and then transferred into hoppers. Sand and aggregate will be purchased damp to minimise dust emissions.
	• Dust created by the saw will be captured by a dust extraction unit and recycled back into the manufacturing operation or sent to land fill.
	• Cement will be delivered in pressurised bulk tankers and pushed into the silo using air. The air exhaust from the silo will be vented to atmosphere through a self-cleaning bag filtration unit.
	Noise
	• Noise levels at a similar facility are as per below (note these are levels close to the equipment, not at sensitive receptors):
	  ○ Wire jenny and drive stations – 85dB(A) 1m outside the building.
	  ○ Saw – 75 dB(A) 10 m from the saw. (Note: acoustic treatment will reduce noise from saw by at least 10 dB(A)).
	  ○ Casting machine –81 dB(A) at 1 m from the building.
	  ○ Batch plant – 67 dB(A) at 1 m from the plant is appropriate.
	Waste
	• Relatively low levels of waste are produced at sleeper manufacturing facilities.
	• Solid waste will consist of material from concrete manufacturing and cutting operations and scrap steel.
	• Concrete waste will amount to approximately 25 m3 per week. This will consist of excess concrete from the sleeper casting operation as well as off-specification and unsaleable products.
	• Concrete waste will be removed from site in bins and either returned to the aggregate quarry for crushing and reuse or sent to a landfill to be used for clean solid fill.
	• Scrap steel from the pre-stressing cable will be collected and sold to a scrap metal recycler. This will amount to less than 0.5 tonnes per week.
	Hydrology
	• The site would be designed in accordance with relevant guideline and Council requirements to manage flooding and potential water contamination.

ATTACHMENT 1

Possible Facility Locations (Site 1 is currently preferred)