



Application

Ore Processing Facility, Power Plant and Bulk Fuel Storage Works Approval Supporting Document

Eliwana Iron Ore Project

August 2019

EW-10023-WA-EN-0001;Rev 0

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TABLE OF COMMITMENTS

Environmental Compliance Report : Ore Processing Facility, Power Plant and Bulk Fuel Storage Works Approval Application

The Eliwana Ore Processing Facility (OPF), Power Plant 6 August 2019, (EW-10023-WA-EN-0001) Fortescue Metals Group Limited (Supporting Document) contains the information required for the Department of Water and Environment and Bulk Fuel Storage Works Approval Application ; Department of Water and Environment Regulation (DWER) to assess the Works Approval application to construct the OPF, Power Plant and Bulk Fuel Storage, under Part V of the *Environmental Protection Act 1986* (EP Act).

The following checklist details evidence of compliance to enable an Environmental Compliance Report to be submitted to the DWER in respect of the facilities.

Section	Requirement	Verification Comments	Evidence	Compliance Status (Y/N/Partial)
2.4	The OPF, Power Station and Bulk Fuel Storage Facility will be located on mining tenement M47/1524.			
Ore Processing Facility				
1.1	Construct a new OPF to support Eliwana Iron Ore mine which will treat a maximum throughput of 30MT per annum.			
2.5.3	Dust suppression at the OPF will be located at the transfer points from the: <ul style="list-style-type: none"> Apron feeder to the Primary Crusher Primary Crusher to Primary Crusher Discharge Feed Conveyors Primary Crusher Discharge Feed Conveyors to Scalping Screen Feed Conveyors 2 Tertiary crusher to Screen Feed Conveyor (CV311, 321 and 331) Product Screen undersize to Product Conveyor (CV701 and 702) 			

Section	Requirement	Verification Comments	Evidence	Compliance Status (Y/N/Partial)
2.5.3	Dust extraction fans will be fitted to tertiary crushers, with dust fed back into the processing circuit.			
Overland Conveyor and Train Loadout (TLO)				
2.5.3	Dust suppression at the Overland Conveyor and TLO will be located at the transfer points from the: <ul style="list-style-type: none"> Overland conveyor to stockpiling conveyor (CV703) Stacker conveyor transfer points Train loadout conveyor Train Loadout Bin 			
2.5.3	Water cannons for dust suppression on the stockpiles.			
Power Station				
2.3	Install 15 diesel-fired generators with a maximum output of 24 MW.			
2.5.6	Diesel fuel storage tanks consisting of: <ul style="list-style-type: none"> 3 x 200 kL self-bunded diesel storage tanks. 			
Bulk Fuel Storage				
2.5.5	Bulk diesel fuel storage tanks consisting of: <ul style="list-style-type: none"> 5 x 200 kL self-bunded diesel storage tanks. 1 x 110 kL self-bunded diesel storage tank. 			

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1. INTRODUCTION

1.1 Project Background

Fortescue is proposing to develop the Eliwana Iron Ore Mine Project which consists of a 30Mtpa mining and processing operation at the Proposed Eliwana Iron Ore Mine, located approximately 90 km west-north-west of Tom Price (Figure 1).

The Eliwana Iron Ore Mine and Rail Projects was formally assessed under Part IV of the Environmental Protection (EP) Act 1986 at the level of Public Environmental Review (PER). On 16 April 2019 the Office of the EPA release EPA Report (1633) concluding that the Eliwana Rail Proposal may be implemented with the recommended conditions. On 24 June 2019 the Office of the EPA release EPA Report (1641) concluding that the Eliwana Mine Proposal may be implemented with the recommended conditions.

Fortescue formally requested consent from the EPA, under section 41A(3) of the EP Act, to conduct minor or preliminary works that are associated with the implementation of the Eliwana Iron Ore Mine Project. Consent was received by the EPA to proceed with minor or preliminary works for the Eliwana Mine Project. Works Approval (W6233/2019/1) for the Eliwana Mine Crushing and Screening Plant was granted on 19 June 2019 and Works Approval (W6245/2019/1) was submitted for the Eliwana Mine Camp under the minor or preliminary works.

The Ore Processing Facility (OPF), Power Plant, Bulk Fuel Facility and associated infrastructure will be constructed on Mining Tenure M47/1524 under Ministerial Statements and this Works Approval application. The tenure for the project is registered to The Pilbara Infrastructure Pty Ltd, which is a wholly owned subsidiary of Fortescue Metals Group (FMG) Limited.

1.2 Purpose and Scope of the Application

This Works Approval application includes information with regards to the proposed construction and operation of an OPF, Power Plant and Bulk Fuel Storage within the Eliwana Mine Project Area. The OPF will produce 30MT per annum at a nominal 29.5MT of iron ore and a nominal 0.5Mt of water for a moisture content of 5.5 – 7%. The Power Plant will produce an average of 21 MW (maximum 24MW). The Bulk Fuel storage will store up to 1,710 KL of diesel.

Fortescue request that this works approval authorise construction, commissioning and time limited operations of the OPF, Power Plant and Bulk Fuel Facility. At the completion of construction of each component an Environment Compliance report will be submitted to demonstrate the OPF, Power Plant and Bulk Fuel Facility have been constructed as per works approval conditions. The commissioning phase will then commence for the purpose of optimising

the plant and equipment to meet predicted emissions. Once the operation of each component is optimised and meeting predicted emissions an Environmental Commissioning Report will be lodged along with a Licence Application. Fortescue requests that the OPF, Power Plant and Bulk Fuel Facility and associated facilities be allowed to operate under “time limited operations” under the works approval while the Licence application is assessed.

1.3 Applicant/Occupier Details

The applicant and occupier of the premises for which this application is made is:

Table 1: Applicant Contact Details

Physical Address	Postal Address	Australian Company Number	Australian Business Number
Fortescue Metals Group Ltd Level 2/87 Adelaide Terrace East Perth, WA, 6004	Fortescue Metals Group Ltd GPO Box 6915 East Perth WA 6004	002 594 872	57 002 594 872

All correspondence should be addressed to the key contact for this application:

Matt Dowling
 Senior Environmental Advisor
 Ph: (08) 9230 1301
 Email: mdowling@fmgl.com.au.

1.4 Prescribed Premises Details

The location of the proposed infrastructure and the proposed Prescribed Premises Boundary (PPB) is shown in Figure 2. The proposed PPB is also described by the coordinates in Table 2.

Table 2: Works approval prescribed premises boundary (MGA 94 Zone 50)

Polygon Vertex	Easting (mE)	Northing (mN)
1	484204	7518454
2	484958	7517944
3	484370	7517051
4	484297	7517098
5	483364	7515643
6	483483	7515563
7	482544	7514240
8	481228	7515193
9	482297	7516509

Polygon Vertex	Easting (mE)	Northing (mN)
10	482901	7516000
11	483999	7517600
12	483741	7517766

A description of the Prescribed Premises categories relevant to this application is provided in Table 3.

Table 3: Prescribed Premises categories

Category	Description	Design Capacity
5	Processing or beneficiation of metallic or non-metallic ore: premises on which: (a) metallic or non-metallic ore is crushed, ground, milled or otherwise processed 50 000 tonnes or more per year	30 MT per annum
52	Electric power generation: premises (other than premises within category 53 or an emergency or standby power generating plant) on which electrical power is generated using a fuel. 10 MW or more in aggregate (using a fuel other than natural gas)	24 MW
73	Bulk storage of chemicals etc.: premises on which acids, alkalis or chemicals that — a) contain at least one carbon to carbon bond; and b) are liquid at STP (standard temperature and pressure), are stored.	1,710 m ³

1.5 Stakeholder Consultation

Stakeholder consultation for the Eliwana project has formed part of the broader stakeholder engagement programme for Fortescue projects undergoing environmental approvals. Fortescue commenced consultation for the Eliwana Mine and Railway Projects in early 2017 by a combination of face to face meetings, presentations and letters to key community stakeholders. The stakeholder consultation has not been specific to the works approval, however, the feedback from the key stakeholders has been considered in the design of the project footprint therein. The overarching objectives of the program are:

- To inform stakeholders about the Project and its impacts to the environment and to describe the outcomes of consultation on project design; and
- To establish relationships with key stakeholders that enable ongoing dialogue through implementation and regulation of the Proposal.

Key stakeholders have been identified through Fortescue's experience in the Pilbara. Fortescue has also adopted previous recommendations from State government agencies on stakeholders that should be included in the program. Key stakeholders identified to date are listed below.

- Cheela Plains Pastoral Station
- Conservation Council of WA
- Department of Biodiversity, Conservation and Attractions (DBCA)
- Department of the Environment and Energy (DoEE)
- Department of Jobs, Tourism, Science and Innovation (DJTSI)
- Department of Mines, Industry Regulation and Safety (DMIRS)
- Department of Planning, Lands and Heritage (DPLH)
- Department of Water and Environmental Regulation (DWER) – EPA Services
- Eastern Guruma People
- Hamersley Pastoral Station
- Mt Stuart Pastoral Station
- Pilbara Development Commission
- Puutu Kunti Kurrama Pinikura People (PKKP)
- Rocklea Pastoral Station
- Shire of Ashburton
- Wildflower Society of WA
- Wilderness Society of WA

1.6 Schedule

The installation of the OPF and Train Load Out (TLO), Power Plant, Bulk Fuel Storage and associated infrastructure is expected to commence once all relevant legislative approvals have

been obtained. A series of Environmental Compliance Reports will be submitted to allow for progressive commissioning. Commissioning of the OPF, TLO, Power Plant, and Bulk Fuel Storage is anticipated to occur over a period of six to twelve months as components become available (Table 4).

Table 4: Construction and Commissioning Schedule

Component	Construction estimated start date	Commissioning Start
OPF	January 2020	August 2020
TLO	March 2020	August 2020
Bulk Fuel Facility	March 2020	April 2020
Power Plant	April 2020	July 2020

It is scheduled that Environmental Commissioning Report and Licence Application will be submitted in December 2020. Time limited operations will commence at that time while the licence is being assessed.

1.7 Cost of Works

It is estimated that the capital costs associated with the OPF, Power Plant and Bulk Fuel Storage is approximately AU\$327,625,000.

Table 5: OPF, Power Station and Bulk Fuel storage Cost of Works

WWTP Works	Cost
OPF	\$316,000,000
Power Plant	\$11,000,000
Bulk Fuel Facility	\$625,000
Total Cost	\$327,625,000

1.8 Site Environmental Characteristics

1.8.1 Climate

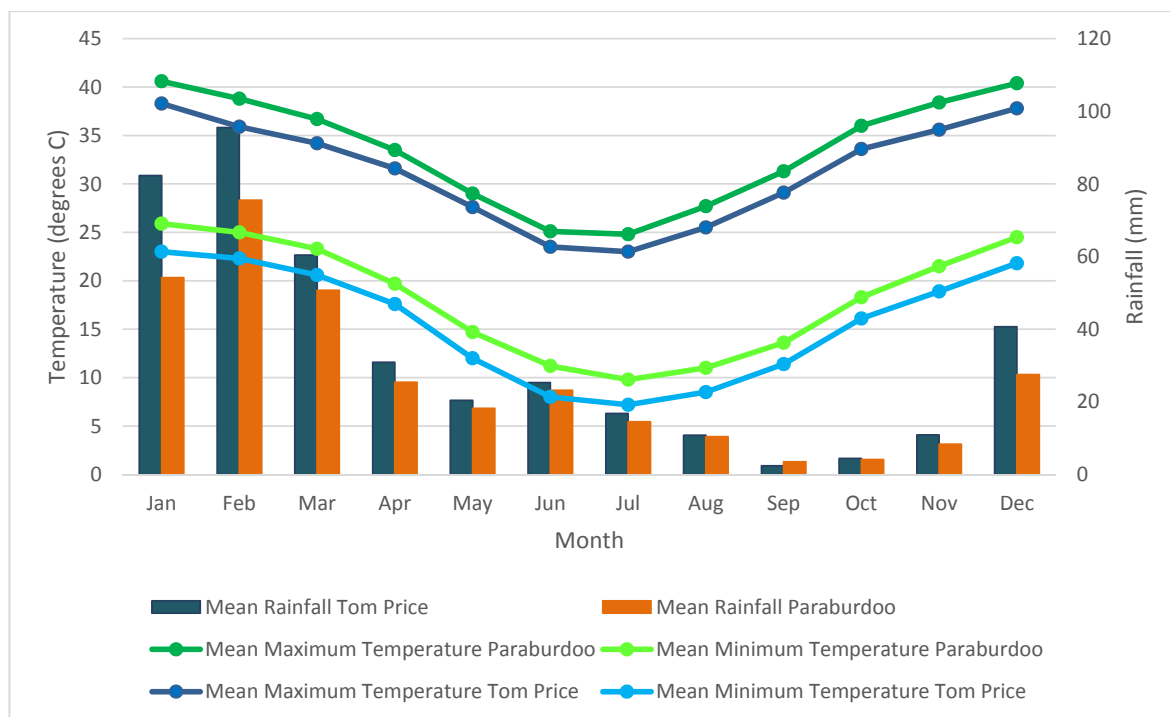
The PPB is located within the Pilbara region, which includes two broad climatic zones. Coastal areas, as well as some higher rainfall inland areas, have a semi-desert tropical climate, which experience between 9 and 11 months of dry weather, with hot humid summers and warm winters. The remaining inland areas have a dry desert climate, typically with higher temperatures and lower rainfall, and often experience up to 12 months of dry weather, with hot dry summers and

mild winters (van Vreeswyk, et al., 2004). The proposed OPF, TLO, Power Plant, and Bulk Fuel Storage is situated within the drier inland area.

The monthly rainfall and temperature averages for the Tom Price (BoM, 2017a) and Paraburdoo (BoM, 2017b) Bureau of Meteorology (BoM) stations, located 50 km and 105 km south of the proposed prescribed premises boundary area, respectively are shown in Graph 1.

Monthly maximum temperatures range from an average of 23°C in July to 41°C in January, whereas minimum temperatures range between 7°C in July and 26°C in January (BoM 2017a; 2017b).

Annual rainfall in the Pilbara has a substantial yearly variation. Tropical cyclones, many of which originate in the Timor Sea, along with local thunderstorms, produce much of the summer and early autumn rainfall. The driest months are in spring (September to October), and the wettest in summer (January to March) (BoM 2017a; 2017b).



Graph 1: Climate Averages (Tom Price and Paraburdoo)

1.8.2 Landforms, Geology and Soils

1.8.2.1 Land Systems

Reoccurring patterns of topography, soils and vegetation are described as land systems. The West Australian Department of Agriculture mapped the land systems and identified 105 different systems within the Pilbara bioregion (Van Vreeswyk et al., 2004).

The PPB footprint of the OPF and TLO, Power Plant, Bulk Fuel Storage and associated infrastructure Works Approval application intersects the Newman, Rocklea and Robe land system. Table 6 includes a description of each land system, the area mapped in the Pilbara and the area of the land system in the PPB. Figure 3 shows the relationship between the Land systems and the PPB.

Table 6: Land systems units occurring within the disturbance envelope

Land System	Description	Ha mapped in Pilbara	Ha in Premise Boundary
Newman	Rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands.	1,458,000	79
Robe	Low limonite mesas and buttes supporting soft spinifex (and occasionally hard spinifex) grasslands.	86,500	55
Rocklea	Basalt hills, plateaux, lower slopes and minor stony plains supporting hard spinifex (and occasionally soft spinifex) grasslands.	2,299,300	306

1.8.2.2 Soils

Soils in Western Australia have been classified into 60 broad categories in the technical guide, 'Soil Groups of Western Australia', published by the Department of Agriculture and Food, Western Australia. Soilwater (2017) analysed soils across the Eliwana Mine site and found that soils of the Newman, Rocklea and Robe land system could be treated as one soil group which is analogous to Soil Group 203 (Stony soils) found on stony foot slopes and plains beneath basaltic hills.

The PPB sits within an area dominated by Stony soils (203). Some general characteristics of this main soil group have been summarised by van Vreeswyk et al., (2004) and Schoknecht (2013) as follows.

Soil Group 203– Stony soils

Stony soils are dark reddish brown to dark red in colour, and very shallow to shallow in depth (<0.25 – 0.50 m). Stony soils are skeletal, poorly-developed and often occur on rock outcrops.

Stony soils are associated with the banded iron formations (jaspilite) (Newman System) and basalt hills of the Rocklea System, and referred to as a Lithosolic Clastic Rudosol or Leptic Rudosol in the Australian Soil Classification. These soils are coarse gravelly, stony or rocky throughout the profile with a sandy loam to loam texture, although soils with a clay loam texture can be found in areas dominated by basalt, ironstone and shale such as the project area. The pH is neutral to acid, and exhibit a very low water holding capacity due to the shallow soil depth and dominance of rock and stone.

1.8.2.3 Geology

The PPB occurs within the Hamersley Province which covers an approximate area of 80,000 km². The Hamersley Province contains late Archaean to Lower Proterozoic age sediments of the Mount Bruce Supergroup (SoilWater, 2017). This Supergroup contains the Fortescue, Hamersley and Turee Creek Groups, which are overlain by remnants of the Wyloo Group. The Fortescue Group is a sequence of basalts, inter-bedded clastic sediment, minor chemical sediment and doleritic intrusions. This Group contains the following Formations: the Mount Roe Basalt, the Hardley Formation, the Kylenea, Boongal, Tumbiana and Maddina Formations, and the Jeerinah Formation.

The Hamersley Group overlies the Fortescue Group, and is approximately 2,500 m thick containing a sequence of banded iron formations (BIF), dolomites, pyroclastic/hemipelagic shale, and acid volcanics. The Hamersley Group contain the two dominant iron ore bearing formations of the region; these being the Brockman Iron Formation and the Marra Mamba Iron Formation. The Turee Creek Group is the youngest geologic unit of the Mount Bruce Supergroup, and is not considered to contain significant quantities of iron ore (SoilWater, 2017).

1.8.3 Hydrology

The PPB footprint falls within the Duck Creek catchment area which drains to the regional Ashburton River basin. The Duck Creek catchment area is approximately 6,800km² at the confluence with the Ashburton River.

The PPB occurs within a number of sub-catchments of Duck Creek, namely an informally named West Creek sub-catchment and an infrastructure sub-catchment, which drain directly into Duck Creek; and Pinarra Creek sub-catchment, draining into Boolgeeda Creek, which drains into Duck Creek. Refer to Figure 4 for surface water catchment areas.

The proposed OPF, Power Station and Bulk Fuel Storage is located in the Pinarra Creek sub-catchment, the overland conveyor is in the West Creek sub-catchment and part of the conveyor and the TLO is located in the infrastructure sub-catchment.

There are no permanent surface water features within the PPB. These facilities have been sited to avoid high order creek lines. It is expected that there will be some unavoidable impacts to low order creeks. Where the facilities intercept low order creeks, flows are being diverted around the infrastructure via drains, or conveyed across via culverts to minimise impacts.

1.8.3.1 Hydrogeology

Groundwater within the broader Eliwana area occurs within both deep, fractured rock aquifers and near the surface along dissected creeks and within gorges. The main aquifers relevant to the permit envelope are likely to be fractured rock aquifers or minor alluvial aquifers in surface creeks. The OPF, Power Plant, Bulk Fuel facility and associated infrastructure will have no impact on groundwater levels or quality during construction.

The abstraction of groundwater to supply the OPF and Power Plant and associated infrastructure will be low during the construction of the facilities. Once operational approximately 0.5 GL will be required annually to suppress dust.

1.8.4 Flora and Vegetation

The PPB lies in the Pilbara biogeographic region of the Interim Biogeographic Regionalisation for Australia (IBRA). The Pilbara biogeographic region incorporates 17,928,700 ha and includes four subregions: Chichester, Roebourne, Hamersley, and Fortescue Plains. The PPB is located entirely within the Hamersley subregion of the Pilbara bioregion.

Broad scale vegetation mapping of the Pilbara region has been completed by Beard (1975). These vegetation units are broad scale descriptors and closely align with topography and landform. Two Beard vegetation unit occurs within the PPB and are described in Table 7.

Table 7: Beard vegetation units occurring within the PPB

Association	Description
82	Snappy Gum (<i>Eucalyptus leucophloia</i>) low woodland over <i>Triodia wieana</i> hummock grassland.
567	Mulga (<i>Acacia aneura</i>) and <i>Acacia pyrifolia</i> 10 open shrubland over soft spinifex. (<i>Triodia epacatia/pungens</i>) and <i>T. basedowii</i> hummock grasslands.

A level 2 flora survey of the Eliwana area was conducted in 2017 by Biota Environmental Services. A total of 7 vegetation communities have been mapped within the PPB as depicted in Table 8 and Figure 5.

Table 8: Vegetation communities

Veg Type Code	Description	Mapped Extent (Ha)
AeTwTe	<i>Acacia exigua</i> , <i>A. marramamba</i> and /or <i>A. bivenosa</i> mid sparse shrubland over <i>Triodia wiseana</i> , <i>T. epactia</i> low open hummock grassland	2,398.4
ChAiTw/EIAbTlo	Mosaic: <i>Corymbia hamersleyana</i> and/ or <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> low isolated trees over <i>Acacia inaequilatera</i> and/ or <i>A. bivenosa</i> mid-tall sparse shrubland over <i>Triodia wiseana</i> low hummock grassland / <i>Eucalyptus leucophloia</i> subsp. <i>leucophl</i>	26,026.2
EIAarTwTspr	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> mid isolated trees <i>Acacia arida</i> mid open shrubland over <i>Triodia wiseana</i> , <i>T. sp. Robe River</i> (M.E. Trudgen et al. MET 12367) mid hummock grassland	2,622.6
EIAmTw	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> and/ or <i>Corymbia hamersleyana</i> mid open woodland over <i>Acacia maitlandii</i> mid sparse shrubland over <i>Triodia wiseana</i> low hummock grassland	64.0
*EvAcCcERit	<i>Eucalyptus victrix</i> low-mid open woodland over <i>Acacia citrinoviridis</i> and/ or <i>Melaleuca glomerata</i> tall open shrubland over * <i>Cenchrus ciliaris</i> , <i>Eriachne tenuiculmis</i> mid open tussock grassland	566
ExAcTHtTe	<i>Eucalyptus xerothermica</i> low open woodland over <i>Acacia citrinoviridis</i> , <i>A. bivenosa</i> , <i>A. pyrifolia</i> tall sparse shrubland over <i>Themeda triandra</i> , <i>Chrysopogon fallax</i> mid tussock grassland over <i>Triodia epactia</i> mid hummock grassland	557.7
SENgTw	<i>Senna glutinosa</i> subsp. <i>glutinosa</i> mid isolated shrubs over <i>Triodia wiseana</i> low open hummock grassland	690.8

1.8.4.1 Significant Vegetation Communities

There are no Threatened Ecological and Priority Ecological Communities occurring within the proposed PPB for proposed OPF, Power Plant and Bulk Fuel Facility. The nearest PEC is the Brockman Iron cracking clay communities of the Hamersley Range located ~19km to the west of the PPB.

1.8.4.2 Conservation Significant Flora Species

Previous surveys have recorded no threatened flora within the Prescribed Premises boundary footprint of the project area, however three priority flora species have been recorded within the nearby vicinity (5 km) of the PPB (Table 9 and Figure 6).

Table 9: Priority flora within nearby vicinity of PPB

Species	Conservation Status (WA)
<i>Indigofera sp. Bungaroo Creek</i>	Priority 3
<i>Goodenia nuda</i>	Priority 4
<i>Rhynchosia bungarensis</i>	Priority 4

1.8.4.3 Introduced Flora Species

Previous surveys have recorded no introduced flora species within the PPB footprint area. A number of introduced species have been identified within the nearby vicinity of the PPB, however none are Weeds of National Significance. Weeds have been commonly recorded along drainage lines, as well as scattered on some clay plains. Weeds were largely absent from the stony plains, slopes and foothills. Introduced species have been recorded within the nearby vicinity (5 km) of the proposal area (Figure 7):

- *Aerva javanica* (Kapok Bush)
- *Argemone ochroleuca* (Prickly Poppy)
- *Bidens bipinnata* (Beggartick)
- *Cenchrus ciliaris* (Buffle Grass)
- *Cenchrus setiger* (Birdwood Grass)
- *Datura leichhardtii* (Native Thornapple)
- *Flaveria trinervia* (Speedy Weed)
- *Malvastrum americanum* (Spiked Malvastrum)
- *Setaria verticillata* (Bristly Foxtail)
- *Vachellia farnesiana* (Mimosa Bush)

1.8.5 Fauna

It is not expected that any fauna species will be significantly impacted by the facility. The OPF and TLO, Power Plant, Bulk Fuel Facility and associated infrastructure is surrounded by surrounding suitable habitat such that no significant impacts are expected.

1.8.5.1 Fauna Habitats

A consolidated level 2 terrestrial fauna assessment was undertaken of the wider Eliwana area as well as a targeted survey for conservation significant bat species in critical habitat areas. Five habitat types were identified and including within the Prescribed Premise boundary (Table 10 and Figure 8):

Table 10: Fauna habitats within the PPB

Habitat Type	Description	Conservation Significant Fauna	Area within PPB (ha)
Gorges/Gully's	Moderately dense layer of <i>Corymbia hamersleyana</i> over <i>Acacia</i> shrubs over spinifex and herbs such as <i>Indigofera sp.</i> <i>Bungaroo Creek</i> . This habitat type often has large amounts of leaf litter, holding moisture and attracting insects.	Northern Quoll (denning, foraging) Pilbara Leaf-nosed Bat (roosting, foraging) Ghost Bat (roosting, foraging) Pilbara Olive Python (shelter and foraging)	4
Hills/Ranges/Plateaux	A continuous layer of bedrock and scattered skeletal soils with pebbles and stones. Sparse vegetation of scattered small shrubs and spinifex clumps on a rocky surface.	Northern Quoll (dispersal and foraging), Pilbara Olive Python (dispersal and foraging) Pilbara Leaf-nosed Bat (foraging) Ghost Bat (foraging)	51
Lower Slopes/Hillslopes	Rolling hills, footslopes of hills with a hard rocky substrate. Tree strata of <i>Eucalyptus leucophloia</i> , <i>Acacia</i> , over a shrub layer of <i>Senna</i> and a spinifex hummock grassland.	Western Pebble-mound Mouse	304
Plain (Shrubland)	Mixed <i>Acacia</i> (mulga) woodland over spinifex hummock grassland.	Nil.	2
Plain (Stony/Gibber)	Relatively flat, slightly undulating plain with open shrubland of <i>Acacia</i> 's and <i>Senna</i> over a spinifex hummock grassland. Substrate of bedrock with scattered pebbles and stones.	Western Pebble-mound Mouse Peregrine Falcon (foraging) Grey Falcon (foraging)	79

1.8.5.2 Significant Fauna Species

Previous surveys have recorded no significant fauna species within the Prescribed Premises boundary footprint of the project area. A total of 8 conservation significant fauna species have been recorded in the nearby vicinity (5 km) of the proposal area (Figure 8). These species are:

Table 11: Priority flora within nearby vicinity of proposal area

Species	Conservation Status (WA)
<i>Western Pebble-Mound Mouse (Pseudomys chapmani)</i>	Priority 4
<i>Lined soil-crevice skink (Notoscincus butleri)</i>	Priority 4
<i>Northern Quoll (Dasyurus hallucatus)</i>	EN
<i>Ghost Bat (Macroderma gigas)</i>	VU
<i>Pilbara Leaf-Nosed Bat (Rhinonictis aurantia)</i>	VU
<i>Pilbara Olive Python (Liasis olivaceus barroni)</i>	VU
<i>Nankeen kestrel (Falco cenchroides)</i>	Migratory

Species	Conservation Status (WA)
<i>Peregrine Falcon (Falco peregrinus)</i>	Migratory

1.8.6 Areas of Significance

Karijini National Park is the closest conservation reserve and is located approximately >100 km to the east of the proposed OPF, Power Plant and Bulk Fuel Storage.

2. PLANT DESIGN AND OPERATION

2.1 Key Characteristics

A new OPF, Power Plant, Bulk Fuel storage and associated infrastructure is proposed to be constructed to produce 30 MT of iron ore product per annum, average of 21 MW (maximum 24MW) of power and store up to 1,710 KL of diesel fuel during operation to provide a minimum 7 day supply. A description of the proposed facilities is contained within Table 12.

Table 12: Description of the proposed facilities

Aspect	Key Characteristics
Location	The OPF, Power Plant, Bulk Fuel storage and associated infrastructure will be located on Mining Lease M47/1524.
Inputs	<p>OPF</p> <p>Iron ore mined from the Eliwana and Flying Fish ore deposits and raw water, chemicals and hydrocarbons used to operate and maintain the OPF.</p> <p>Power Plant</p> <p>Diesel fuel is the only fuel that will be used in the power plant, with minor oils and water for maintenance.</p> <p>Bulk Fuel Storage</p> <p>8 x 200 KL Diesel tanks</p> <p>1 x 110 KL Diesel tank</p>
Outputs	<p>OPF</p> <p>Crushed and screened Iron Ore (<10mm) with 5.5% – 7% moisture</p> <p>Power Plant</p> <p>Average of 21 MW (maximum 24MW) of power,</p> <p>Bulk Fuel Storage</p> <p>Diesel fuel</p>
Key Environmental Values	<p>Surface Water</p> <p>Chemical and Hydrocarbon Management</p> <p>Vegetation and Flora Management</p> <p>Fauna Management</p> <p>Soil Contamination</p> <p>Dust Management</p>

2.2 Inputs

The main input into the OPF will be 29.5 MT of mined iron ore requiring processing (crushing and screening) to meet produce specifications (<10mm; 5.5-7% moisture). Small volumes of water are added to the ore during the crushing and screening to minimise the production of dust.

The main input into the Power Plant and Bulk Fuel Storage facility will be diesel fuel. The Bulk Fuel Storage is designed to store up to 1,710 KL of diesel, between 30% and 35% will be used in the Power Plant with the remainder used to power light vehicles (LV's) and heavy vehicles (HV's), generators, bores and other mobile equipment.

Water will be utilised in the OPF and TLO, Power plant and associated facilities, this will be supplied from borefields (and latter mine dewatering a separate application for mine dewatering will be submitted at a later date). The workshops and mobile equipment also utilise oils and greases to maintain equipment.

2.3 Outputs

The output of the OPF will be 30MT of iron ore product per annum. The project underpins the introduction of a 60% iron grade product and will maintain Fortescue's low cost status while providing greater flexibility and maintaining a minimum 170 million tons per annum production rate over 20 years.

The overland conveyor, stockpile and TLO, allow management of the iron ore product and loading of trains to allow the transport of the product to Fortescue's Herb Elliot Port Facility in Port Headland, via Fortescue's train network.

The Power Plant will consist of 15 installed 2 MVA Prime rated generators capable of producing a maximum output of approximately 24 MW Prime or 21 MW continuous. Nominally the Power Plant will operate approximately 10 generators running at a total output of 12 MW with 2 on standby and up to 3 generators allocated to be "Out of Service". Maximum output if all generators are run at once is 24 MW.

The Bulk Fuel facility will supply diesel fuel to the Power Plant as well as mobile equipment.

2.4 Location and Area of Disturbance

The OPF and TLO, Power Plant, Bulk Fuel Storage Facility and associated infrastructure will be located on mining tenement M47/1524. The area of Prescribed Premise boundary for the

construction of the OPF and TLO, Power Plant, Bulk Fuel Storage Facility and associated infrastructure is 440 ha (Figure 2).

Note: This Works Approval application does not seek approval for the clearing associated with the Power Plant, Bulk Fuel Storage Facility and associated infrastructure.

2.5 Process Description

2.5.1 OPF

The OPF is a dry processing plant which takes product from the feed size down to the product size via a three stage crushing and screening process. The OPF does not remove any impurities/waste and does not produce tailings. Components of the OPF (screens, crushers (jaw/cone/mills), conveyors listed below and shown in Figure 9.

- ROM Bin (BN101)
- Apron feeder (AF101)
- Primary crusher (Gyratory crusher, CRG101)
 - Feed = -1,500mm
 - Product = -250mm
- Hybrid feeders (Low profile feeders, BF221 & BF211)
- Scalping screens (SN211 & SN221)
- Secondary crushers (Sizer crushers, SZ211 & SZ221)
 - Feed = -250mm
 - Product = -150mm
- Belt feeders (BF311, BF321, & BF331)
- Tertiary Crushers (Cone crushers, CRC311, CRC 321, & CRC331)
 - Feed = -150mm
 - Product = -31.5mm
- Product screens (SN311, SN321, & SN331)
- Vibrating pan feeders (VF311, VF321, VF322, & VF331)

- Plant Conveyors (CV211, CV221, CV212, CV222, CV311, CV321, CV331, CV701 & CV702)

2.5.2 Overland conveyor and TLO

The product is then transferred to the overland Conveyor (CV703) and taken either straight to the TLO or stacked on stockpile (ST80-1) via the Stock piling conveyor (CV803) where it can be reclaimed for loading through the Stacker/Reclaimer when required. Components of the overland conveyor and TLO are listed below and shown in Figure 9.

- Overland Conveyor (CV703)
- Sampling Stations (SS701 & SS901)
- Stockpiling conveyor (CV801 & CV803)
- Stacker/Reclaimer
- TLO shuts and conveyors (SC901, 902, 903, CV901)
- Train Loadout

2.5.3 Dust Suppression

Dust suppression is via the installed number of dust suppression sprays, wash down points, covers and hoods and stockyard cannons. Usage for the entire OPF (Primary Crusher, Screening Building, Tertiary Crushing Building, OLC, Stockyard, and TLO) is expected to average 199m³/hr, with an instantaneous flow rate of 335m³/hr.

Usage for individual components of the OPF can be found on Figures 10-15.

Dust suppression within the OPF commences at the ROM Feed Bin (Figure 13) where a series of water sprays (Figure 14) wet the ore fed into the ROM Feed Bin. Water sprays are also located at the transfer point from the:

- Apron feeder to the Primary Crusher
- Primary Crusher to Primary Crusher Discharge Feed Conveyors
- Primary Crusher Discharge Feed Conveyors to Scalping Screen Feed Conveyors 2
- Tertiary crusher to Screen Feed Conveyor (CV311, 321 and 331)
- Product Screen undersize to Product Conveyor (CV701 and 702)

- Overland conveyor to stockpiling conveyor (CV703)
- Stacker conveyor transfer points
- Train loadout conveyor
- Train Loadout Bin

There are no water sprays on the Secondary Crusher, Belt Feeders (BF311, BF321, & BF331) or transfer to Tertiary Crushers, at this stage as the ore is still fairly coarse >250mm to <150mm and produces little dust. There is also a requirement to keep the moisture content low as moisture reduces the throughput of the secondary and tertiary crushers.

The Tertiary Crushers (Figure 13) are fitted with dust extractor fans which report to dust collectors. The dust is then fed back into the processing circuit below the crusher, where it is moistened by dust suppression sprays.

A moisture analyser will be installed on Product Conveyor (CV701 and 702) with additional water sprays to ensure the product meets the required moisture content.

Dust suppression on the ore stockpile is via water cannons. Dust suppression during construction will be via water carts.

2.5.4 Raw water

Raw water used in the OPF will be sourced from water supply borefields (and latter mine dewatering borefields). Raw water will be pumped to raw water tanks at the OPF and TLO, where it will be reticulated to offices, workshops, and OPF to be used as dust suppression. Figure 15 shows the schematic distribution of water around the OPF and TLO.

Water quality ranges from 200mg/L TDS up to 3500mg/L TDS (Fortescue 2018). Water used for potable use will be processed through an RO plant, whereas water used in the OPF and TLO will be raw water.

2.5.5 Bulk Fuel storage

The Bulk Fuel Storage Area will consist of diesel storage and re-fuelling facilities which includes the following:

- Main storage tanks with total capacity of 1,000,000 litres (5 x 200 KL tanks);
- Fully automated decant facilities for unloading triple road train tankers including pumps, piping, concrete slabs and adjacent sump pits for spills per decant point;

- LV re-fuelling with standard bowser for light vehicles and buses;
- HV re-fuelling with minimum rate of 800 litres/minute;
- Storage tank/s at HV re-fuelling location (e.g. 110kL tank) if re-fuelling rate of 800 litres/minute cannot be achieved with direct pipeline from the main storage tanks;
- Pumps, above ground pipeline and underground road crossings from the main storage tanks to the HV and LV re-fuelling locations and the Power Station storage tanks;
- Tracking system as per:
 - Deliveries to the main storage tanks;
 - HV and LV re-fuelling;
- Safety showers and eye wash stations at storage and re-fuelling locations.

2.5.6 Power Station and associated Fuel Storage

The Power Station will include:

- Storage tanks with total capacity of 600,000 litres (3 x 200 KL tanks; as these tanks will be located in close proximity from the Bulk Fuel facility and will be connected by pipework. Tanks will be double skinned for spill containment;
- Fully automated control system to fill these Power Station tanks from the Bulk Fuel storage tanks;
- Fully automated decant facilities for single point connection ;
- Above ground piping is proposed with underground piping for road crossings;
- Pumps, piping and control systems for fuel transfer;
- 15 self-bunded diesel generator sets;
- Pumps, transfer points will be bunded; and
- Tracking system for:
 - Deliveries to the storage tanks;
 - Fuel usage by generators.

3. EMISSIONS, DISCHARGES, POTENTIAL IMPACTS AND ENVIRONMENTAL MANAGEMENT

An assessment of the potential emissions, receptors and adverse effects relevant to the OPF, TLO, Power Plant, Bulk Fuel Storage and associated infrastructure and the corresponding management measures are provided in this section.

3.1 Greenhouse Gas Emission and Monitoring

The main emissions from the Power Station are emissions to air of nitrogen oxide, carbon dioxide, hydrocarbons and particulates (Table 13). These emissions have been determined by the manufacturer (Appendix 1) and will be confirmed during commissioning. Due to the remote location of the Power Station away from sensitive premises (Eliwana Camp >5km from Power Plant) the emission risk is very low.

Table 13: Expected Power Plant emissions summary

Emission	Expected volume
Total NO _x	18,261 g/hr
Total CO	1,567 g/hr
Total HC	333 g/hr
Total particulates	103 g/hr

3.2 Hydrocarbon Management

The use of hydrocarbons in the OPF has been avoided where possible by using electric motors to drive the major processing equipment and the only hydrocarbons present in the plant areas are associated with lubrication and tensioning systems. The rock breaker, bin shut-off/isolation gates and TLO cannot be bought with purely electronic drives as they utilise large hydraulic cylinders to move/function. The hydraulic/lubrication packs associated with these will have drip trays to mitigate the risk of environmental contamination.

Operation of the Power Station, Bulk Fuel Facility and associated infrastructure will require the storage of diesel and other hydrocarbons. The Bulk Fuel facilities will be designed to store up to 1600 KL of diesel. Other hydrocarbons expected to be stored on site include:

- New Oil : 27,000 litres
- Used/waste Oil : 10,000L in concrete bund or self bunded tanks.

Chemicals and hydrocarbons utilised during construction will be managed in accordance with Fortescue's *Chemical and Hydrocarbon Management Plan* (100-PL-EN-0011). Fortescue anticipates that these management measures will be adequate to mitigate significant risk to from accidental chemical and hydrocarbon spills.

3.3 Vegetation and Flora Management

To mitigate the potential impacts to significant flora and vegetation, the management measures outlined in the *Significant Flora and Vegetation Management Plan* (45-PL-EN-0017) will be implemented during the construction and operating of the OPF and TLO, Power Plant and Bulk Fuel Storage and associated infrastructure.

To mitigate the potential impacts from weeds, the management measures outlined in Fortescue's Weed Management Plan will be implemented within the PPB to ensure new weed species are not introduced into the project area.

3.4 Fauna Management

No critical habitat for conservation significant fauna will be disturbed as a result of the construction of the proposed OPF and TLO, Power Station, Bulk Fuel Facility and associated infrastructure.

3.5 Dust Management

Dust management measures outlined in Fortescue's *Mine and Rail Dust Management Plan* (45-PL-EN-0030) will be implemented during the construction and operating of the Power Station, Bulk Fuel Facility and associated infrastructure. This will ensure that dust emissions do not adversely impact surrounding land users or the environment.

The OPF and TLO have been designed with dust management measures including sprays and dust extraction fans to minimise dust produced by the crushing, screening and movement of the

ore. Water cannons on stockpile to minimise dust lift off from the stockpile. See section 2.5.3 for further details.

3.6 Surface Water Management

Surface water will be managed in accordance with the *Eliwana Surface Water Management Plan* (100-PL-EN-1015).

The general surface water management philosophy for the OPF, TLO, Power Plant and Bulk Fuel storage area is that any catchment flows intercepted by the facilities will be diverted away via diversion drains or conveyed across the structure via culverts. In accordance with the Fortescue *Standard Engineering Specification for Drainage and Flood Protection*, surface water management infrastructure is typically designed for a 1 in 20 AEP or 1 in 100 AEP flood events for critical facilities such as the OPF and the TLO. Sedimentation basins have also been included in the surface water management design to manage sediments runoff from these facilities. These have generally been designed for a 1 in 2 AEP with 1 hour critical duration flood event.

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Figure 1: Eliwana Mine Project Location



LEGEND

Towns

Eliwana Project

FMG Rail Alignments

BHPB Rail

Rio Tinto Rail

Roy Hill Rail

Data Sources:
3rd Rail, RTIO, BHPB, RHIO.
Towns, Landgate.
Basemap, GA.

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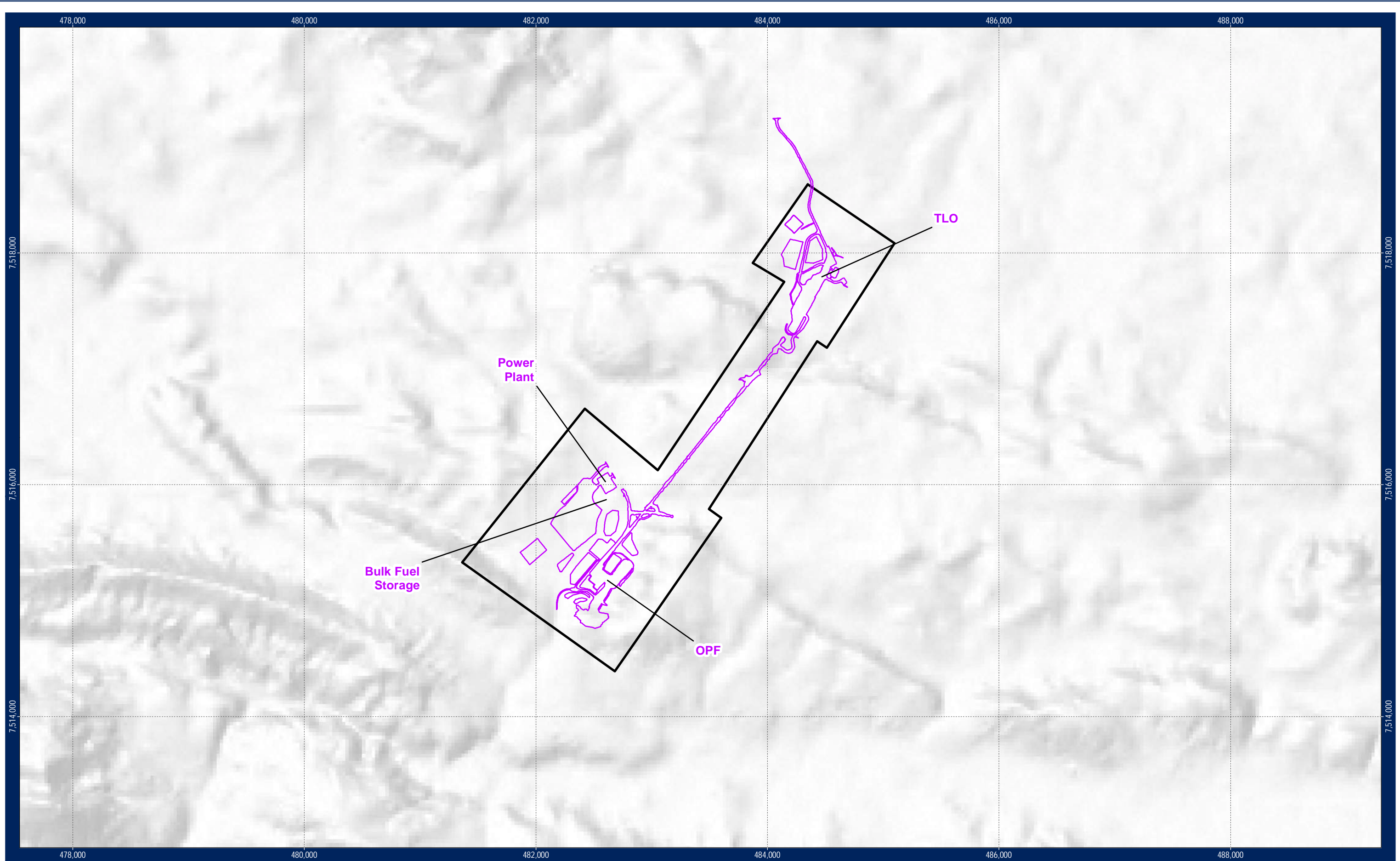
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Document Name: 751EW_MP_EN_0028.001_r0

Date: 23/07/2019
Size: A3L
Revision: 0
Confidentiality: 1



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The New Force in Iron Ore

Figure 1
Project Location

Figure 2: Eliwana Proposed Infrastructure and Prescribed Premises Boundary



LEGEND

-  Proposed Infrastructure
-  Prescribed Premise Boundary

Data Source(s):
Tenure based on source from DMIRS, 2019
WA Land Systems: Landgate, 2018
SRTM, GA
All other data: FMG, 2019

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Kilometres



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Drawn By: P. Kulkarni
Revised By: pkulkarni
Approved By: P. Mastalir
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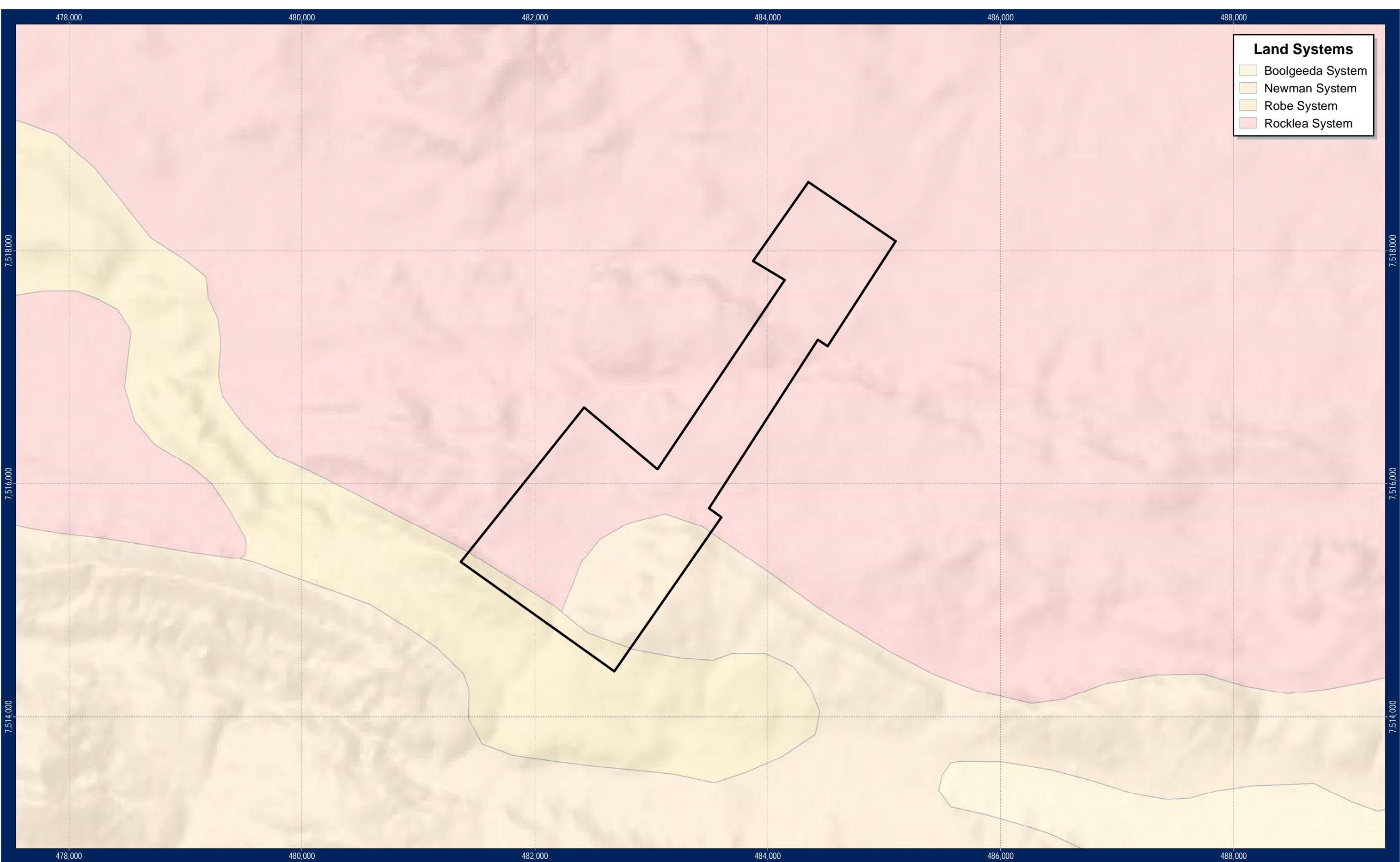
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Figure 2
Eliwana Proposed Infrastructure
& Prescribed Premises Boundary



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Figure 3: Land Systems



LEGEND
[Black outline] Prescribed Premise Boundary

Data Source(s):
Tenure based on source from DMIRS, 2019
WA Land Systems: Landgate, 2018
SRTM, GA
All other data: FMG, 2019

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Kilometres



Requested By: B. Sinclair
Drawn By: P. Kulkarni
Revised By: pkulkarni
Approved By: P. Mastalir
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Coordinate System: GDA 1994 MGA Zone 50
Document Name: 751EW_MP_EN_0028.003_r0

Date: 23/07/2019
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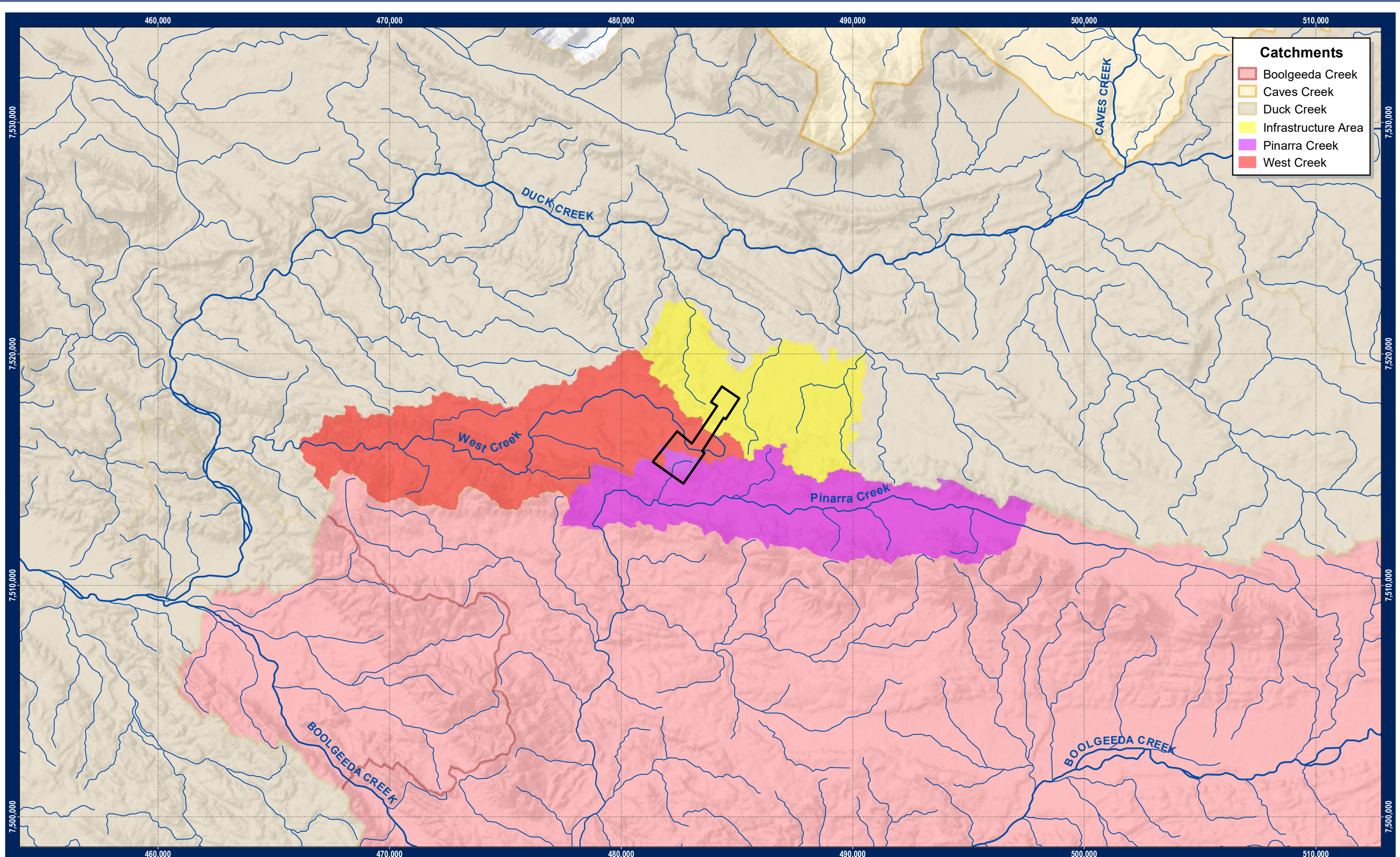
Figure 3
Land Systems



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Figure 4: Catchment Boundaries and Surface Water

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Catchments

- Boolgeeda Creek
- Caves Creek
- Duck Creek
- Infrastructure Area
- Pinarra Creek
- West Creek

LEGEND

- Prescribed Premise Boundary
- Watercourses

Data Source(s):
Tenure based on source from DMIRS, 2019
Subcatchments: DoW
SRTM, GA
All other data: FMG, 2019

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Kilometres

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Drawn By: P. Kulkarni
Revised By: pkulkarni
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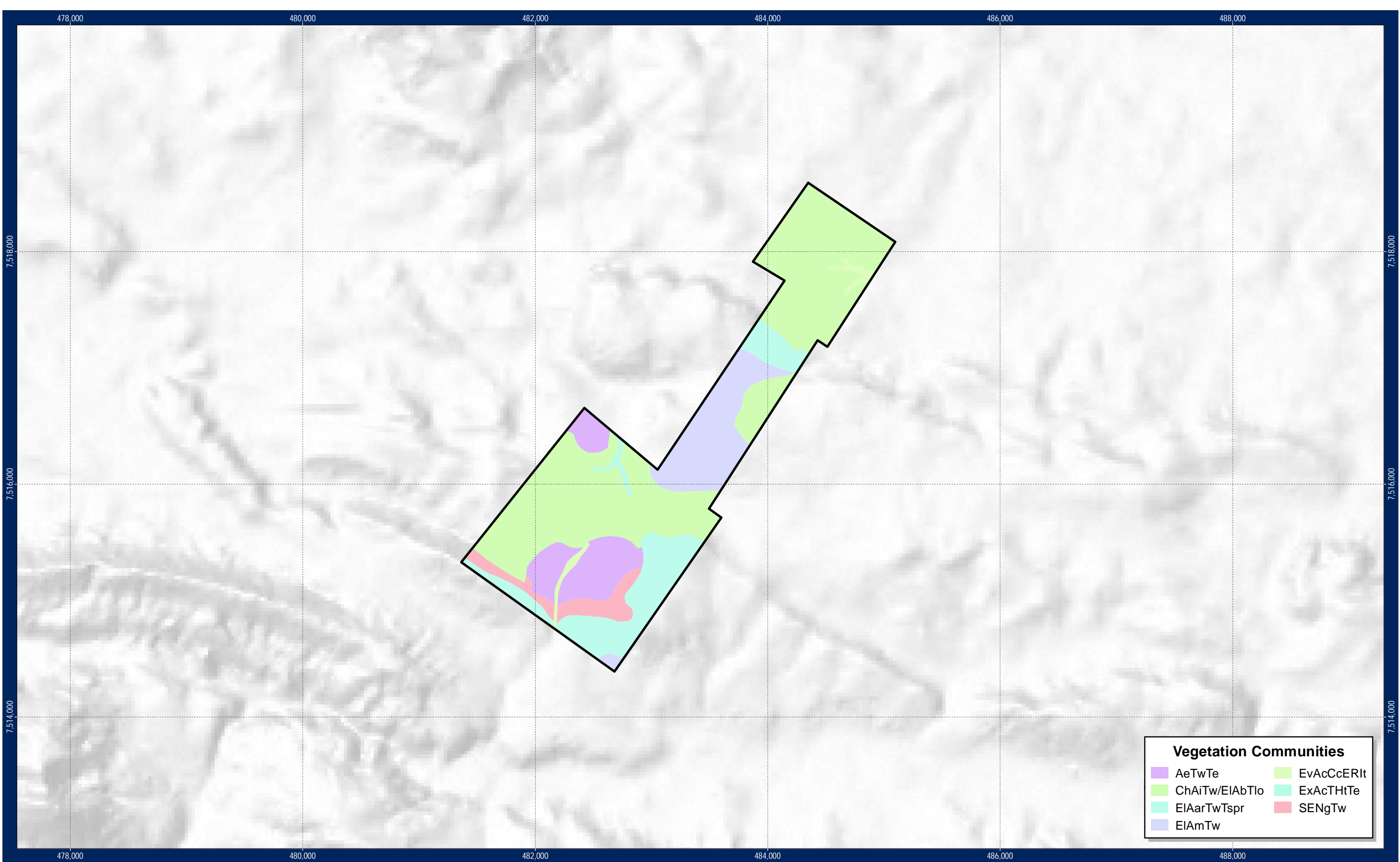
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Revision: 1
Confidentiality: 1

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Figure 4
Surface Water
Catchment Boundaries

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Figure 5: Vegetation Communities



LEGEND
[Black Outline] Prescribed Premise Boundary

Data Source(s):
Tenure based on source from DMIRS, 2019
SRTM, GA
All other data: FMG, 2019

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Kilometres

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Revised By: pkulkarni
Approved By: P. Mastalir
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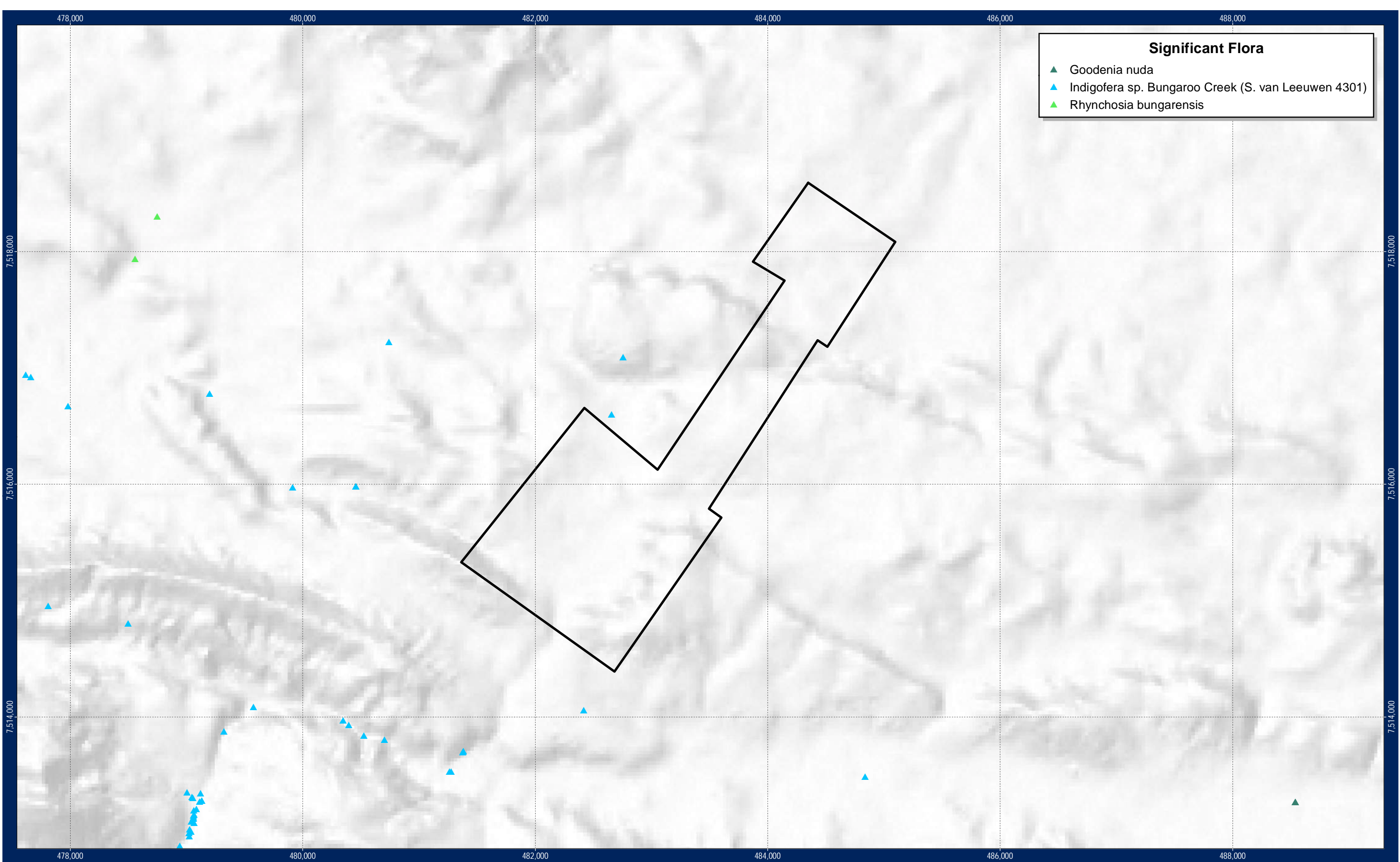
Vegetation Communities

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[Light Green]	ChAiTw/EIAbTlo	[Cyan]	ExAcTHtTe
[Cyan]	EIAarTwTspr	[Pink]	SENgTw
[Light Blue]	EIAmTw		

Figure 5
Vegetation Communities

Figure 6: Conservation Significant Flora


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LEGEND

 Prescribed Premise Boundary

Data Source(s):
 Tenure based on source from DMIRS, 2019
 SRTM, GA
 All other data: FMG, 2019

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 Kilometres

Requested By: B. Sinclair
 Drawn By: P. Kulkarni
 Revised By: pkulkarni
 Approved By: P. Mastalir
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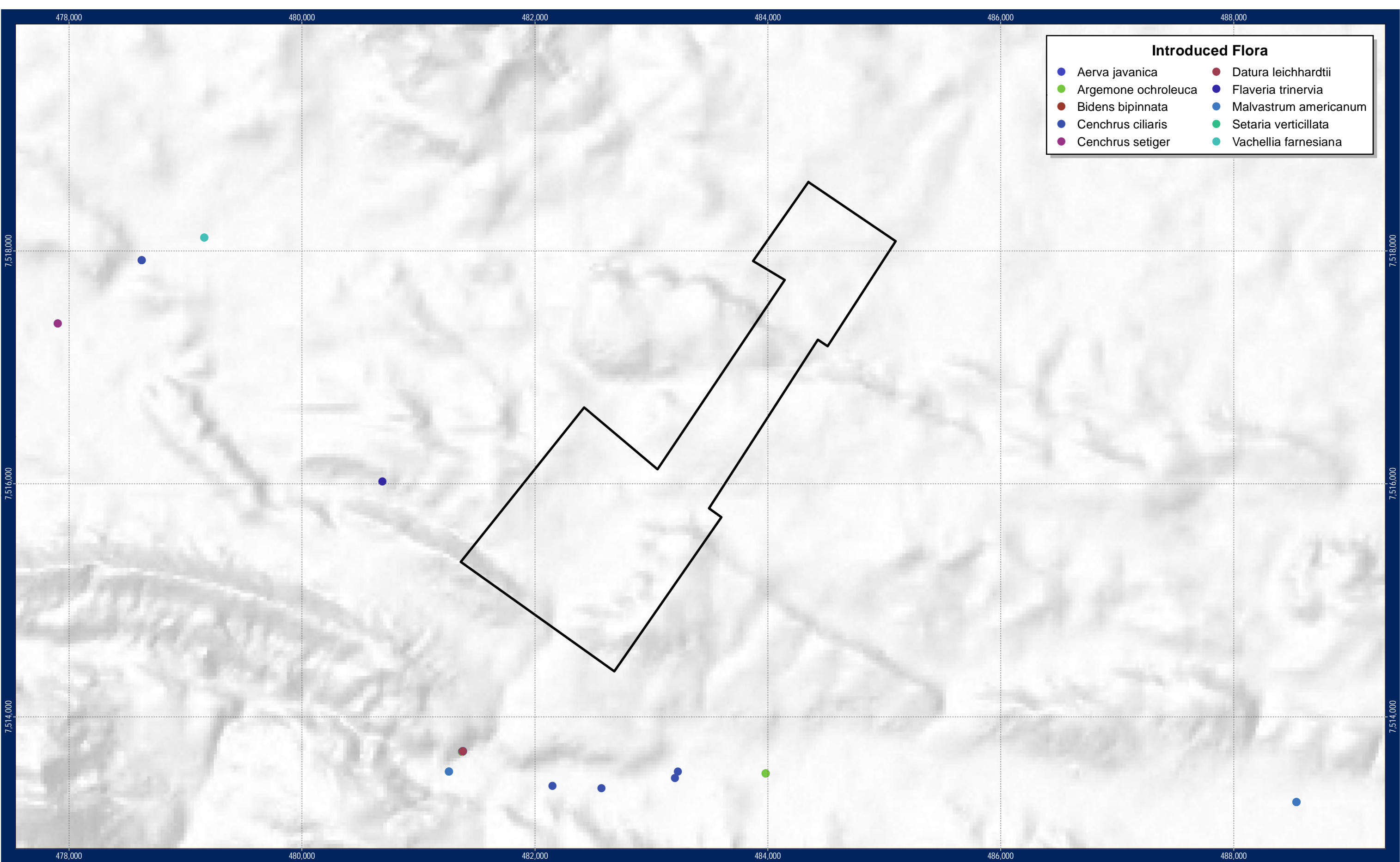
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Figure 6
Conservation Significant Flora



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 The New Force in Iron Ore

Figure 7: Introduced Flora



LEGEND
□ Prescribed Premise Boundary

Data Source(s):
Tenure based on source from DMIRS, 2019
SRTM, GA
All other data: FMG, 2019

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Kilometres



Requested By: B. Sinclair
Drawn By: P. Kulkarni
Revised By: pkulkarni
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Size: A3L
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Figure 7
Introduced Flora



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The New Force in Iron Ore

Figure 8: Fauna Habitat and Conservation
Significant Fauna

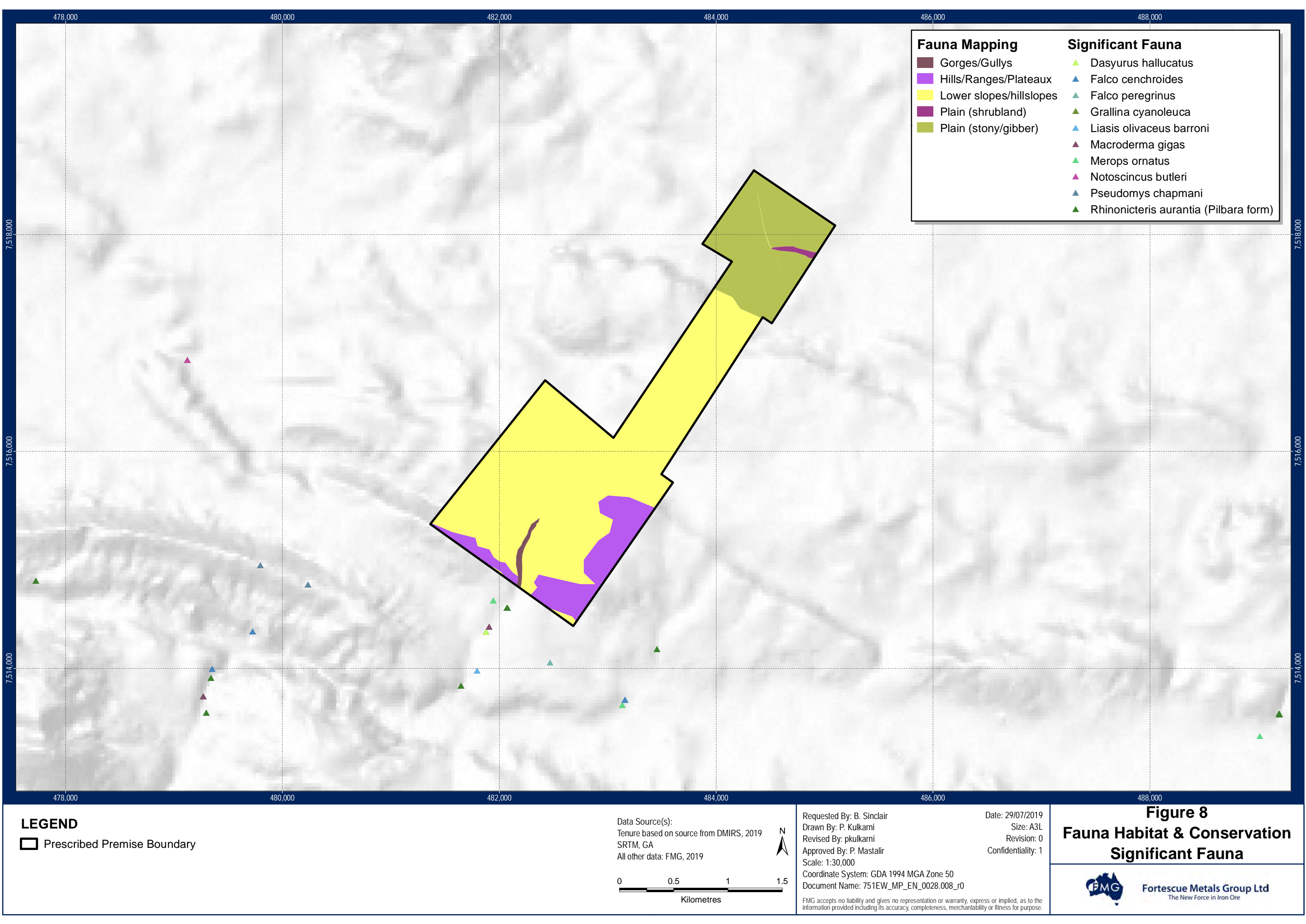


Figure 9: OPF and TLO Overall Plant Process Flow Diagram

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Figure 10: **OPF and TLO Overall Site General Arrangement**

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Figure 11: OPF General arrangement

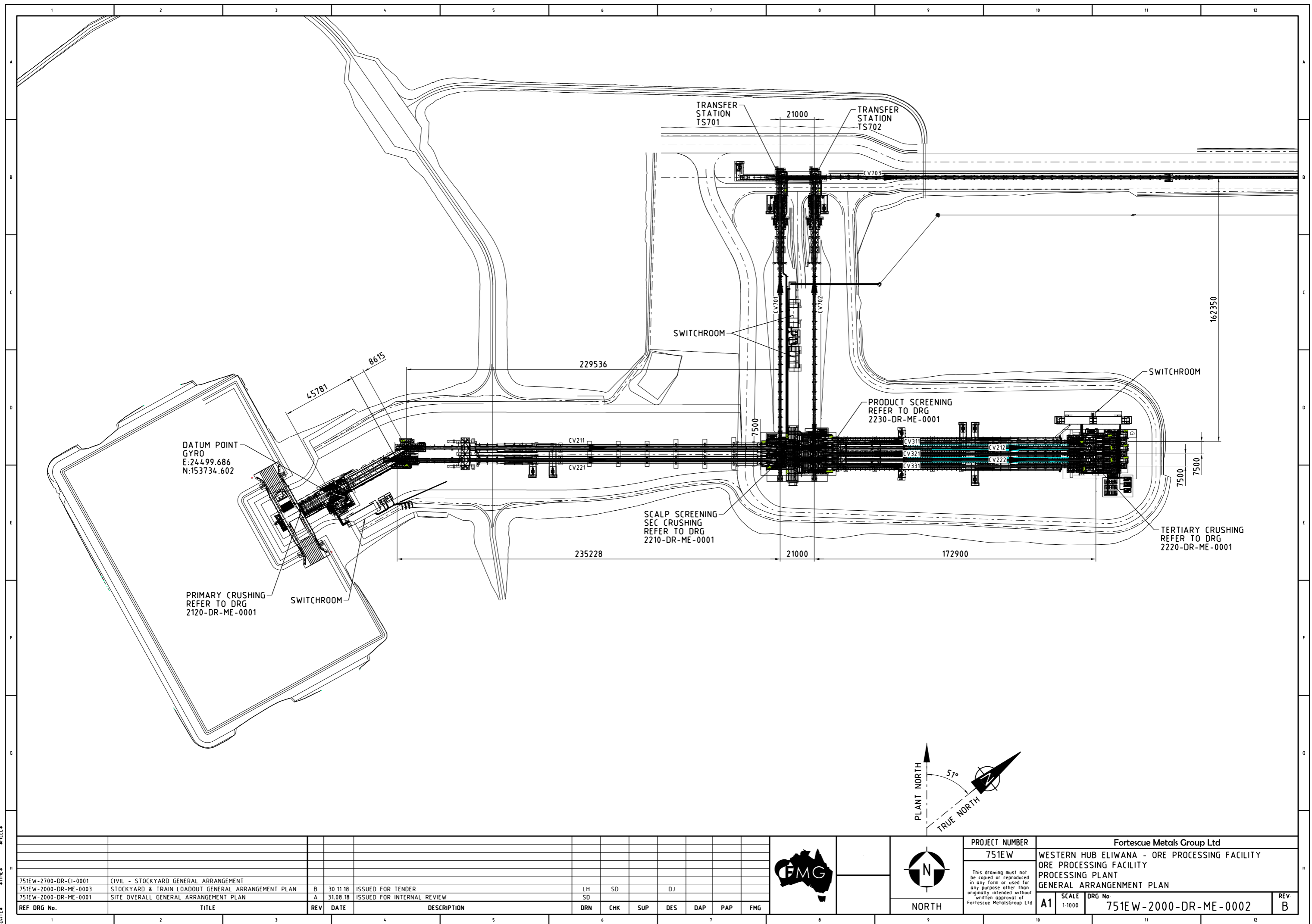
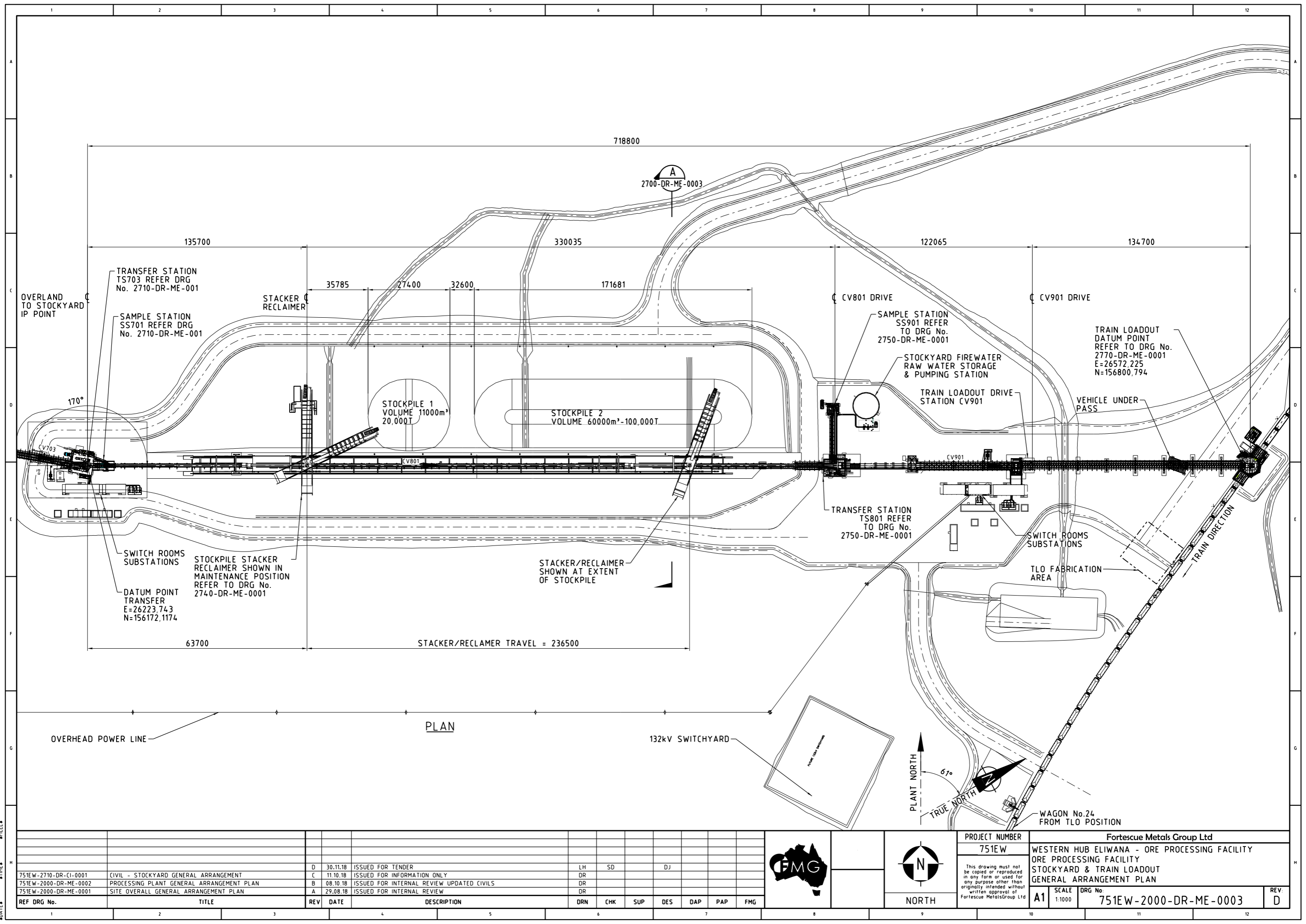


Figure 12: **Stockyard and TLO General
Arrangement**





																PROJECT NUMBER				Fortescue Metals Group Ltd			
																751EW				WESTERN HUB ELIWANA - ORE PROCESSING FACILITY			
																This drawing must not be copied or reproduced in any form or used for any purpose other than originally intended without written approval of Fortescue Metals Group Ltd				ORE PROCESSING FACILITY			
																				STOCKYARD & TRAIN LOADOUT			
																				GENERAL ARRANGEMENT PLAN			
751EW-2710-DR-CI-0001		CIVIL - STOCKYARD GENERAL ARRANGEMENT		D	30.11.18	ISSUED FOR TENDER				LH	SD	DJ											
751EW-2000-DR-ME-0002		PROCESSING PLANT GENERAL ARRANGEMENT PLAN		C	11.10.18	ISSUED FOR INFORMATION ONLY				DR													
751EW-2000-DR-ME-0001		SITE OVERALL GENERAL ARRANGEMENT PLAN		B	08.10.18	ISSUED FOR INTERNAL REVIEW UPDATED CIVILS				DR													
				A	29.08.18	ISSUED FOR INTERNAL REVIEW				DR													
REF DRG No.		TITLE		REV	DATE	DESCRIPTION				DRN	CHK	SUP	DES	DAP	PAP	FMG							

Figure 13: OPF Primary Crushing Plant piping and instrumentation diagram

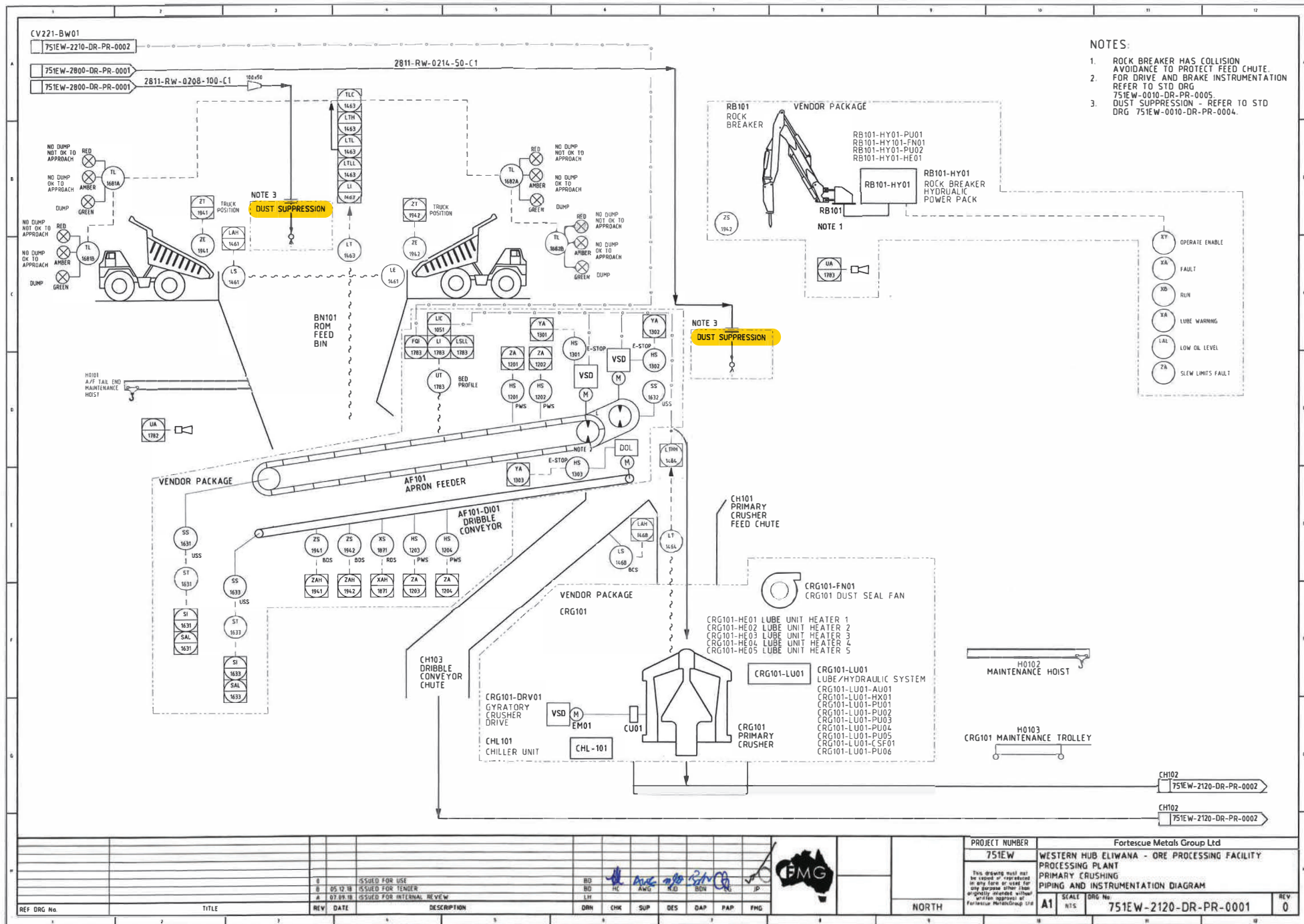


Figure 14: OPF and TLO Water Spray Details

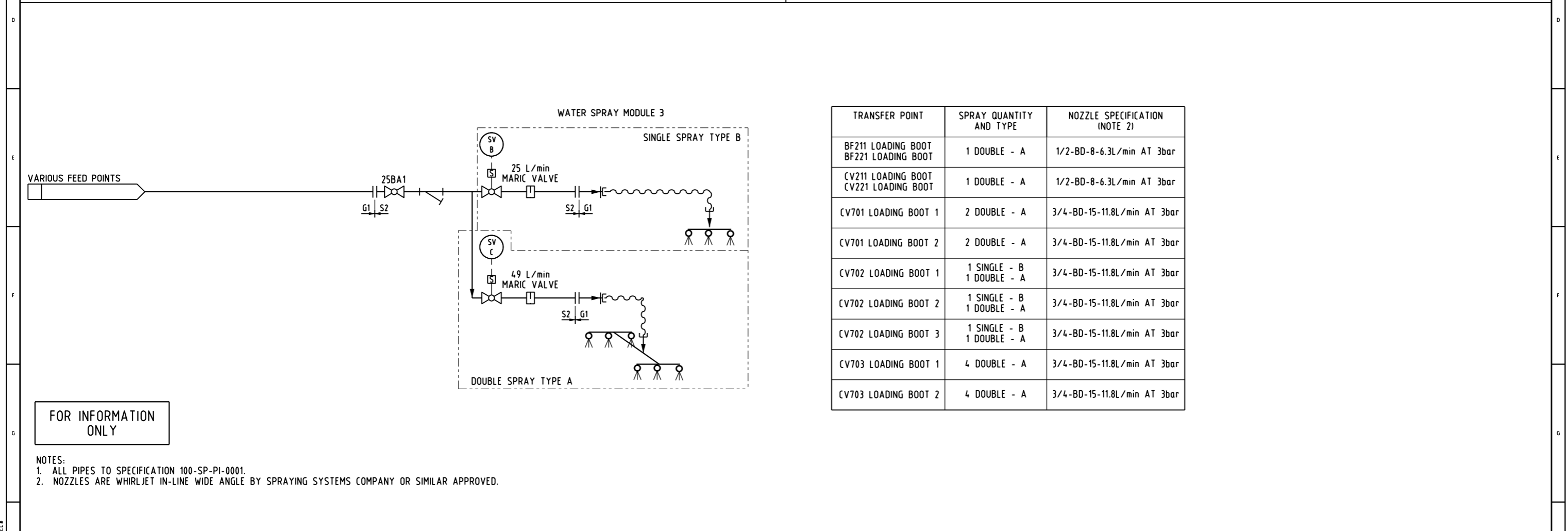
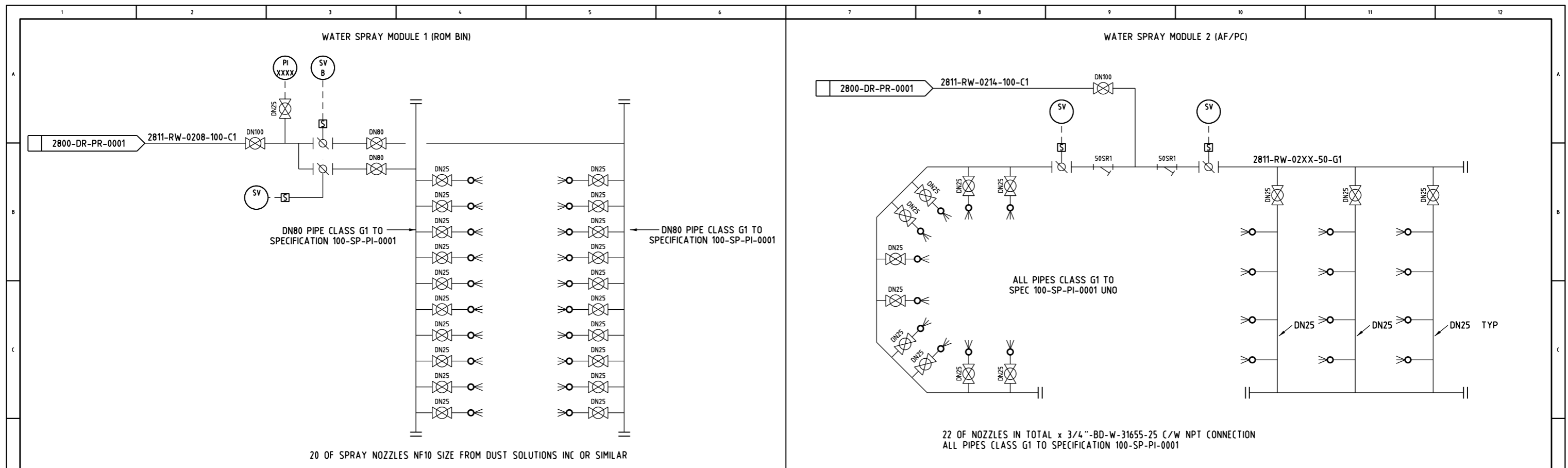
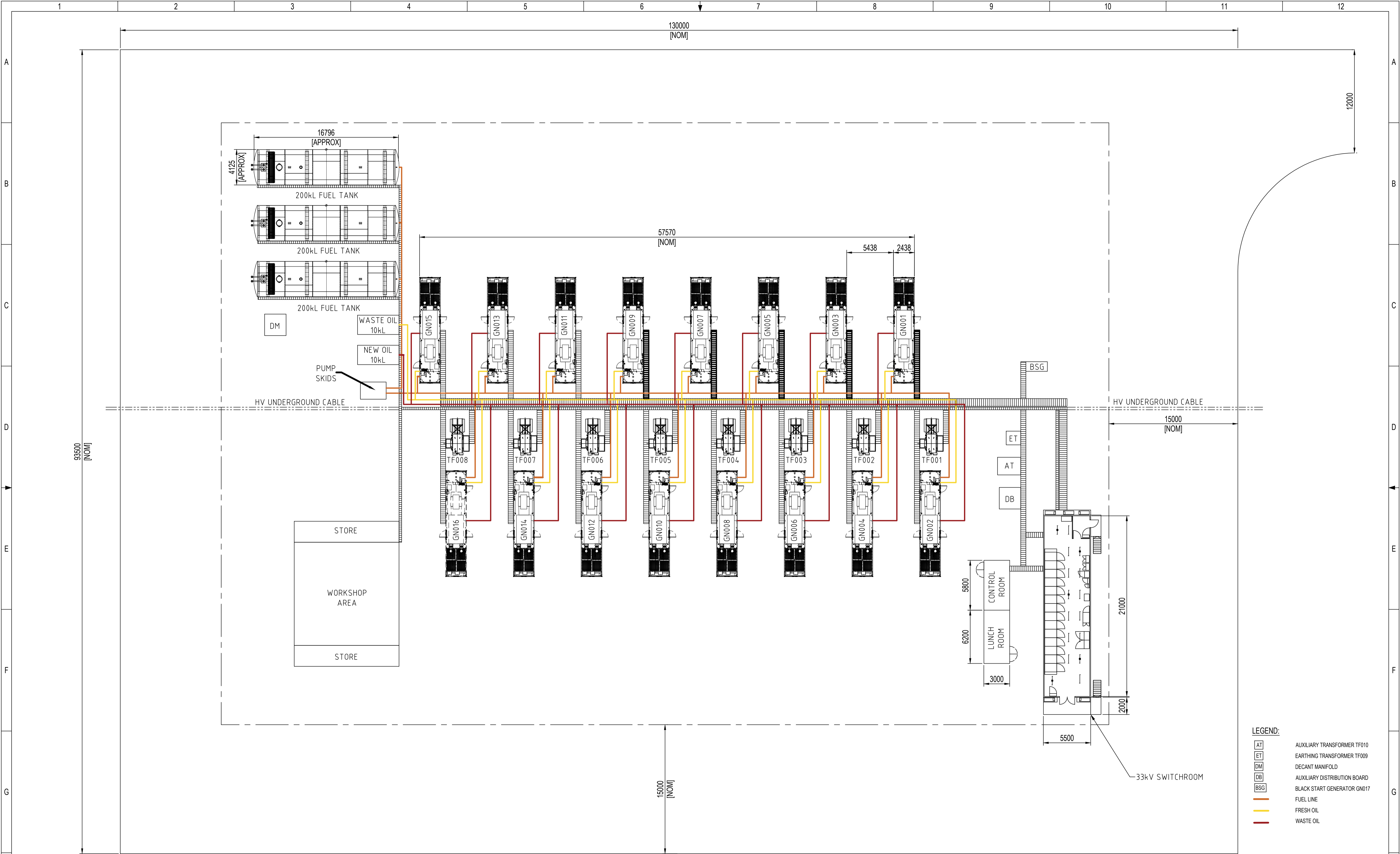
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Figure 15: Power Plant Layout




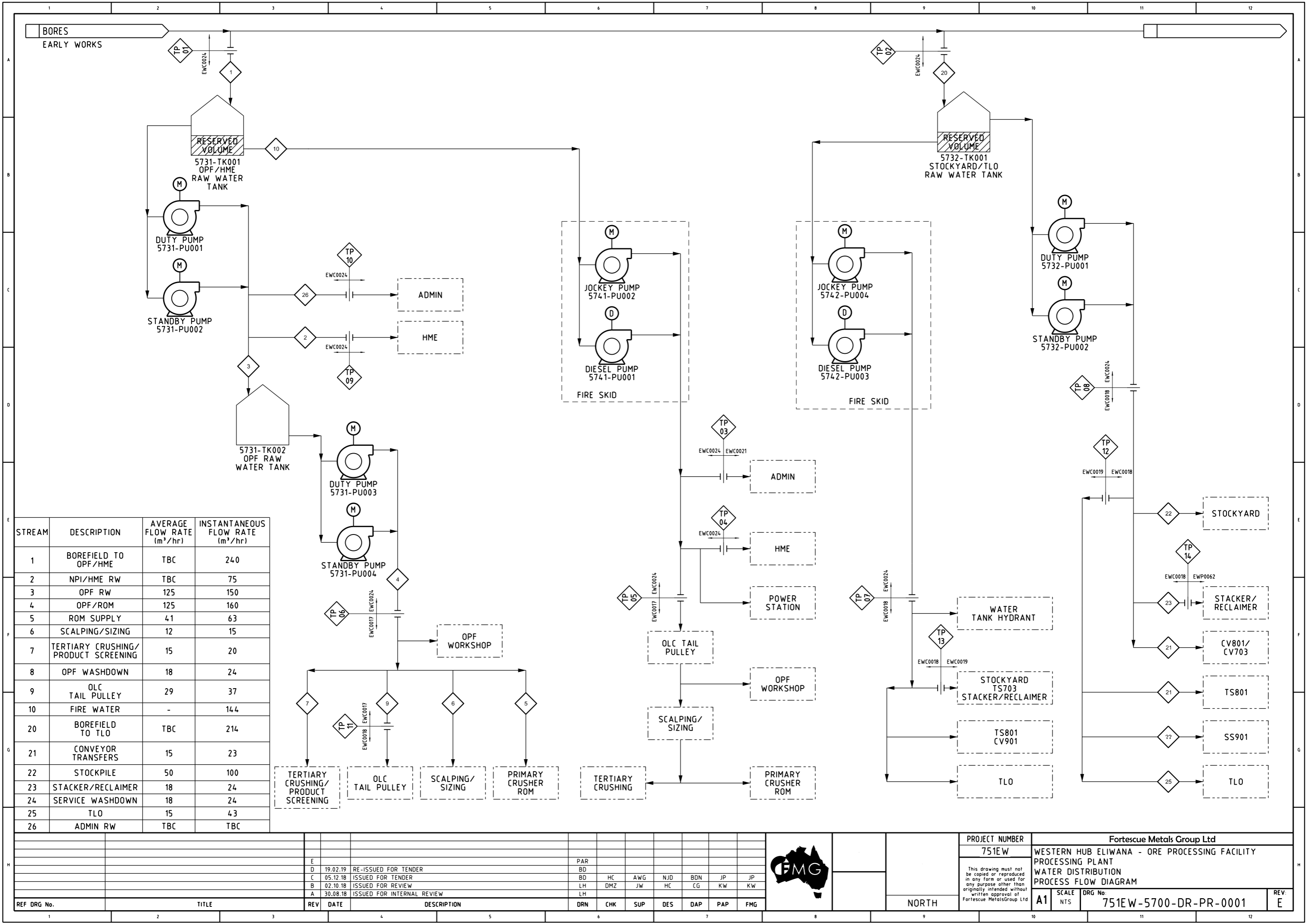
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Figure 16: OPF and TLO Water Distribution
Process Flow Diagram



APPENDIX 1 – POWER PLANT EMISSIONS

Performance Number: DM9408

Change Level: 01

SALES MODEL:	3516B	COMBUSTION:	DIRECT INJECTION
BRAND:	CAT	ENGINE SPEED (RPM):	1,500
ENGINE POWER (BKW):	1,743.0	HERTZ:	50
GEN POWER WITH FAN (EKW):	1,600.0	FAN POWER (KW):	75.0
COMPRESSION RATIO:	14	ASPIRATION:	TA
RATING LEVEL:	PRIME	AFTERCOOLER TYPE:	SCAC
PUMP QUANTITY:	2	AFTERCOOLER CIRCUIT TYPE:	JW+OC, AC
FUEL TYPE:	DIESEL	AFTERCOOLER TEMP (C):	90
MANIFOLD TYPE:	DRY	JACKET WATER TEMP (C):	99
GOVERNOR TYPE:	ADEM3	TURBO CONFIGURATION:	PARALLEL
ELECTRONICS TYPE:	ADEM3	TURBO QUANTITY:	4
CAMSHAFT TYPE:	STANDARD	TURBOCHARGER MODEL:	BTVA8503-50T-1.08
IGNITION TYPE:	CI	COMBUSTION STRATEGY:	LOW BSFC
INJECTOR TYPE:	EUI	CRANKCASE BLOWBY RATE (M3/HR):	66.1
FUEL INJECTOR:	2309457	FUEL RATE (RATED RPM) NO LOAD (L/HR):	43.0
REF EXH STACK DIAMETER (MM):	305	PISTON SPD @ RATED ENG SPD (M/SEC):	9.5
MAX OPERATING ALTITUDE (M):	1,600		

INDUSTRY	SUBINDUSTRY	APPLICATION
ELECTRIC POWER	STANDARD	PACKAGED GENSET

General Performance Data

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP
EKW	%	BKW	KPA	G/BKW-HR	L/HR	KPA	DEG C	DEG C	KPA	DEG C
1,600.0	100	1,743	2,021	197.2	409.8	230.4	100.2	647.3	165.3	483.7
1,440.0	90	1,576	1,827	197.8	371.5	202.3	98.4	631.9	144.2	483.4
1,280.0	80	1,410	1,635	198.8	334.2	173.7	96.6	617.0	123.9	485.8
1,200.0	75	1,328	1,539	199.5	315.7	159.3	95.7	609.6	114.1	487.4
1,120.0	70	1,245	1,443	200.4	297.3	145.0	94.9	602.3	104.5	488.9
960.0	60	1,080	1,253	202.7	261.0	117.2	93.6	586.6	86.4	490.7
800.0	50	916	1,062	206.0	225.0	91.2	92.9	566.3	70.1	489.1
640.0	40	754	874	210.9	189.5	67.3	92.2	541.0	55.7	483.3
480.0	30	590	684	218.8	153.9	47.1	91.5	498.3	43.9	462.0
400.0	25	507	588	224.7	135.9	38.0	91.2	470.7	38.7	444.7
320.0	20	424	491	232.8	117.6	29.8	90.8	438.5	33.9	422.7
160.0	10	252	292	264.8	79.6	15.7	90.0	353.9	25.6	349.8

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP	WET INLET AIR VOL FLOW RATE	ENGINE OUTLET WET EXH GAS VOL FLOW RATE	WET INLET AIR MASS FLOW RATE	WET EXH GAS MASS FLOW RATE	ENGINE OUTLET WET EXH VOL FLOW RATE (0 DEG C AND 101 KPA)	ENGINE OUTLET DRY EXH VOL FLOW RATE (0 DEG C AND 101 KPA)
EKW	%	BKW	KPA	DEG C	M3/MIN	M3/MIN	KG/HR	KG/HR	M3/MIN	M3/MIN
1,600.0	100	1,743	177	208.1	126.0	332.0	8,776.4	9,120.2	119.8	109.4
1,440.0	90	1,576	156	191.8	115.4	304.1	8,041.8	8,353.5	109.8	100.3
1,280.0	80	1,410	134	174.8	104.5	276.1	7,282.7	7,563.0	99.4	90.8
1,200.0	75	1,328	123	166.1	99.0	262.0	6,899.9	7,164.8	94.1	86.0
1,120.0	70	1,245	112	157.2	93.5	248.0	6,517.2	6,766.6	88.9	81.3
960.0	60	1,080	91	138.9	82.7	220.2	5,770.6	5,989.4	78.7	72.0
800.0	50	916	72	120.2	72.6	192.8	5,063.6	5,252.2	69.1	63.3
640.0	40	754	53	101.9	63.1	166.1	4,404.6	4,563.7	60.0	55.0
480.0	30	590	38	84.5	55.0	140.8	3,842.1	3,971.2	52.3	48.2
400.0	25	507	31	76.2	51.5	128.4	3,592.4	3,706.3	48.9	45.2
320.0	20	424	25	68.0	48.2	116.1	3,363.3	3,461.9	45.6	42.4
160.0	10	252	14	53.4	42.9	91.8	2,989.6	3,056.3	40.2	37.9

Heat Rejection Data

GENSET	PERCENT	ENGINE	REJECTION	REJECTION	REJECTION	EXH	FROM OIL	FROM	WORK	LOW HEAT	HIGH HEAT
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