## Brief Process description for EPU/ QPU:

Early Production Units (EPUs) or Quick Production Units (QPUs) will be installed for the processing of produced well fluid. A EPU/ QPU will be a packaged/ modular mobile unit and will mainly consists of a heater-treater separator or a production heater followed with a three phase separator, electrostatic coalescer, oil storage tanks, oil tanker loading system, produced water separation and disposal system, power generation (GEG or DG), test separator skid, utility systems such as fuel gas, flare, Inst. Air package, diesel storage, firefighting equipment, etc. A QPF will be designed for a capacity of 2,000 BLPD (Barrels of liquid per Day) with water cut variation from 0 – 50 vol%.

Produced well fluid from one or more successful exploratory/ appraisal wells will be gathered & sent to heater-treater separator skid for primary separation & heating purpose. Gathered produced fluid will be heated & degassed in heater-treater separator skid operating at ~2.5 – 3 Barg and ~70 – 80 $^{0}$C and separated in to gas, oil and water streams. The separated produced (associated) gas will be either routed to fuel gas system or to flare depending on the quantity of produced (associated) gas. In case of sufficient quantity of produced gas, a part of the produced gas will be used for power generation (using GEG), for firing in heater-treater separator skid and for blanketing & purging purpose. The surplus gas post internal consumption (if any) will be routed to flare for safe disposal purpose.

Separated oil from heater-treater separator skid will be sent to electrostatic coalescer separator (if needed, based on oil properties) to separate the residual water and achieve BS&W specifications. The treated crude oil from electrostatic coalescer separator will be sent to oil storage tanks. From oil storage tanks, oil will be pumped & loaded in to road tanker using the tanker loading facility for evacuation of crude oil to the nearby available facilities like terminals/ depots of consumers.

Separated produced water (PW) from heater-treater separator skid will be sent to degasser vessel operating at low pressure. The evolved HC gases from degasser vessel will be routed to flare for safe disposal and the degassed water sent to PW treatment package.

The PW treatment package will consists of a compact flotation unit or other equivalent gas floatation based de-oiling (oil removal) system and a filtration system. The treated water from PW treated skid will be stored in PW storage tanks. The produced water will be treated to achieve MoEF/ CPCB/ SPCB specifications (discharge standards) and will be disposed off. The treated effluent (i.e. produced water) will be disposed-off using either a nearby down hole disposal well (by reinjection in abandoned well) or other available and suitable onshore disposal medium or solar/ mechanical evaporators depending on the quantity and feasibility.

The power requirement will be met through either state electricity grid and/ or installation of Diesel/ Gas Engine Generator(s) using produced gas. If produced gas is sufficient quantity then power generation using produced gas will be preferred.

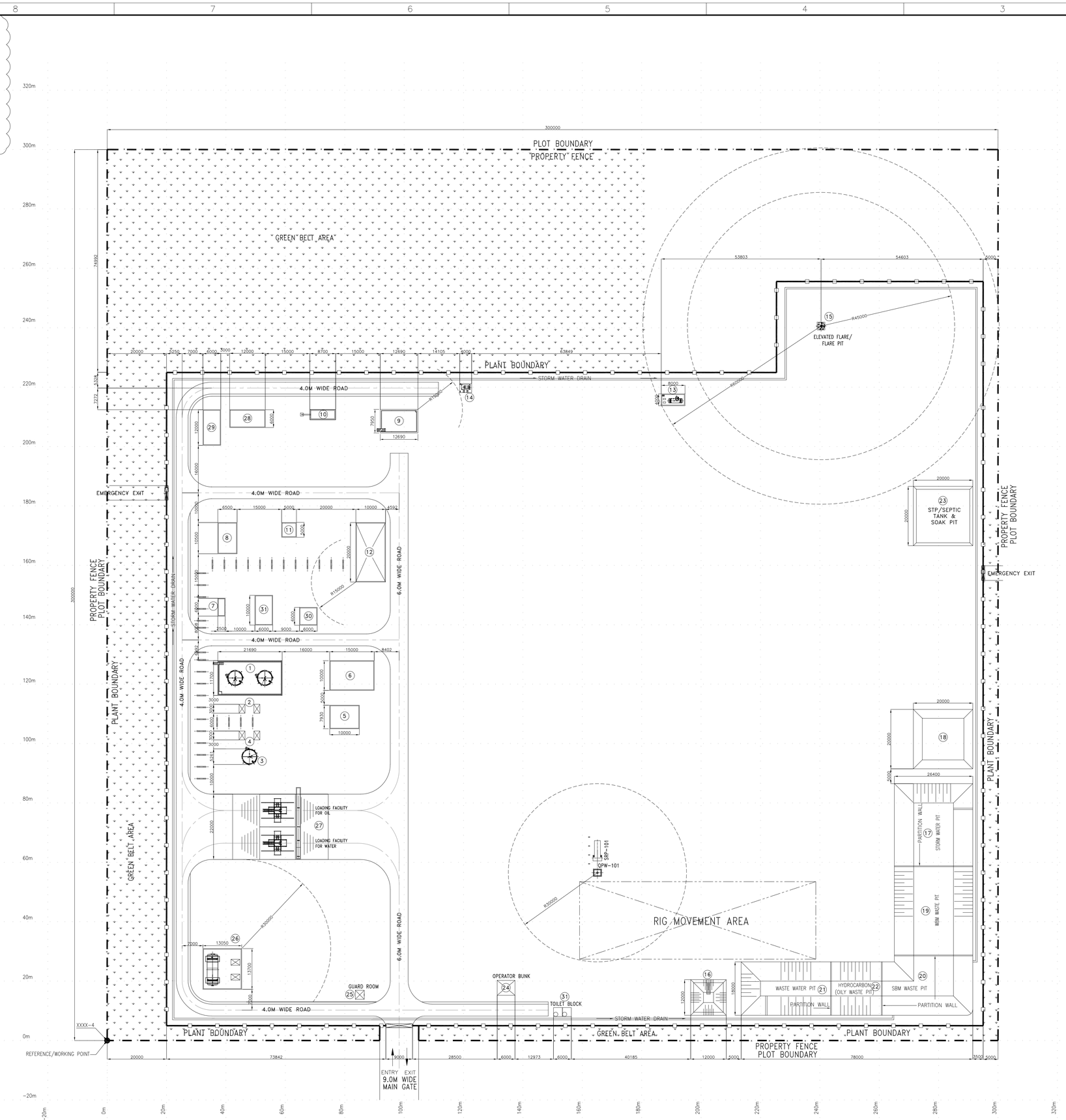
Along with above processing facility, a well test separator skid will be installed at pad. It will be used for well testing purpose. Well under testing will be routed to test separator skid. The separated gas, oil & water will be sent back to inlet of heater-treater separator skid for further processing.

Quick production set-up will have following utility systems & infrastructure for supporting the operations.

- Wells with selected artificial lift and flow lines
- Fuel gas system consisting of filters & a super-heater
- Instrument Air package or Instrument as system
- Chemical dosing packages i.e. corrosion inhibitor, de-mulsifier & scale inhibitor etc.
- Elevated flare system or enclosed ground flare or ground flare
- Closed drain system, storm water drain system
- Fresh water storage
- Diesel storage
- Power generation (GEG and / or DG)
- Firefighting equipment
- Domestic sewage treatment facility (STP or septic tank & soak pit system);

PLANT NORTH

UNDER HOLD




## REFERENCE DRAWINGS

| SLNO | DRAWING NO. | REV. | DESCRIPTION |
|---|---|---|---|
| 1. | – | – | – |
| | | | |
| | | | |

## EQUIPMENT LIST:

| SL. NO. | EQUIPMENT DESCRIPTION | QTY. | DIMENSIONS (M) | REMARK |
|---|---|---|---|---|
| 1 | OIL STORAGE TANK | 2 | 5.2 Dia | – |
| 2 | OIL TRANSFER PUMPS | 2 | – | – |
| 3 | WATER STORAGE TANK | 1 | 5.2 Dia | – |
| 4 | WATER TRANSFER PUMPS | 2 | – | – |
| 5 | INSTRUMENT AIR PACKAGE | 1 | 10x7.93 | |
| 6 | CHEMICAL INJECTION PACKAGE | 1 | 15x10 | – |
| 7 | ELECTROSTATIC COALESCER SEPARATOR | 1 | 6x2.5 | – |
| 8 | HEATER TREATER SKID | 1 | 10.5x6.5 | |
| 9 | DIESEL STORAGE TANK & PUMP | 1 | 12.96x7.95 | – |
| 10 | DIESEL GENERATOR | 2 | 8.7x3.5 | – |
| 11 | FUEL GAS SYSTEM | 1 | 10x10 | – |
| 12 | GEG PACKAGE | 1 | 20x10 | – |
| 13 | FLARE KO DRUM & PUMPS | 1 + 2 | 8x4 | – |
| 14 | CLOSED DRAIN SYSTEM & PUMPS | 1 + 2 | 4x4 | – |
| 15 | ELEVATED FLARE / FLARE PIT | 1 | 2.6x2.6 | – |
| 16 | FRESH WATER PIT | 1 | 12x12 | – |
| 17 | STORM WATER PIT | 1 | 30x20 | – |
| 18 | MUD PIT | 1 | 20x20 | – |
| 19 | WBM WASTE PIT | 1 | 27.7x26.4 | – |
| 20 | SBM WASTE PIT | 1 | 29.7x26.4 | – |
| 21 | WASTE WATER PIT | 1 | 30x18 | – |
| 22 | HYDROCARBON (OILY WASTE PIT) | 1 | 18x16.5 | – |
| 23 | STP/SEPTIC TANK & SOAK PIT | 1 | 20x20 | – |
| 24 | OPERATOR ROOM | 1 | 6X5 | – |
| 25 | GUARD ROOM | 1 | 3X3 | – |
| 26 | FIRE FIGHTING FACILITY & FIRE PUMPS | 1 + 2 | 13.7x13 | – |
| 27 | LOADING FACILITY AREA | 1 | – | – |
| 28 | SUB-STATION | 1 | 12x6 | – |
| 29 | CONTROL ROOM | 1 | 6x6 | – |
| 30 | WELL TEST SEPARATOR | 1 | 6x6 | – |
| 31 | PRODUCED WATER TREATMENT SKID | 1 | 10x6 | – |
| 31 | TOILET BLOCK | 1 | – | – |

## NOTES:

1) ALL DIMENSIONS ARE IN MILLIMETERS, CO-ORDINATES ARE IN METERS UNLESS OTHERWISE SPECIFIED.
2) ALL EQUIPMENT & PACKAGES SIZE AND LOCATION TO BE UNDER HOLD.

## LEGEND:-

- PROPERTY FENCE
- PLANT BOUNDARY
- GATE
- GREEN BELT

TOTAL AREA =90000m²
QPU PLANT AREA =62620m²
GREEN BELT AREA =20455m²

| REV | DATE | DESCRIPTION | PRED BY | CHKD. BY | APPRD. BY |
|---|---|---|---|---|---|
| A2 | 14.05.2019 | ISSUED FOR INTERNAL REVIEW | PS | JCP | VKB |

OWNER:
VEDANTA LIMITED
Cairn Oil & Gas : DLF Atria, Phase-2, Jacaranda Marg, DLF City, Gurugram-122002, Haryana, India

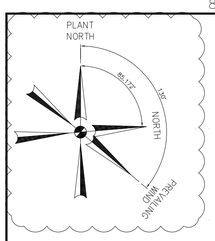
PROJECT: EXPLORATION & APPRAISAL

DRAWING TITLE: TYPICAL PLOT PLAN FOR WELLPAD WITH QUICK PRODUCTION UNIT (QPU)

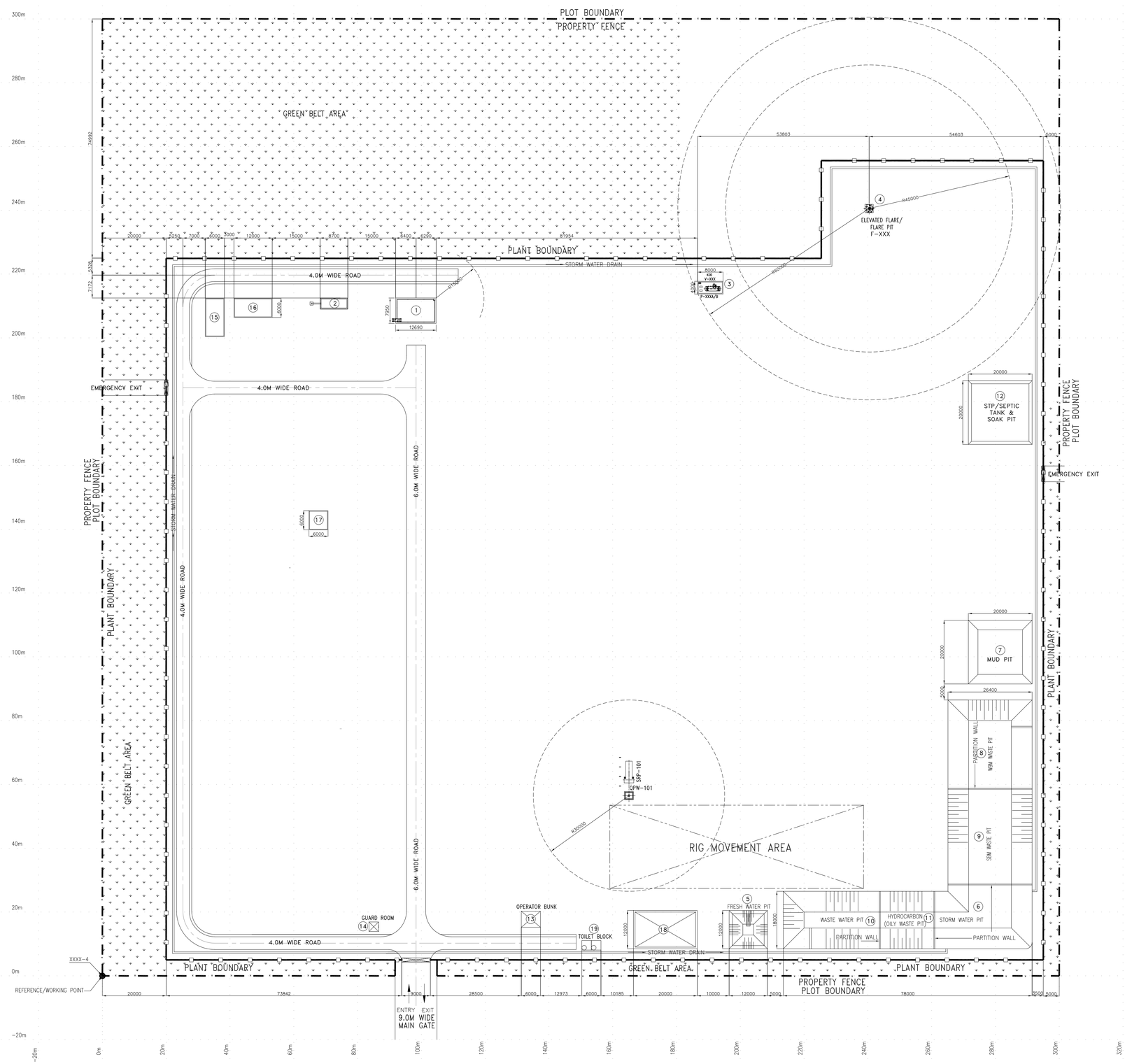
| SCALE | 1:1300 |
|---|---|
| SIZE | A1 |
| SHT. | REV |
| 1 OF 1 | A2 |

PROJECT NO. XXXX

DWG. NO. XXXX-XXXX-L-DWG-0001-01




UNDER HOLD




## REFERENCE DRAWINGS

| SLNO | DRAWING NO. | REV. | DESCRIPTION |
|---|---|---|---|
| 1. | – | – | – |
| | | | |
| | | | |

## EQUIPMENT LIST:

| SL. NO. | EQUIPMENT DESCRIPTION | QTY. | DIMENSIONS (M) | REMARK |
|---|---|---|---|---|
| 1 | DIESEL STORAGE TANK & PUMP | 1 | 12.96x7.95 | – |
| 2 | DIESEL GENERATOR | 2 | 8.7x3.5 | – |
| 3 | FLARE KO DRUM & PUMPS | 1 + 2 | 8x4 | – |
| 4 | ELEVATED FLARE / FLARE PIT | 1 | 2.6x2.6 | – |
| 5 | FRESH WATER PIT | 1 | 12x12 | – |
| 6 | STORM WATER PIT | 1 | 30x20 | – |
| 7 | MUD PIT | 1 | 20x20 | – |
| 8 | WBM WASTE PIT | 1 | 27.7x26.4 | – |
| 9 | SBM WASTE PIT | 1 | 29.7x26.4 | – |
| 10 | WASTE WATER PIT | 1 | 30x18 | – |
| 11 | HYDROCARBON (OILY WASTE PIT) | 1 | 18x16.5 | – |
| 12 | STP/SEPTIC TANK & SOAK PIT | 1 | 20x20 | – |
| 13 | OPERATOR ROOM | 1 | 6X5 | – |
| 14 | GUARD ROOM | 1 | 3X3 | – |
| 15 | SUB-STATION | 1 | 12x6 | – |
| 16 | CONTROL ROOM | 1 | 6x6 | – |
| 17 | WELL TEST SEPARATOR | 1 | 6x6 | – |
| 18 | CHEMICAL STORAGE AREA | 1 | 20x12 | |
| 19 | TOILET BLOCK | 1 | – | – |

## NOTES:

1) ALL DIMENSIONS ARE IN MILLIMETERS, CO-ORDINATES ARE IN METERS UNLESS OTHERWISE SPECIFIED.
2) ALL EQUIPMENT & PACKAGES SIZE AND LOCATION TO BE UNDER HOLD.
3) WASTE FROM SEWAGE COLLECTION TANK IS PROPOSED TO BE EVACUATED TO PLANT/DISPOSAL THROUGH TRUCKING.

## LEGEND:-

- PROPERTY FENCE
- PLANT BOUNDARY
- GATE
- GREEN BELT

TOTAL AREA =90000m²
QPU PLANT AREA =62620m²
GREEN BELT AREA =20455m²

| REV | DATE | DESCRIPTION | PRED BY | CHKD. BY | APPRD. BY |
|---|---|---|---|---|---|
| A2 | 14.05.2019 | ISSUED FOR INTERNAL REVIEW | PS | JCP | VKB |

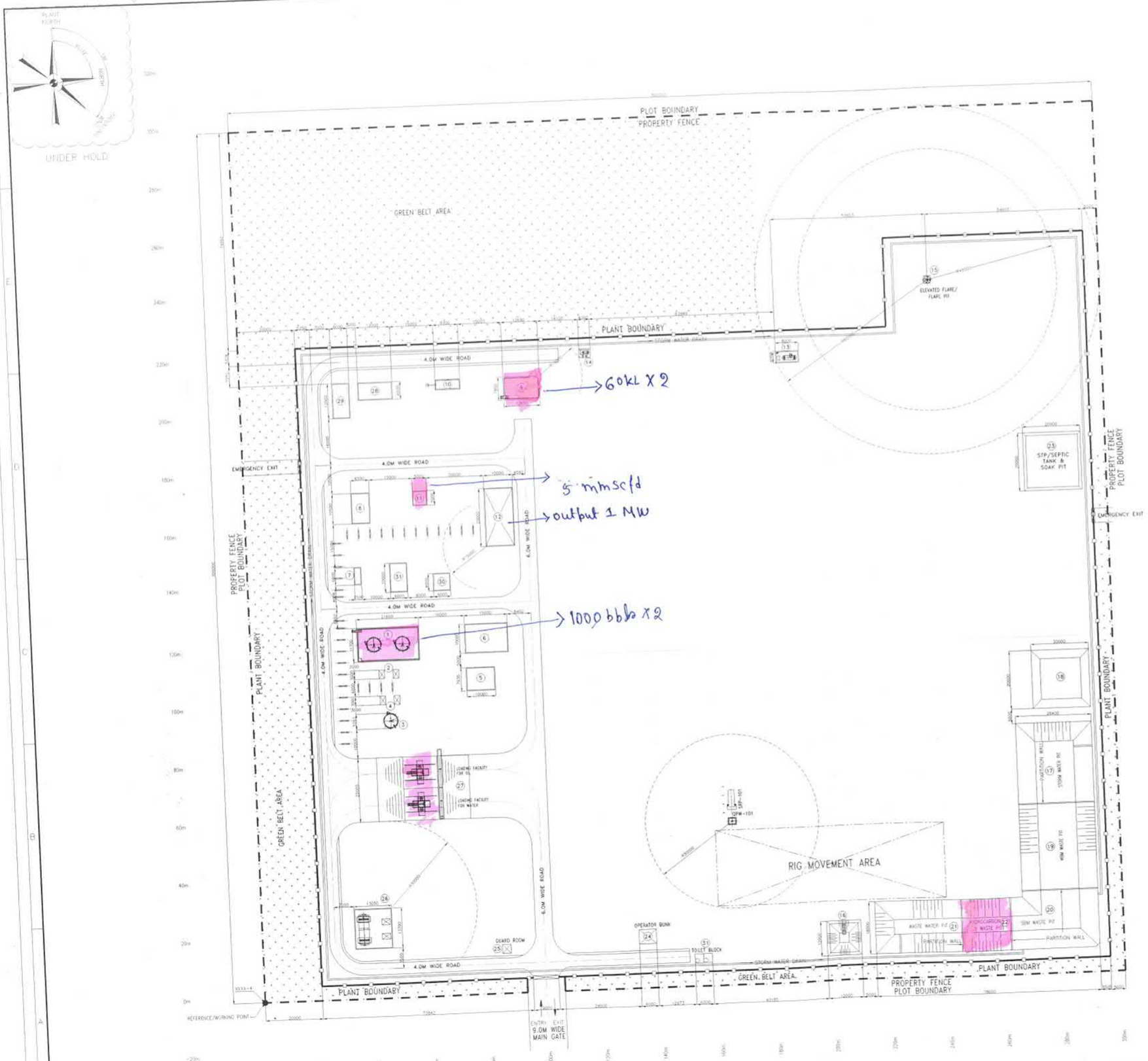
OWNER:

VEDANTA LIMITED
Cairn Oil & Gas : DLF Atria, Phase-2, Jacaranda Marg, DLF City, Gurugram-122002, Haryana, India

PROJECT: EXPLORATION & APPRAISAL

DRAWING TITLE: TYPICAL PLOT PLAN FOR WELLPAD OALP

| PROJECT NO. | DWG. NO. | SCALE | 1:1300 |
|---|---|---|---|
| XXXX | XXXX-XXXX-L-DWG-0001-01 | SIZE | A1 |
| | | SHT. | REV |
| | | 1 OF 1 | A2 |




## REFERENCE DRAWINGS

| SL.NO | DRAWING NO. | REV. | DESCRIPTION |
|---|---|---|---|
| 1 | - | - | - |

## EQUIPMENT LIST:

| SL. NO. | EQUIPMENT DESCRIPTION | QTY. | DIMENSIONS (M) | REMARK |
|---|---|---|---|---|
| 1 | OIL STORAGE TANK | 2 | 5.2 Dia | - |
| 2 | OIL TRANSFER PUMPS | 2 | - | - |
| 3 | WATER STORAGE TANK | 1 | 5.2 Dia | - |
| 4 | WATER TRANSFER PUMPS | 2 | - | - |
| 5 | INSTRUMENT AIR PACKAGE | 1 | 10x7.93 | - |
| 6 | CHEMICAL INJECTION PACKAGE | 1 | 15x10 | - |
| 7 | ELECTROSTATIC COALESCER SEPARATOR | 1 | 6x2.5 | - |
| 8 | HEATER TREATER SKID | 1 | 10.5x6.5 | * |
| 9 | DIESEL STORAGE TANK & PUMP | 1 | 12.96x7.95 | - |
| 10 | DIESEL GENERATOR | 2 | 8.7x3.5 | - |
| 11 | FUEL GAS SYSTEM | 1 | 10x10 | - |
| 12 | PIG PACKAGE | 1 | 20x10 | - |
| 13 | FLARE KO DRUM & PUMPS | 1 + 2 | 8x4 | - |
| 14 | CLOSED DRAIN SYSTEM & PUMPS | 1 + 2 | 4x4 | - |
| 15 | ELEVATED FLARE / FLARE PIT | 1 | 2.6x2.6 | - |
| 16 | FRESH WATER PIT | 1 | 12x12 | - |
| 17 | STORM WATER PIT | 1 | 30x20 | - |
| 18 | MUD PIT | 1 | 20x20 | - |
| 19 | WBM WASTE PIT | 1 | 27.7x26.4 | - |
| 20 | SBM WASTE PIT | 1 | 29.7x26.4 | - |
| 21 | WASTE WATER PIT | 1 | 30x18 | - |
| 22 | HYDROCARBON (OILY WASTE PIT) | 1 | 18x16.5 | - |
| 23 | STP/SEPTIC TANK & SOAK PIT | 1 | 20x20 | - |
| 24 | OPERATOR ROOM | 1 | 6x5 | - |
| 25 | GUARD ROOM | 1 | 3x3 | - |
| 26 | FIRE FIGHTING FACILITY & FIRE PUMPS | 1 + 2 | 13.7x13 | - |
| 27 | LOADING FACILITY AREA | 1 | - | - |
| 28 | SUB-STATION | 1 | 12x6 | - |
| 29 | CONTROL ROOM | 1 | 6x6 | - |
| 30 | WELL TEST SEPARATOR | 1 | 6x6 | - |
| 31 | PRODUCED WATER TREATMENT SKID | 1 | 10x6 | - |
| 31 | TOILET BLOCK | 1 | - | - |

NOTES:

1) ALL DIMENSIONS ARE IN MILLIMETERS, CO-ORDINATES ARE IN METERS UNLESS OTHERWISE SPECIFIED.
2) ALL EQUIPMENT & PACKAGES SIZE AND LOCATION TO BE UNDER HOLD.

LEGEND:-

- PROPERTY FENCE
- PLANT BOUNDARY
- GATE
- GREEN BELT

TOTAL AREA =90000m²
OPU PLANT AREA =62620m²
GREEN BELT AREA =20455m²

| REV | DATE | DESCRIPTION | PRED BY | CHKD. BY | APPRD BY |
|---|---|---|---|---|---|
| A2 | 14.05.2019 | ISSUED FOR INTERNAL REVIEW | PS | JDP | VKB |

OWNER:
vedanta transforming elements
CAIRN
VEDANTA LIMITED
Cairn Oil & Gas : DLF Atria, Phase-2, Jacaranda Marg, DLF City, Gurugram-122002, Haryana, India

PROJECT: EXPLORATION & APPRAISAL

DRAWING TITLE: TYPICAL PLOT PLAN FOR WELLPAD WITH QUICK PRODUCTION UNIT (QPU)

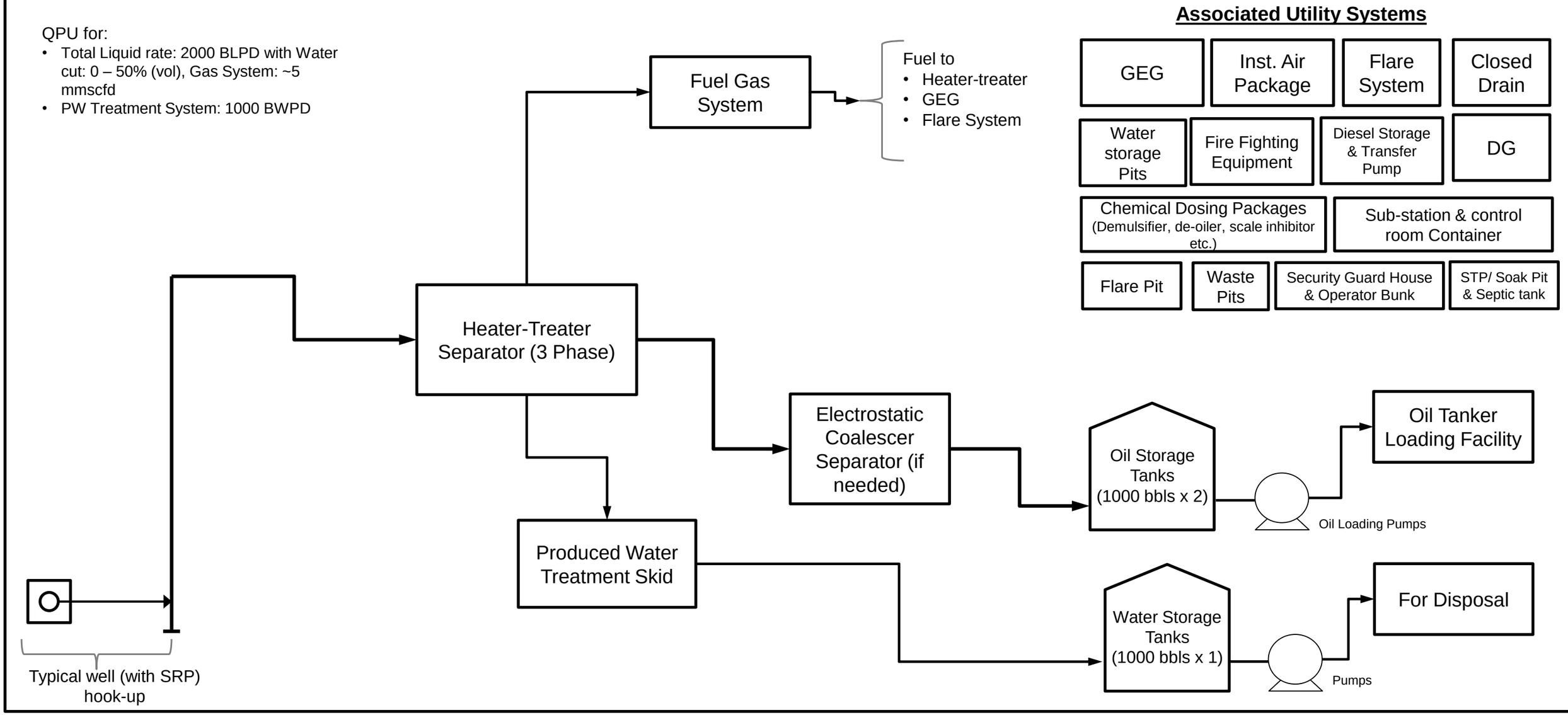
SCALE 1:1300 | SIZE A1 | SHT. REV.

PROJECT NO: XXXX | DWG. NO: XXXX-XXXX-L-DWG-0001-01 | 1 OF 1 | A2

© 2017 Vedanta Limited


# Quick Production Unit/ Early Production Unit (2000 BLPD)

QPU for:
- Total Liquid rate: 2000 BLPD with Water cut: 0 – 50% (vol), Gas System: ~5 mmscfd
- PW Treatment System: 1000 BWPD




**Associated Utility Systems**

| | | | |
|---|---|---|---|
| GEG | Inst. Air Package | Flare System | Closed Drain |
| Water storage Pits | Fire Fighting Equipment | Diesel Storage & Transfer Pump | DG |
| Chemical Dosing Packages (Demulsifier, de-oiler, scale inhibitor etc.) | | Sub-station & control room Container | |
| Flare Pit | Waste Pits | Security Guard House & Operator Bunk | STP/ Soak Pit & Septic tank |