Australian Government
Department of Defence

AECOM

Fulton Hogan

R8129
COCOS (KEELING) ISLANDS AIRFIELD UPGRADE PROJECT

Environmental Commissioning Plan

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Document Control

The revision number is included at the bottom of each page. When revisions occur, the entire document must be issued with the revision number updated accordingly for each owner of a controlled copy.

Attachments / Appendices to this report are revised independently of this report.

Revision History

Rev	Reviewed By	Endorsed By	Date	Description / Summary of Changes
0	[redacted]		02/04/2025	Initial Preparation

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1 Introduction

To support the delivery of the Cocos Keeling Islands (CKI) Airfield Upgrade Project, enabling infrastructure at the Quarantine Station (Q-Station), including asphalt and foamed bitumen basecourse manufacturing, bitumen blending and concrete batching facilities, are required. A Works Approval for the Prescribed Premises (Categories 35 and 36) require an Environmental Commissioning Plan (ECP, this plan) to support Time Limited Operations.

Environmental commissioning is testing undertaken to validate actual environmental performance relative to predicted environmental performance and includes testing of the integrity and performance of plant environmental controls such as baghouses and filters. Subject to Works Approval conditions, higher than normal emissions may occur until plant is stabilised and optimised for performance.

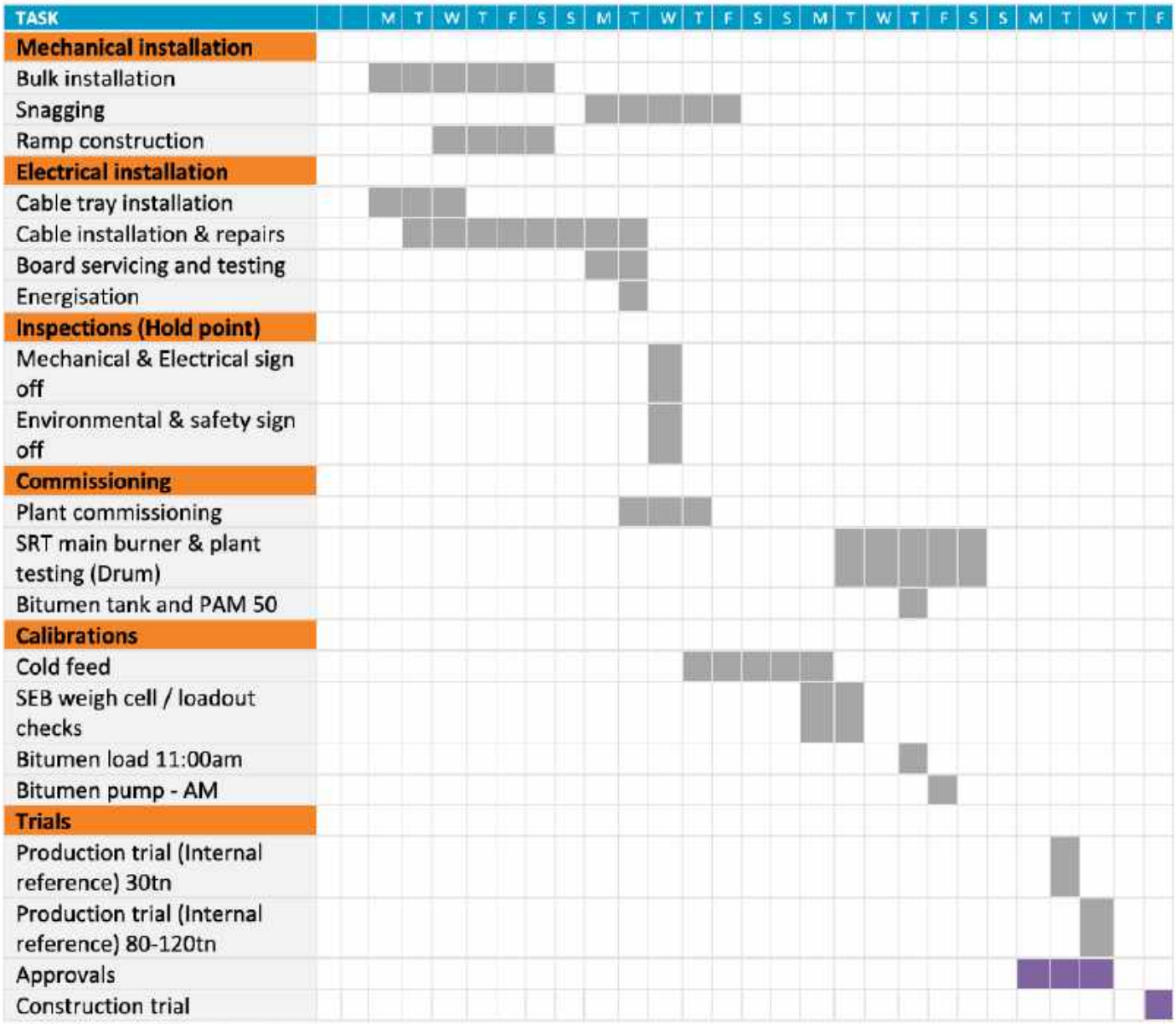
This ECP focuses on the asphalt and foamed bitumen basecourse manufacturing and bitumen blending plants, as other plant within the Prescribed Premise do not require specific Environmental Commissioning.

2 Commissioning Schedule

Post plant mobilisation to CKI, placement, and connection of the asphalt plant modules, a commissioning process will be followed. The asphalt plant configuration consists of eight (8) trailers, all of which are independent units and as part of the installation process are required to be mechanically and electrically connected.

- First stage involves progressively testing and commissioning all elements of the system
- The second stage involves dry commissioning where the plant components are run up without material flowing through the plant. During dry commissioning, each module will be tested for functionality.
- The process is expected to take between 3-4 weeks for the plant to be fully commissioned, with trials undertaken confirming plant optimization.

Table 1 illustrates the approximate commissioning schedule.



Commissioning will be considered complete when:

- All components have been tuned and the plant runs in a stable and reliable manner
- No excessive emissions are recorded from stack validation testing
- Commissioning Checklist is verified and complete (Refer to Asphalt Plant Commissioning Checklist in **Appendix A**).

3 Processes and Key Inputs / Outputs

3.1 Asphalt manufacturing (Category 35)

3.1.1 Overview

Fulton Hogan currently has two identical asphalt plants of which one (Hulk1) will be utilised at the Premises. The plant consists of 8No. trailers that will be transported via ship to CKI and then transferred onto a barge and moved to the Project Materials Offloading Facility (MOF) at Rumah Baru Port. Once the barge is moored at the MOF, each trailer will be connected to a cab unit and driven off the barge to the Q-Station.

The mobile plant will be on site for approximately 18 months. The asphalt plant is a ASTEC hot mix asphalt facility

equipped with a Double Barrel Dryer Drum Mixer fitted to liquid asphalt heated storage tanks. The process of the mobile plant is manufacturing hot asphalt which involves mixing crushed or ground rock aggregates with bitumen or asphaltic materials at elevated temperatures. The end asphalt product is then transport to the airfield site for placement. The plant components and characteristics are detailed in Table 1.

Table 1: Asphalt plant characteristics

Components	Details	Production capacity
Asphalt Product	AC14 and AC20	
Drum	PDB-633E portable 1.8 m x 10.0 m double barrel dryer mixer	180 tonnes per hour, 80,000 tonnes per year
PM control	PBH-30E Portable 30,384 ACFM Pulse jet baghouse	860 m3/min
Generator		
Asphalt plant generators diesel storage tank	30,000 L capacity	
Asphalt plant burner diesel storage tank	66,000 L capacity	
Mobile bitumen (PMB) storage tank	100,000 L capacity	
Bitumen transfer pump		
Burner	Powerflame C2-GO-15 Direct fired combination gas/oil burner	
Conveyors		
Hot bin		
Cold feed bin		
Recycle bin and feed system		
Polyethylene lined ponds		
Aggregate	Virgin and recycled aggregate are proposed to be used on site	

3.1.2 Process description

The process of asphalt manufacture will be as follows:

1. Component materials will be off-loaded at the Material Offloading Facility (MOF) located at Rumah Baru and delivered to Q-Station by truck where materials will be stored in stockpiles. This will primarily consist of MRWA 501, bitumen, aggregates (7 mm, 10 mm, 14 mm and 20 mm), 20 mm crushed rock, crusher dust, and sand.
2. Aggregates will be loaded from stockpiles into cold feed bins.
3. Aggregates will then be fed from cold feed at controlled rates into a continuous mix drum to evaporate all moisture and heat to approximately 175°C.
4. Hot bitumen and Evotherm will be added directly to the drum and mixed with the aggregates.
5. The resulting asphalt is released from the drum to a conveyor which leads to a gob hopper and then into the back of tippers for delivery to the airport refurbishment site.
6. Produced asphalt will be temporarily stored in the gob hopper prior to being loaded into trucks.

Site power for the asphalt plant will be from a low sulphur diesel powered generator. Aggregate is dried and heated before having a liquid bitumen binder adhered in a drum in a continuous process.

The general process flow is shown in Figure 1.

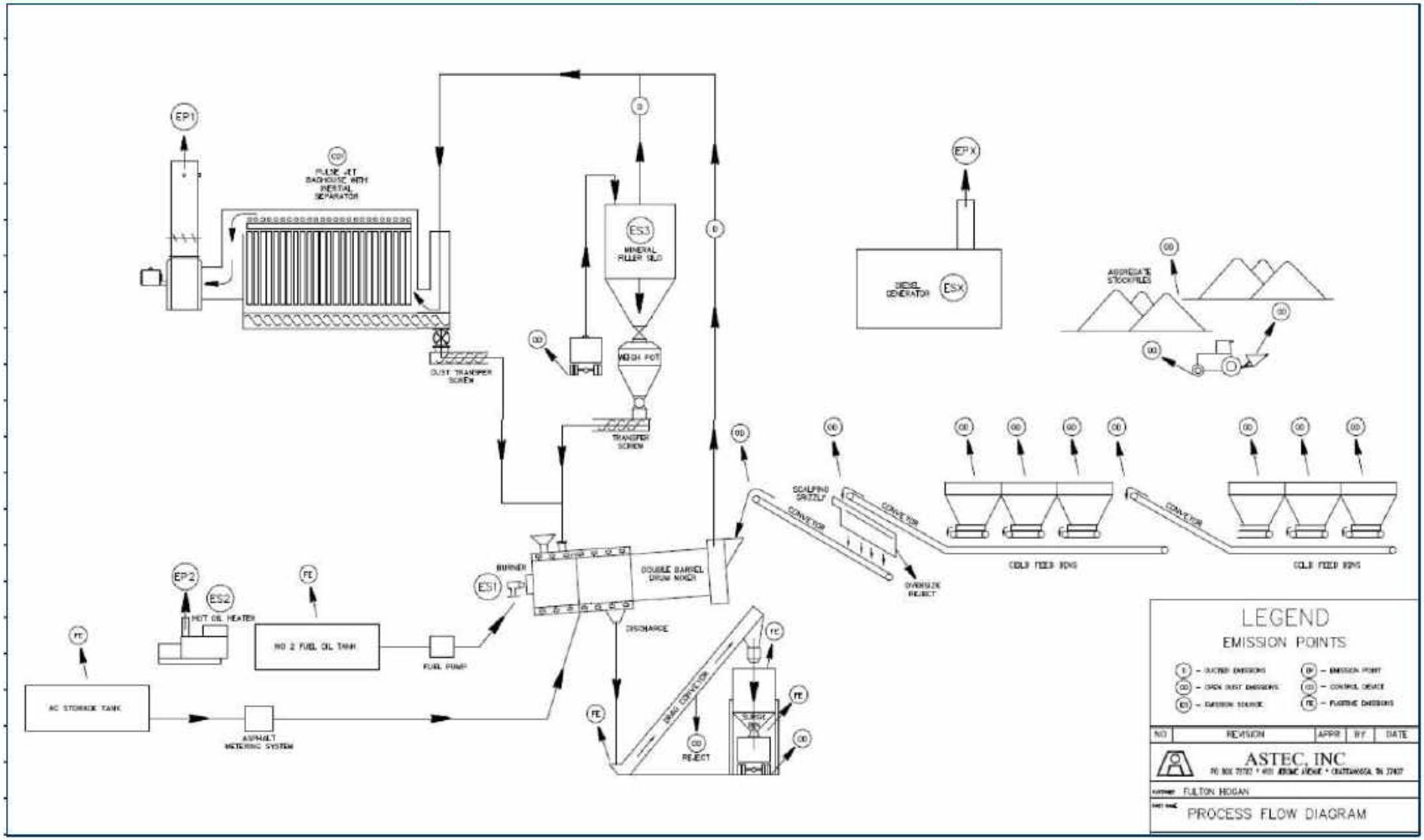


Figure 1: Process flow diagram for the proposed asphalt plant

3.1.2.1 Inputs

The facility will receive virgin materials via the proposed MOF and Stilling Basin compound at Rumah Baru. Materials will be transported via trucks to the Premises and stored on-site. Inputs to the asphalt manufacturing include:

- Aggregate
- Polymer Modified Bitumen (PMB)
- Additives (Evotherm)
- Reclaimed or Recycled Asphalt Pavement (RAP) - might be used.

3.1.2.2 Outputs

- The asphalt plant will produce liquid asphalt cement (AC) for onsite application.

3.2 Bitumen manufacturing plant (Category 36)

3.2.1 Overview

Fulton Hogan will have a polymer modified bitumen blending plant and a Foamed Bitumen Stabilised Basecourse (FBSB) plant. An overview of the two plants is provided in the following sections.

3.2.2 Polymer Modified Bitumen (PMB) blending plant

The mobile plant for the blending of bitumen will be assembled, inspected, and tested in Perth, Australia before being transported to CKI, where it will be installed in the central part of the Premises within the bitumen heating and blending area.

The plant will have a design Polymer Modified Bitumen (PMB) production rate of up to 30 tonnes/hr. The plant mixes and dissolves the Styrene Butadiene Styrene (SBS) polymer with liquid bitumen, whereby both ingredients are continuously fed, combined and homogenised in the mixing chamber. Sulphur material is added to the mix via a variable-speed hopper that control-feeds sulphur flakes into a vacuum conveyor that transfers sulphur to a filter receiver for dispensing into the mixing chamber's dry material inlet chute. Blending oil is also added to the mixture via a supply pump and controlled by a Coriolis flowmeter.

The prepared mixture is kept hot while in storage using oil heaters under the tanks while being stirred continuously. The heating system circulates heated oil around the bitumen storage tanks and pipes to maintain bitumen temperature.

Plant components are listed in Table 2 and an accompanying example plant illustration in Figure 2

Table 2: Mobile polymer blending plant components

Components	Design capacity
Bitumen dosing unit	-
Polymer hoppers (x4)	4.5 m3/hopper
Polymer feed system	2,000 kg/hr
Blending oil dosing unit	-
Sulphur dispenser	350 kg/hr
Mixing chamber	320 L
PMB discharge pump	30 t/hr
Bitumen heater units	162 kL (6 x 27 kL tanks)

Figure 2: Example of the polymer blending plant that will be used

3.2.3 Process description:

The general process (Figure 3) for preparation of PMB is:

1. Hot liquid bitumen is feed into the into the mixing chamber via a flow pump with flow measurement
2. Sulphur and SBS are added by means of volumetric dosing to the mixing chamber
3. Both inputs are combined in the mixing chamber continuously and transferred to the dispersing stage
4. Solvent or blending oil is added to the mix just prior to passing through the bitumen outlet pump
5. PMB is proposed to be class A10E.

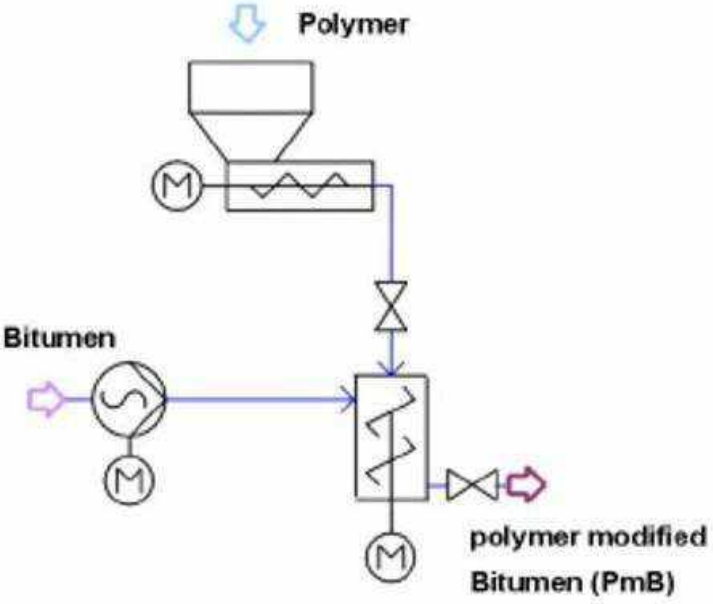


Figure 3: High-level process description of PMB blending

3.2.3.1 Inputs

The facility will receive materials via the proposed MOF and Stilling Basin compound at Rumah Baru. Materials will be transported to the Premises via trucks and stored within the bitumen storage area. Inputs to the blending plant include:

- Liquid base bitumen (C170) – note the bitumen will be in a solid form in the bitutainers until heated
- SBS polymer
- Powdered sulphur
- Blending oil.

3.2.3.2 Outputs

- PMB for use in asphalt.

3.2.4 Mobile foamed bitumen stabilized base plant (WIRTGEN KMA 220/KMA 220i)

Fulton Hogan are proposing to use a mobile foamed bitumen stabilised base plant, the WIRTGEN KMA 220/KMA 220i, to produce FBSB suitable for use as a heavy-duty pavement base. The plant is a cold recycling mixing plant that processes hot bitumen to produce foamed bitumen material for cold mixing with aggregates to form the FBSB. The mobile plant will be on site for the duration of the 18-month construction period, although its use will be intermittent depending on Project scheduling.

The WIRTGEN KMA 220/KMA 220i has an integrated diesel engine and can mix many different unbound source materials. The precise injection system adds binders to aggregates to create a homogenous mix with the specified material properties. The mobile plant components and characteristics are detailed in Table 3.

The foamed bitumen is produced by foaming standard road-grade bitumen (straight run C170). Small amounts of water and air are injected into the hot bitumen at high pressure which results in the bitumen foaming and expanding to around 20 times its original volume. This process is required to make the hot bitumen material suitable for mixing with cold construction materials.

Table 3: Mobile foamed bitumen plant (WIRTGEN KMA 220/KMA 220i) characteristics

Components	Details	Design capacity
Mobile unit	Production capacity of cold mix Length 14,710 mm Width 2,500 m Height 4,000 m	Max. 220 t/h
Hot bitumen heating system	42V Dosing up to 160 l/min	
Hopper	Twin hopper with hydraulically folding vibration screens Proportioning of mineral aggregate	2 x 6 m³
Mixer	Tin-shaft continuous compulsory mixer	2 x 30 kW
Engine	Deutz 6 Cylinder Diesel Engine Emission Standards EU Stage 3a/US Tier 3 EU Stage 4/US Tier 4f	
Fuel tank	Diesel only	400 L
Hydraulic oil tank		400 L
Water tank	Dosing up to 2000 l/min	4,500 L
Auger conveyor	For hydraulic binding agents	13 m³/h

3.2.5 Process description

The general process for preparation of cold mixed foamed bitumen is:

1. The hot liquid bitumen (prepared as per Section 3.3.2) is fed into the WIRTGEN KMA 220/KMA 220i and injected with small amounts of water and air to produce foamed bitumen.
2. The foamed bitumen is then injected into a mixer via injection nozzles making it suitable for mixing with the cold construction materials.
3. The source material (aggregate) is then mixed with the foamed bitumen, water, and cement in the required quantities to produce the new, homogeneous FBSB mixture.
4. The FBSB produced will be stored at the Processed FBSB stockpile area at the Premises before being transported to the CKI Airfield for placement.

3.2.5.1 Inputs

The following inputs are required for preparation of processed foam bitumen stabilised base:

- Heated liquid bitumen (C170)
- Water
- Air
- Aggregates
- Evotherm
- RAP (may be used).

3.2.5.2 Outputs

The mobile foamed bitumen plant will produce the following outputs depending on final use:

- FBSB for use as heavy-duty pavement base.

4 Achieving steady state operation

A combustion engineer is engaged during commissioning to test and optimise the burner operation, and a scale technician is engaged to verify the accuracy of the Self Erecting Bin (SEB) to ensure load out accuracy. Stack testing monitoring will be undertaken as detailed in Section 5 once the plant is commissioned and fully operational.

Monitoring of environmental control systems is undertaken to ensure optimal operational ranges, as described:

- **Baghouse differential pressure**: Optimal range: 3 - 6 inches WC
- **Baghouse stack temperature**: Optimal range: 115C – 150C degrees Celsius. With 205C being the automatic safety shutdown
- **Baghouse exit temperature**: Optimal range: 95C – 120C degrees Celsius
- **Burner suction**: Optimal range: 0.2 - 0.5 inches WC (Negative pressure)

A daily checklist will be used on the Project (**Appendix B**), however is being further revised for the context of CKI and will be made available prior to plant mobilisation.

5 Expected Emissions and Discharges

5.1 Asphalt manufacturing (Category 35)

Air emissions from the asphalt plant are principally from the Double Barrel® drum which emits exhaust from the burner and steam from the baghouse. Exhaust gases from the Double Barrel® travel via ductwork to the baghouse, which is equipped with an inertial separator inlet section. Oversized particles are collected from the gas steam there. The gas steam is then distributed within a bag chamber where dust is collected on the outside of the bags. It passes through the

built-up dust cake, bag fabric, and supporting wire bag cage and moves upward to the clean air plenum at the top of the baghouse. The stack emissions consist mainly of steam, but will also contain particulate matter, nitrogen oxide (NO_x), sulphur dioxide (SO_2) and carbon monoxide (CO). Exhaust is emitted continuously during operation of the plant.

Stack emission monitoring of the Hulk plant was undertaken by Assured Environmental at the request of Fulton Hogan to confirm the emissions expected from the plant being taken to CKI. The stack emissions were monitored while the plant was producing similar production rates of asphalt as expected at CKI. Table 4 provides the results from stack emission testing.

Table 4: Baghouse stack emissions summary of results (Assured Environmental 2023)

Release Point Parameter	Unit of Measure	Stack result	Relevant air emission standard
Sample location		Baghouse stack	-
Date of testing	dd-mm-yyyy	10/07/2023	-
Time of test	hh:mm	23:17	-
Average stack temperature	°C	113	-
Absolute stack pressure	mbar	1,021	-
Average stack gas water vapour content	%-vol	12.3	-
Average carbon dioxide content	%-vol	5.14	-
Average oxygen content	%-vol	13.4	-
Dry gas density	kg/Nm3	1.31	-
Dry gas molecular weight	g/gmole	29.4	-
Sample volume (dry gas meter)	Nm^3	1.27	-
Exhaust velocity	m/sec	19.6	-
Actual stack volume flow	m^3/min	1,034	-
Dry standard stack flow rate	Nm^3/min	646	-
Total solid particulates emission rate	mg/Nm^3 g/min	83.6 53.9	250[1]; 1502
Oxides of nitrogen (NO_x) emission rate	Mg/Nm^3 g/min	123 79.1	500[3]
Carbon monoxide (CO) emission rate	mg/Nm^3 g/min	287 185	125[2]; 350-1000[3]
Heavy metals			-
Antimony (Sb)	$\mu g/Nm^3$	4.46	
Arsenic (As)	$\mu g/Nm^3$	4.46	
Beryllium (Be)	$\mu g/Nm^3$	0.334	
Cadmium (Cd)	$\mu g/Nm^3$	0.236	
Chromium (Cr)	$\mu g/Nm^3$	4.10	
Cobalt (Co)	$\mu g/Nm^3$	1.58	
Lead (Pb)	$\mu g/Nm^3$	14.2	
Manganese (Mn)	$\mu g/Nm^3$	90.6	
Nickel (Ni)	$\mu g/Nm^3$	4.81	
Selenium (Se)	$\mu g/Nm^3$	4.46	
Tin (Sn)	$\mu g/Nm^3$	110	
Vanadium (V)	$\mu g/Nm^3$	8.12	
Mercury (Hg)	$\mu g/Nm^3$	2.66	

Heavy metals – lower range emission rate	Mg/Nm^3 g/min	0.229 0.148	-
Total Volatile Organic Compounds (VOCs) as propane emission rate	mg/Nm^3 g/min	0.422 0.273	-
Average odour emission rate	ou ou/sec	1,116 13,698	-

[1] Maximum emission limit of particulate matter of 250 mg/m3 according to Western Australia's *EPA Environmental Code of Practice for Asphalt Plants*.

[2] Maximum emission limit of CO and NO_x according to NSW Protection for the Environment Operations (Clean Air Regulation) 2010.

[3] The European Asphalt Pavement Association Environmental Guidelines on Best Available Technologies.

5.2 Bitumen Heating / Blending and FBSB manufacturing

Keeping the bitumen viscous requires for it to be heated. Heating the bitumen and blending the bitumen with other products causes fumes that can lead to a reduced ambient air quality. The main pollutants of concern are VOCs, polycyclic aromatic hydrocarbons (PAHs) and hydrogen sulphide (H_2S).

Bitumen blending and production of the FBSB material is not expected to require specific environmental commissioning testing, as control measures as detailed within the Works Approval supporting documentation are expected to adequately manage emissions.

6 Emissions and Discharges Monitoring

6.1 Commissioning Monitoring

Refer to Appendix B for estimated daily and weekly checks to occurring during commissioning.

Once the asphalt plant is optimised operationally, stack testing as described in Section 5 will be repeated during the construction trial of the plan to validate expected emissions. The results will then be provided to the DWER for review and to provide the basis for ongoing licensing.

7 Risk Management

Contingencies for the commissioning phase of the plant is summarised in Table 5 below. A register will be maintained of all incidents and corrective actions during commissioning.

Table 5: Risk Management

Infrastructure	Contingency	Action
Asphalt Manufacturing Plant	Baghouse unable to be operated as effective temperature	Shut down plant, identify fault and repair.
	Complaints due to noise, odour or dust	Shut down plant and identify cause and rectify issue.
	Spills of oil, bitumen or diesel	Emergency response procedure if required, shut down plant, recover spill, identify fault and repair
	Unacceptable environmental performance	Maintain all maintenance records and inspection records Shut down plant until appropriate controls can be implemented
Bitumen Blending / FBSB Manufacturing Plants	Spill or leak of bitumen	Shut down plana and recover spill, identify fault and repair.
	Unacceptable odour	Fume bath / covers installed on tanks

8 Reporting

Written advice will be provided to DWER for the following:

- Commencement of commissioning of the asphalt plant (seven days prior to start).
- Suspension of commissioning of the asphalt plant (seven days after suspension).
- Completion of commissioning of the asphalt plant (seven days after completion).

As per the DWER Industry Licensing Guidelines (Department of Water and Environmental Regulation 2019), Fulton Hogan will provide the following reports to DWER after commissioning is complete:

- Environmental Commissioning Report.

Upon completion of commissioning activities, a Commissioning Report will be submitted to the DWER as soon as possible after completion of the commissioning program (in accordance with the Works Approval conditions – when issued).

Any incidents will be recorded and investigated under an internal incident reporting system in place at the Project. Reporting of incidents other than minor incidents shall follow the requirements set out in s72 of the Environmental Protection Act 1986.

APPENDIX A

Asphalt Manufacturing Plant Commissioning Checklist

Project / Site:			
Asset:	**Astec – Hulk 1 02-216**	**Date:**	

Inspection type	Yes	No	NA	Corrective Action / Comment
Control Room (first)				
Release emergency stop	☐	☐	☐	
Silence any alarms	☐	☐	☐	
Test start up siren	☐	☐	☐	
	☐	☐	☐	
	☐	☐	☐	
Compressor				
Complete walk through of plant and check for any air leaks (Cold feed belt scrappers, SEB, Burner inlet, Baghouse pulse manifold, AC trailer spray valve, Mix temp positive, flame sensor, AGG temp)	☐	☐	☐	
Cold Feed A & B (Locally at panel)				
Bump test all belts and screens manually from VSD/contactor verify correct direction	☐	☐	☐	
Bump test all feeder belts and verify correct direction	☐	☐	☐	
Confirm all lanyards stop belts and require manual restart	☐	☐	☐	
Turn all off	☐	☐	☐	
	☐	☐	☐	
	☐	☐	☐	
Control Room				
Test all chutes and doors				
Calibration chute (Virgin bypass)	☐	☐	☐	
SEB discharge (Ensure key is in manual position)	☐	☐	☐	
SEB Gob hopper	☐	☐	☐	
SEB Reject chute (Silo Bypass)	☐	☐	☐	

AC Spray valve	☐	☐	☐	
Bump test Drag conveyor and verify direction (ACW viewed from boot)	☐	☐	☐	
Bump Drum Mixer and verify correct direction (ACW viewed from Burner end)	☐	☐	☐	
Bump Cyclone Transfer Screw to Drum (ACW from non-drive end)	☐	☐	☐	
Bump Baghouse Dust Transfer Screw to Cyclone Screw (ACW from non-drive end)	☐	☐	☐	
Bump Baghouse Cross Screw from MBU (ACW from non-drive end)	☐	☐	☐	
Bump Baghouse Waste Screw (ACW from non-drive end)	☐	☐	☐	
Bump Baghouse Hoppers Screws A & B (ACW from non-drive end)	☐	☐	☐	
Check no rotations				
Cold Feed (Remote)				
Test all cold feed belts and shakers	☐	☐	☐	
Confirm all lanyards stop belts and require manual reset	☐	☐	☐	
Verify RPM feedback at each feeder @100% speed from MBU	☐	☐	☐	
Bump exhaust fan and verify direction	☐	☐	☐	
Bump burner blower and verify direction				
Turn on computers – Refer start up procedure in operational manual				
Verify Weighbridge A/D signal (load cell input) no load = 9500 - 10500	☐	☐	☐	
Verify all temperatures and analogue inputs	☐	☐	☐	
Verify RPM on MBU matched computer	☐	☐	☐	
Check no flow switch operation (MBU light flicker during no flow alarm)	☐	☐	☐	
Check bin vibrators 2,3,6 in auto/manual	☐	☐	☐	

AC trailer – Cold system (Empty tank)				
Visual inspection of all pumps connections	☐	☐	☐	
Bump test circulation pump and verify direction	☐	☐	☐	
Bump test auxiliary pump and verify direction	☐	☐	☐	
Verify thermal oil level	☐	☐	☐	
Verify manual oil valve positions	☐	☐	☐	
Set system to purge position	☐	☐	☐	
Run circulation and auxiliary pumps for 30 minutes, complete visual inspection around plant to confirm no leaks	☐	☐	☐	
Stop pumps	☐	☐	☐	
Re-check thermal oil level to confirm no losses	☐	☐	☐	
Complete incremental moisture boil out procedure	☐	☐	☐	
REFER TO PAM 50 for AC tank safety checks and calibrations	☐	☐	☐	Confirm completed
REFER to PAM 69 for Hot oil safety checks and calibrations	☐	☐	☐	Confirm completed
AC trailer – Hot system (Empty tank)				
Bump unloading pump and verify direction	☐	☐	☐	
Test tank 1 high-high level mechanical cut out	☐	☐	☐	
Test tank 1 High-high level set point (Pressure transmitter)	☐	☐	☐	
Test tank 1 high level set point (Pressure transmitter)	☐	☐	☐	
Test tank 2 high-high level mechanical cut out	☐	☐	☐	
Test tank 2 High-high level set point (Pressure transmitter)	☐	☐	☐	
Test tank 2 high level set point (Pressure transmitter	☐	☐	☐	
Test tank 1 low level cut out (Oil bypass)	☐	☐	☐	
Test tank 2 low level cut out (Oil bypass)	☐	☐	☐	
Bump AC spray pump and verify direction	☐	☐	☐	

Test AC spray valve form control room and verify position feedback	☐	☐	☐	
Confirm AC spray valve is interlocked with Drum (Stop Drum while testing valve)	☐	☐	☐	
Bump test Tank 1 stirrer and verify direction (Pushing product down)	☐	☐	☐	
Bump test Tank 2 stirrer and verify direction (Pushing product down)	☐	☐	☐	
Test tank 1 stirrer low temp cut out	☐	☐	☐	
Test tank 2 stirrer low temp cut out	☐	☐	☐	
REFER TO PAM 50 for AC tank safety checks and calibrations	☐	☐	☐	**Confirm completed**
Plant calibrations				
REFER TO PLANT CALIBRATION PROCEDURE	☐	☐	☐	
Confirm calibration data received	☐	☐	☐	Confirm completed
SEB calibrations				
REFER TO SENSORTRONIC SERVICE REPORT	☐	☐	☐	
Confirm service reported received	☐	☐	☐	Confirm completed
General plant				
Complete a full system start up test – Simulated dry run	☐	☐	☐	
Burner commissioning and testing				
REFER TO SRT COMBUSTION SERVICE REPORT	☐	☐	☐	Confirm completed
Confirm service reported received	☐	☐	☐	Confirm completed

APPENDIX B

Asphalt Manufacturing Plant Daily and Weekly Checklists

PAM 007 AU - Hulk 1, Hulk 2, 170T Hr Mbl #1 & Mbl #2 - Mobile Asphalt Plant - Checklist

Fulton Hogan

Asset Number: 700475, 700610, 764313, 819584	**Date:**
Asset Description: Astec Asphalt Plant	**Location:**
Region: 652	**Model:**
Service Type: Daily	**Business Unit:** 62827

These are suggested maintenance checks and frequency
All checks to be carried out by a person who is experienced and familiar with the plant item and its operational requirements.
Non contact checks on electrical and gas maybe done by a person who is experienced and familiar with the plant item.
Any work on electrical (greater than 24v) or gas must be carried out by a registered and / or qualified person.

Plant

Item	Task	Specification	✓/✗	Comments & Priority Rating
Plant	Deactivate	Plant must be positively isolated as per the Isolation Procedure AU_00007670		
DAILY GREASE	GREASE	ENSURE DAILY PLANT GREASE IS COMPLETED		

Cold Feed System

Item	Task	Specification	✓/✗	Comments & Priority Rating
Guards	Inspect/Check	Check guards are in place at each drive (before start-up)		
Belts	Inspect/Check	Visual inspection of v-belt and drive-belts (before start-up)		
Rollers	Inspect/Check	Ensure roller surfaces are clean, rotate freely and quietly. Check for wear		
Conveyors	Inspect/Check	Inspect conveyor condition and tracking		

Incline Conveyor and Screen

Item	Task	Specification	✓/✗	Comments & Priority Rating
Guards	Inspect/Check	Check guards are in place at each drive (before start-up)		

Belts	Inspect/Check	Visual inspection of v-belt and drive-belts (before start-up)		
Maintenance Unit	Fill	Check the air line lubricator for oil level		
Maintenance Unit	Drain	Check the air line water separator for water in the trap		

Gear Motor	Inspect/Check	Visual inspection of oil level and for leaks in vibrating unit of screen		
Rollers	Inspect/Check	Ensure roller surfaces are clean, rotate freely and quietly. Check for wear		
Screen	Inspect/Check	Visually check screen deck, cloth, springs, and movement		
Conveyors	Inspect/Check	Inspect conveyor condition and tracking		

Double Barrel Drum Mixer				
Item	**Task**	**Specification**	**✓/✗**	**Comments & Priority Rating**
Guards	Inspect/Check	Check guards are in place at each drive (before start-up)		
Chain	Inspect/Check	Check the chain for tension (6mm) (before start-up)		
Chain Oilers	Check/Fill	Check the drive chain oilers and oil level (before start-up)		
Trunions/ Tyres	Inspect/Check	Check the double barrel tires for the development of wear patterns		
Thrust Rollers	Inspect/Check	Check if drum tires are riding hard against a thrust roller		
Maintenance Unit	Fill	Check the air line lubricator for oil level		
Burner System	Inspect/Check	Check for fuel leaks and fuel pressure		

Baghouse				
Item	**Task**	**Specification**	**✓/✗**	**Comments & Priority Rating**
Guards	Inspect/Check	Check guards are in place at each drive (before start-up)		
Belts	Inspect/Check	Visual inspection of v-belt and drive-belts (before start-up)		

Screw hanger bearings	**Lubricate**	**Grease the hopper screw hanger bearings as follows :** **At start-up** **After 4 hours total** **After 8 hours total** **After 12 hours total**		

MCC/Cyclone				
Item	**Task**	**Specification**	**✓/✗**	**Comments & Priority Rating**
Compressor	Inspect/Check	Check compressor air filter (clean as needed)		
Compressor	Inspect/Check	Check compressor oil level (top up if needed)		
Air System	Inspect/Check	Check air system for leaks		
Air Dryer	Inspect/Check	Check air dryer for leaks and operation		

SEB				
Item	**Task**	**Specification**	**✓/✗**	**Comments & Priority Rating**
Control Room	Clean	Sweep out control room, empty bins		
Silos	Inspect/Check	Check silo doors for operation		
Guards	Inspect/Check	Check guard in place at drag drive (before start-up)		
Belts	Inspect/Check	Visual inspection of drive tension at drag drive (before start-up)		
Bypass Chute	Clean	Clean daily		
Maintenance Unit	Fill	Check the air line lubricator for oil level		

Rap Trailer				
Item	**Task**	**Specification**	**✓/✗**	**Comments & Priority Rating**

Rollers	Inspect/Check	Ensure roller surfaces are clean, rotate freely and quietly. Check for wear.		

Conveyors	Inspect/Check	Inepct conveyor condition and tracking		
Guards	Inspect/Check	Check guards in place at each drive (before start-up)		
Belts	Inspect/Check	Visual inspection of v-belt and drive-belts (before start-up)		

Bitumen Tanks				
Item	**Task**	**Specification**	**✓/✗**	**Comments & Priority Rating**
Hot Oil System	Inspect/Check	Check operation and check fuel level		
Hot Oil System	Inspect/Check	Check for oil leaks and check oil temp		
Bitumen	Inspect/Check	Check bitumen level and temp		
Bitumen	Inspect/Check	Check for leaks		

Generators				
Item	**Task**	**Specification**	**✓/✗**	**Comments & Priority Rating**
Engine	Inspect/Check	Check oil level, fuel level and coolant level		
Engine	Inspect/Check	Check for leaks		
Generator - small	Inspect/Check	Current hours, last service - small		
Generator - large	Inspect/Check	Current hours, last service - large		

Fuel Tanks				
Item	**Task**	**Specification**	**✓/✗**	**Comments & Priority Rating**
Tanks	Inspect/Check	Check levels		
Tanks	Inspect/Check	Check for leaks		

Additional Comments & Notes

Inspection Carried out by (Name):
Signature:
Inspection Carried out by (Where Registration / Qualification Required) (Name):
Signature:
Registration/ Qualification (and expiry):

PAM 007 AU - Hulk 1, Hulk 2, 170T Hr Mbl #1 & Mbl #2 - Mobile Asphalt Plant - Checklist

Fulton Hogan

Asset Number: 700475, 700610, 764313, 819584	**Date:**
Asset Description: Astec Asphalt Plant	**Location:**
Region: 652	**Model:**
Service Type: Weekly	**Business Unit:** 62827

These are suggested maintenance checks and frequency
All checks to be carried out by a person who is experienced and familiar with the plant item and its operational requirements.
Non contact checks on electrical and gas maybe done by a person who is experienced and familiar with the plant item.
Any work on electrical (greater than 24v) or gas must be carried out by a registered and / or qualified person.

Plant

Item	Task	Specification	✓/✗	Comments & Priority Rating
Plant	Deactivate	Plant must be positively isolated as per the Isolation Procedure AU_00007670		
WEEKLY GREASE	GREASE	ENSURE WEEKLY PLANT GREASE IS COMPLETED		

Cold Feed System

Item	Task	Specification	✓/✗	Comments & Priority Rating
Guards	Inspect/Check	Check guards are in place at each drive (before start-up)		
Belts	Inspect/Check	Check v-belt, drive-belts for tension (before start-up)		
Maintenance Unit	Fill	Check air line lubricator for oil level		
Maintenance Unit	Drain	Check air line water separator for water in the trap		
Conveyors	Inspect/Check	Inspect conveyor condition and tracking		
Bearings Feeder Pulleys	Lubricate	Grease (2-shots), bearings feeder pulleys		
Bearings Collecting Conveyor Pulleys	Lubricate	Grease (2-shots), bearings collecting conveyor pulleys		
Bearings Gravity Take-Up Pulleys	Lubricate	Grease (2-shots), bearings gravity take-up pulleys		
Bearings Divert Chute	Lubricate	Grease (2-shots), bearings divert chute		

Rollers	Inspect/Check	Ensure roller surfaces are clean, rotate freely and quietly. Check for wear.		
Trailer	Inspect/Check	Check trailer level (using spirit level)		

Incline Conveyor and Screen

Item	Task	Specification	✓/✗	Comments & Priority Rating
Guards	Inspect/Check	Check guards are in place at each drive (before start-up)		
Belts	Inspect/Check	Check v-belt, drive-belts for tension (before start-up)		
Gear Motor	Inspect/Check	Check oil level and for leaks in the vibrating unit of screen		
Conveyors	Inspect/Check	Inspect conveyor condition and tracking		
Bearings Conveyor Pulleys	Lubricate	Grease (2-shots), bearings conveyor pulleys		
Bearings Gravity Take-Up Pulleys	Lubricate	Grease (2-shots), bearings gravity take-up pulleys		
Bearings Divert Chute	Lubricate	Grease (2-shots), bearings divert chute		
Rollers	Inspect	Ensure roller surfaces are clean, rotate freely and quietly. Check for wear.		
Weighbridge	Inspect/Check	Check weighbridge for material obstructions		
Trailer	Inspect/Check	Check trailer level (using spirit level)		

Double Barrel Drum Mixer

Item	Task	Specification	✓/✗	Comments & Priority Rating
Guards	Inspect/Check	Check guards are in place at each drive (before start-up)		
Double Drum	Inspect/Check	Open drum, inspect tips and arms, clean as required		
Double Drum	Inspect/Check	Inspect drive chain, ensure 6mm gap on tension springs		

Chain Oilers	Check/Fill	Check the drive chain oilers, oil level (before start-up)		
Trunions/ Tyres	Inspect/Check	Check the double barrel tires for the development of wear patterns		
Thrust Rollers	Inspect/Check	Check if drum tires are riding hard against a thrust roller		
Maintenance Unit	Fill	Check the air line lubricator for oil level		
Bearings - Thrust Roller	Lubricate	Grease (2-shots), bearings in each thrust roller		
Burner Linkages, Spin Vanes and Valves	Inspect/Check	Check the burner linkages, spin vanes, and valves		
Inlet Chute Vibrator	Lubricate	Grease (2-shots) inlet chute vibrator, high temperature		
Inlet/Discharge Chute	Inspect/Check	Check for blockages, build-up and wear		
Thermocouples and Infrared Scanner	Inspect/Check	Check infrared scanners for wear, Check for accuracy of mix temp with infrared gun		
Trailer	Inspect/Check	Check trailer level (using spirit level)		

Baghouse				
Item	**Task**	**Specification**	**✓/✖**	**Comments & Priority Rating**
Guards	Inspect/Check	Check guards are in place at each drive (before start-up)		
Belts	Inspect/Check	Check v-belt, drive-belts for tension (before start-up)		
Compressor	Inspect/Check	Check the compressor oil level (top up if needed)		
Compressor	Inspect/Check	Check the compressor air filter (clean as needed)		
Airlock Packing	Lubricate	Grease (4-shots) the airlock packing		
Airlock Drive Chain	Lubricate	Oil the chain of the airlock drive		

Exhaust Fan Shaft Bearings	Lubricate	Grease (4-shots) the exhaust fan shaft bearings. Using the inspection door in the side of the exhaust fan, look for dust or run spots on the blades (indicating baghouse problems)		
Baghouse screws		Check operation and for leaks		
Manifold Water Drain Valves	Inspect/Check	Check manifold water drain valves for water		
Trailer	Inspect/Check	Check trailer level (using spirit level)		

MCC/Cyclone				
Item	**Task**	**Specification**	**✓/✗**	**Comments & Priority Rating**
Cyclone	Inspect/Check	Check cyclone for internal wear		
Cyclone	Lubricate	Grease auger bearings		
Cyclone	Inspect/Check	Check drives		
Trailer	Inspect/Check	Check trailer level (using spirit level)		

SEB				
Item	**Task**	**Specification**	**✓/✗**	**Comments & Priority Rating**
Guards	Inspect/Check	Check guards are in place at each drive (before start-up)		
Slat Chain Sprockets	Inspect/Check	Inspect chain tension and sprockets,floor wear		
Belts	Inspect/Check	Check the drive tension, drag drive (before start-up)		
Maintenance Unit	Fill	Check oil level of air line lubricator		
Drag Shaft Bearings	Lubricate	Grease (2-shots) all the drag shaft bearings		
Bottom Silgate Bearings	Lubricate	Grease (2-shots) bottom silgate bearings		

Batcher Gate Bearings	Lubricate	Grease (2-shots) batcher gate bearings		
Shutdown Computers	Shutdown	shutdown, backup and reset plant computers		
Storage Bin	Inspect/Check	Check for build-up		
Trailer	Inspect/Check	Check trailer level (using spirit level)		

Rap Trailer

Item	Task	Specification	✓/✗	Comments & Priority Rating
Guards	Inspect/Check	Check guards are in place at each drive (before start-up)		
Belts	Inspect/Check	Check v-belt, drive-belts for tension (before start-up)		
Maintenance Unit	Fill	Check the air line lubricator for oil level		
Maintenance Unit	Drain	Check the air line water separator for water in the trap		
Conveyor pulleys	Lubricate	Grease (2-shots) bearings conveyor pulleys		
Gravity take-up pulleys	Lubricate	Grease (2-shots) bearings gravity take-up pulleys		
Bypass chute	Lubricate	Grease (2-shots) bearings divert chute		
Rollers	Inspect	Ensure roller surfaces are clean, rotate freely and quietly. Check for wear.		
Weighbridge	Inspect/Check	Check weighbridge for material obstructions		

Bitumen Tanks

Item	Task	Specification	✓/✗	Comments & Priority Rating
Bitumen Strainer	Inspect/Check	Check for leaks,check strainer,replace dust in spill tray		
Bitumen Tanks	Inspect/Check	Check for leaks/wear		

Bitumen Temperatures	Inspect/Check	Check truetail on each tank against computer readings		
Load-in Pump	Grease	Grease (3 bearings, 1 shot), the load-in pump		
Mixing Supply Pump	Grease	Grease (2 bearings, 1 shot) the mixing supply pump		
Transfer Hose Winch	Inspect/Check	Inspect transfer hose in date. Inspect winch rope for damage or fraying. Inspect winch stopper for operation		
Oil Level	Inspect/Check	Check for proper level of thermal fluid. Sight gauge on expansion tank should show at least 3 inches.		
Pressure Gauges and Thermometers	Inspect/Check	During normal operation check all pressure gauges and thermometers on heater for values		
Operating and Limit Controls	Inspect/Check	Check all operating and limit controls and settings to make sure they are set properly and are working properly		
Heater and Piping	Inspect/Check	Check heater and piping to ensure there are no leaks of thermal fluid or asphalt cement		
Burner Control Linkage	Inspect/Check	Check burner control linkage to make sure it is not binding or loose		
Heater	Inspect/Check	Check heater to ensure there is no structural damage to heater shell, end plates, etc. or signs of over heating		
Hot Oil System	Inspect/Check	Check fuel level, operation, oil leaks, oil temp		
Bitumen	Inspect/Check	Check bitumen level, leaks, temp		

Generators				
Item	**Task**	**Specification**	**✓/✗**	**Comments & Priority Rating**
Engine	Inspect/Check	Daily checks		
Air Filters	Inspect/Check	Check air filters		
Panel Filters	Inspect/Check	Check panel filters		

Fuel Tanks				
Item	**Task**	**Specification**	**✓/✗**	**Comments & Priority Rating**
Tanks	Inspect/Check	Check overfill sensors		

Electrical (Licensed Electrician Only)				
Item	**Task**	**Specification**	**✓/✗**	**Comments & Priority Rating**
Power Panels	Clean/Inspect	Clean accumulated dust from power panels (all trailers)		
Power Panels	Clean/Inspect	Clean air filters (all trailers)		
Flame Detector Lens - Main Burner, Hot Oil	Clean	Clean ultraviolet flame detector lens		
General	Inspect/Check	Check cables and trays for security and damage		
General	Inspect/Check	Check lanyards, earth stakes, circuit breakers		

Additional Comments & Notes

Inspection Carried out by (Name):
Signature:
Inspection Carried out by (Where Registration / Qualification Required) (Name):
Signature:
Registration/ Qualification (and expiry):