



APPROVED STANDARD DESIGNS OF BOOSTER PUMPING STATIONS & STORAGE RESERVOIRS FOR WATER SUPPLY PROJECTS

JABATAN BEKALAN AIR LUAR BANDAR (JBALB) SARAWAK
(Effective on 18.6.2025)

**Approved By:
State Building Design Committee (SBDC)**



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Overview Layout of Reservoir

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SPA Requirements

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Approved Detailed Building Plan

1.0

Elevated High Level Tanks



**1.1**

ELEVATED HIGH LEVEL TANKS



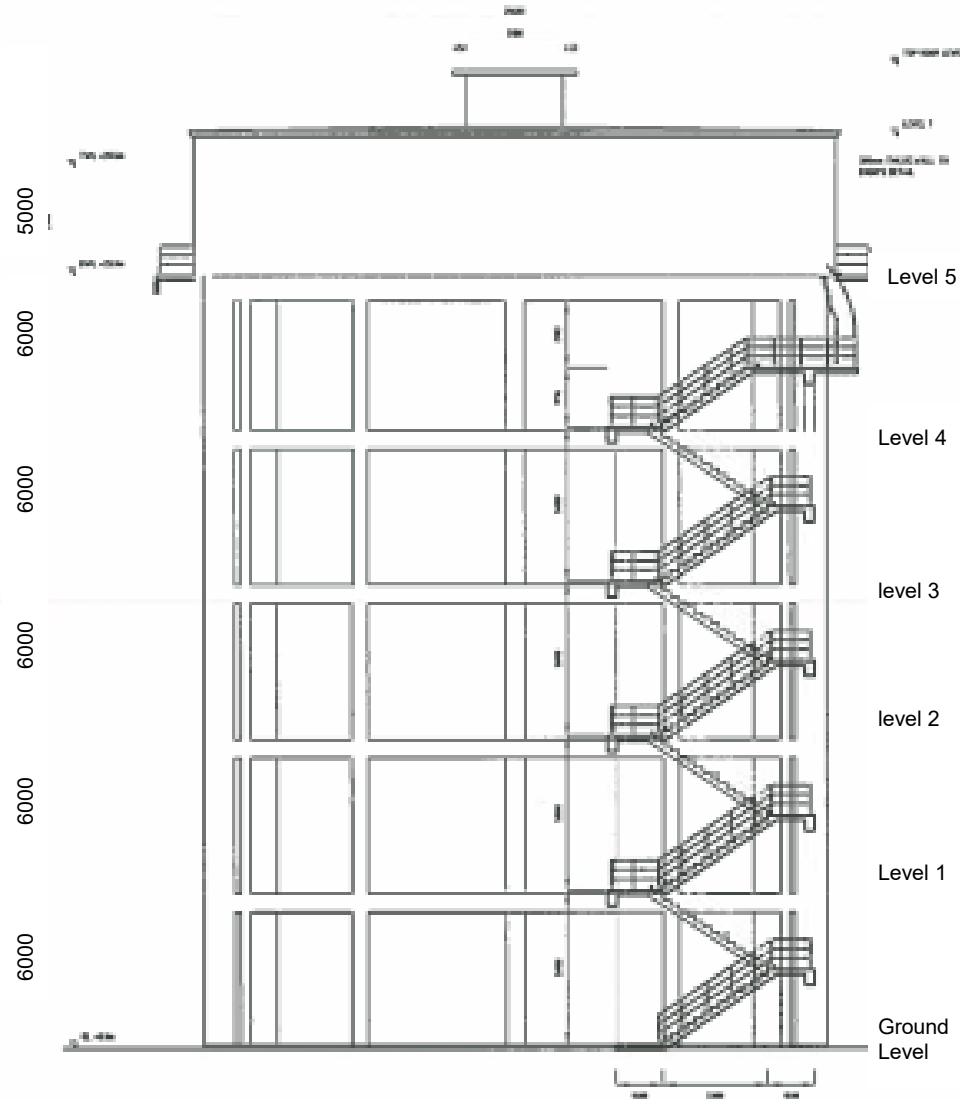
STORAGE CAPACITY	TANK SIZE	TANK WALL HEIGHT	MAX. ELEVATED HEIGHT TO TANK BOTTOM	MIN. LAND SIZE REQUIRED*
0.5 ML	15m (Inner Dia.)	4.0m	30m	0.5 acres
1.0 ML	20m (Inner Dia.)	4.5m	30m	0.8 acres
2.0 ML	25m (Inner Dia.)	5.0m	30m	1.0 acre
3.0 ML	30m (Inner Dia.)	5.0m	30m	1.2 acres
4.5 ML	36m (Inner Dia.)	5.5m	30m	1.4 acres
5.0 ML	40m (Inner Dia.)	5.5m	30m	1.7 acres

- Min. Land Size does not take into consideration of area required for cut or fill.
- All Elevated High Level Tanks shall be designed and constructed as cast in-situ reinforced concrete (RC) structures.



1.2

TYPICAL DESIGN

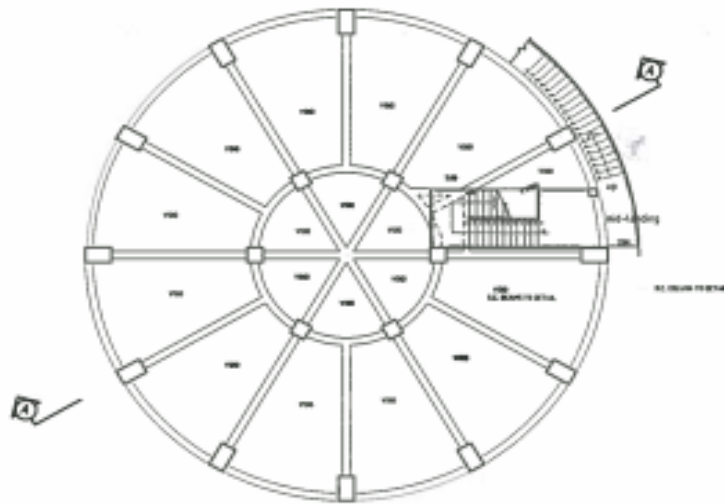


ELEVATION
SCALE 1:100
DATE 10/1/2018

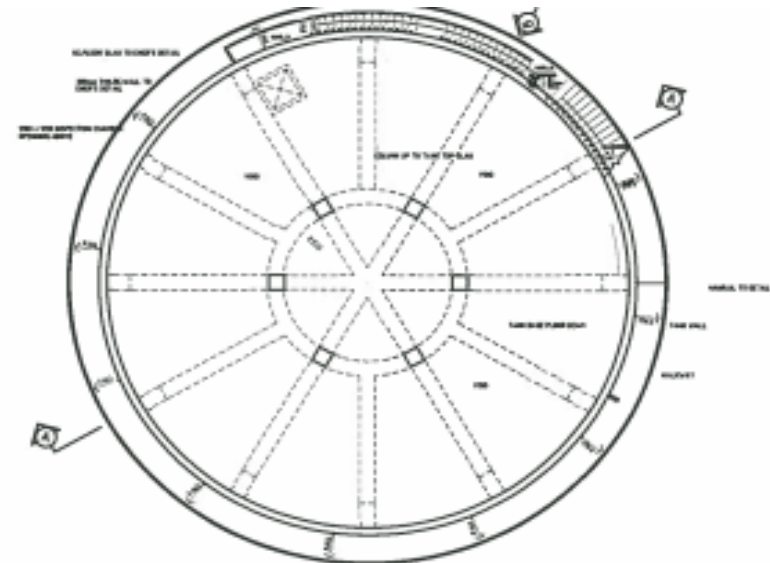


1.3

FLOOR DESIGN



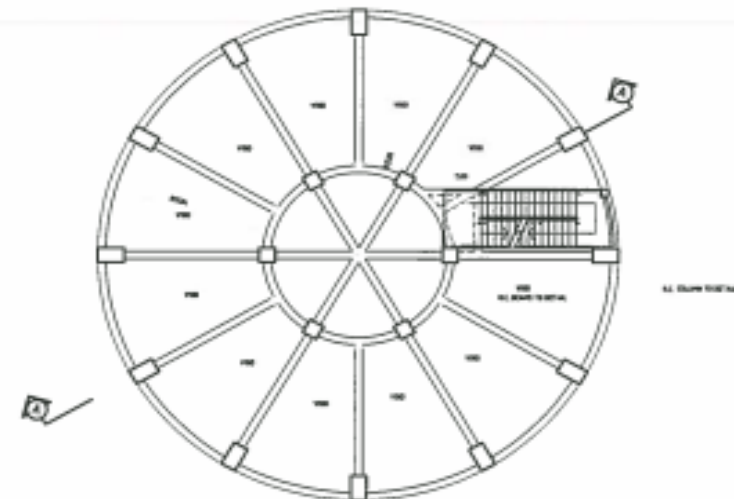
FLOOR PLAN FOR LEVEL 5
100' x 100'
100' x 100'



FLOOR PLAN FOR LEVEL 6
100' x 100'
100' x 100'



GROUND FLOOR PLAN (LEVEL 1)
100' x 100'
100' x 100'

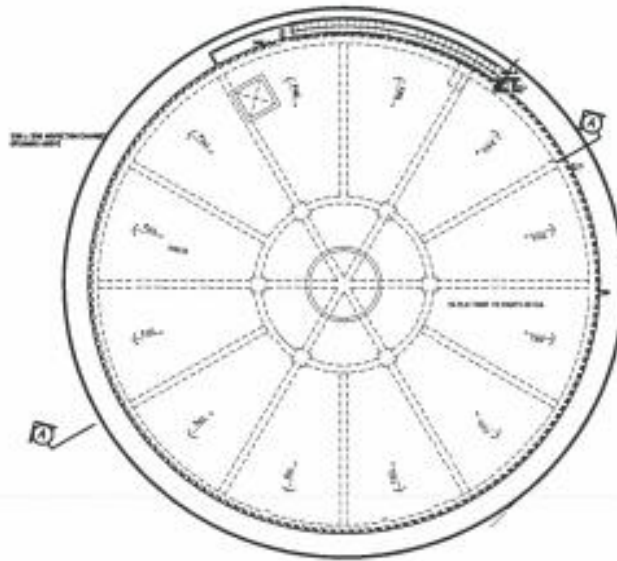


FLOOR PLAN FOR LEVEL 2/3/4
100' x 100'
100' x 100'

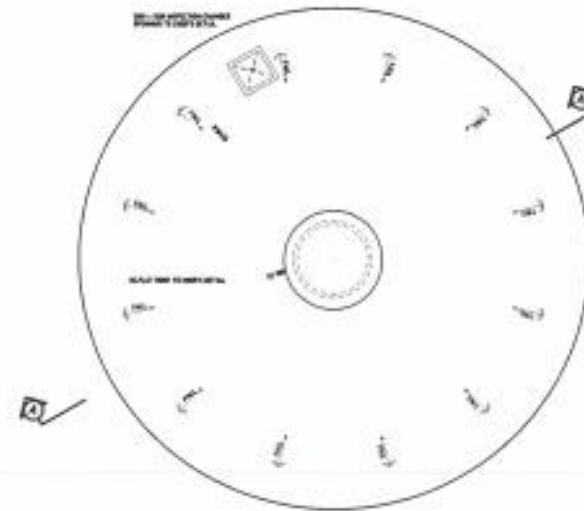


1.4

ROOF PLAN



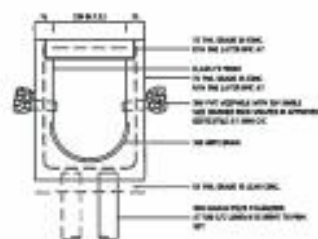
LOWER ROOF PLAN (LEVEL 7)
SCALE: 1:50



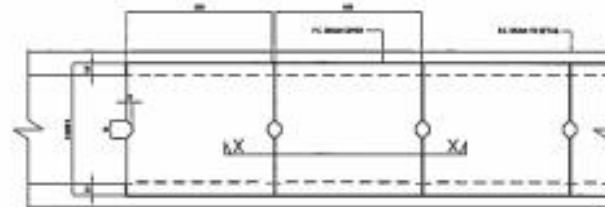
TOP ROOF PLAN
SCALE: 1:50



DETAIL No. 4
SCALE: 1:10



SECTIONAL DETAIL OF 230 WIDE R.C. DRAIN
SCALE: 1:10



PLAN OF P.C. DRAIN COVER
SCALE: 1:10

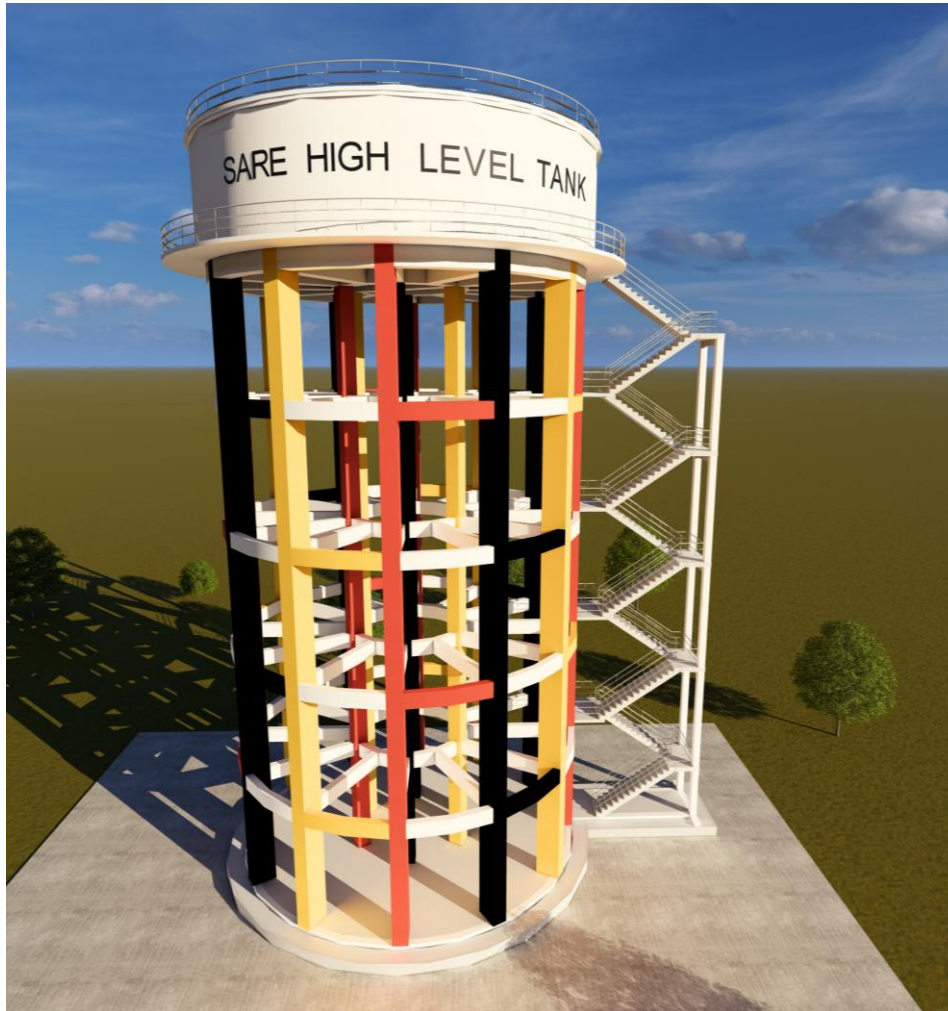


SECTION X-X
SCALE: 1:10

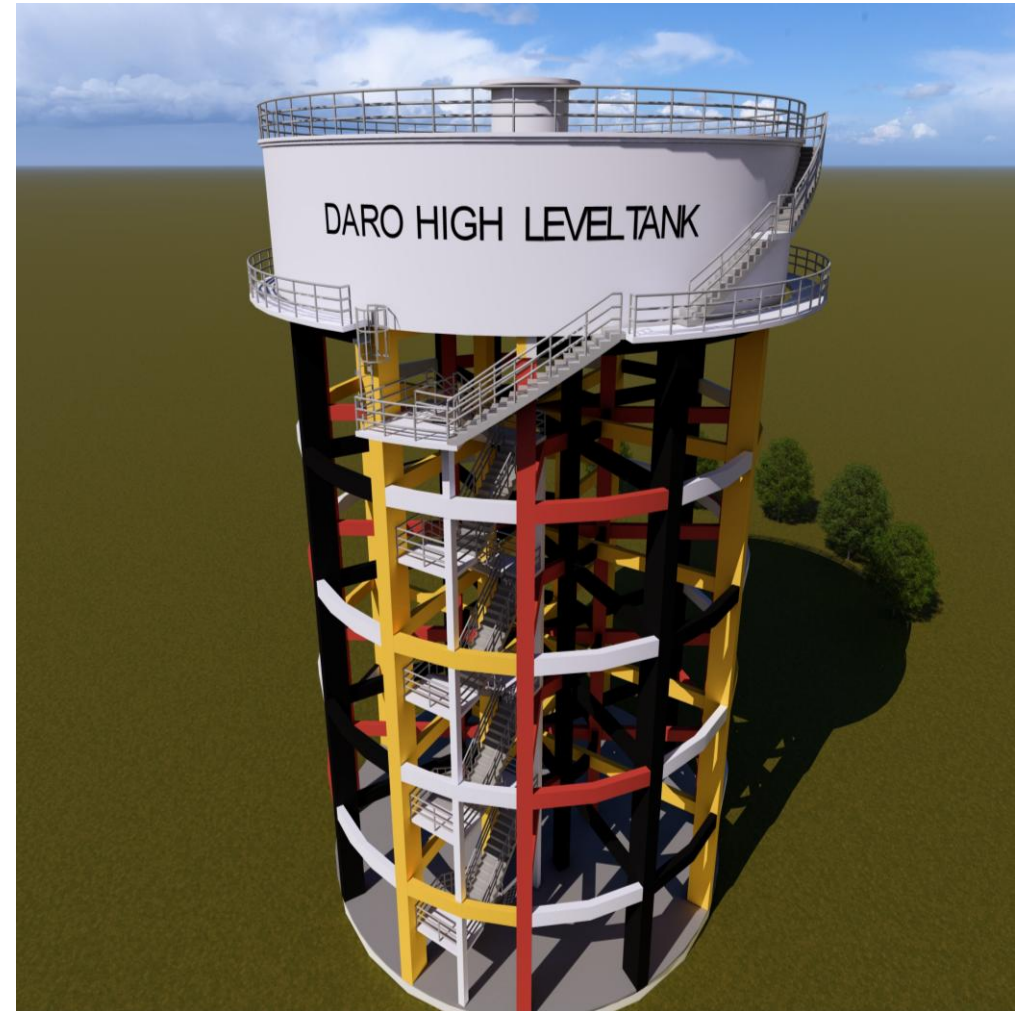


1.5

ARTIST IMPRESSION



0.5 ML HLT



1.0 ML HLT

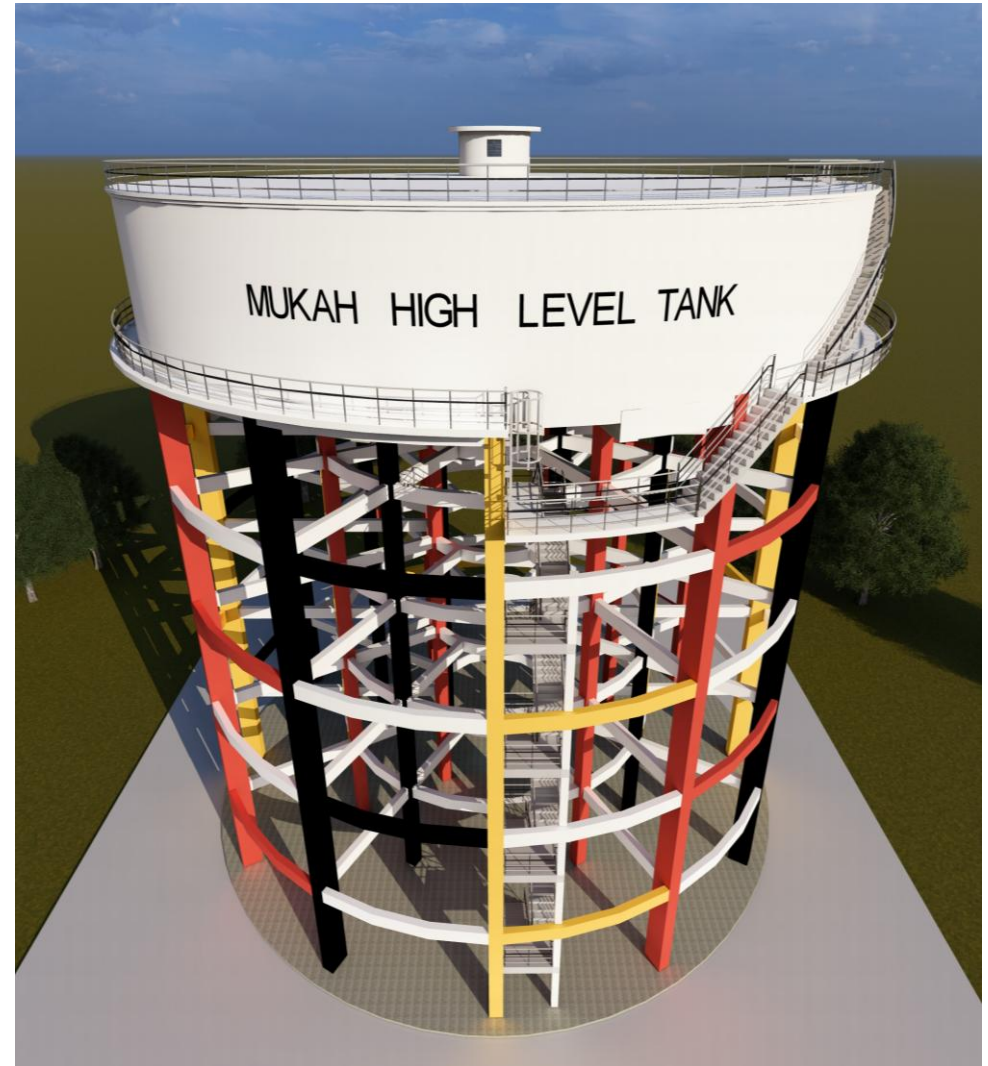


1.6

ARTIST IMPRESSION



2.0 ML HLT

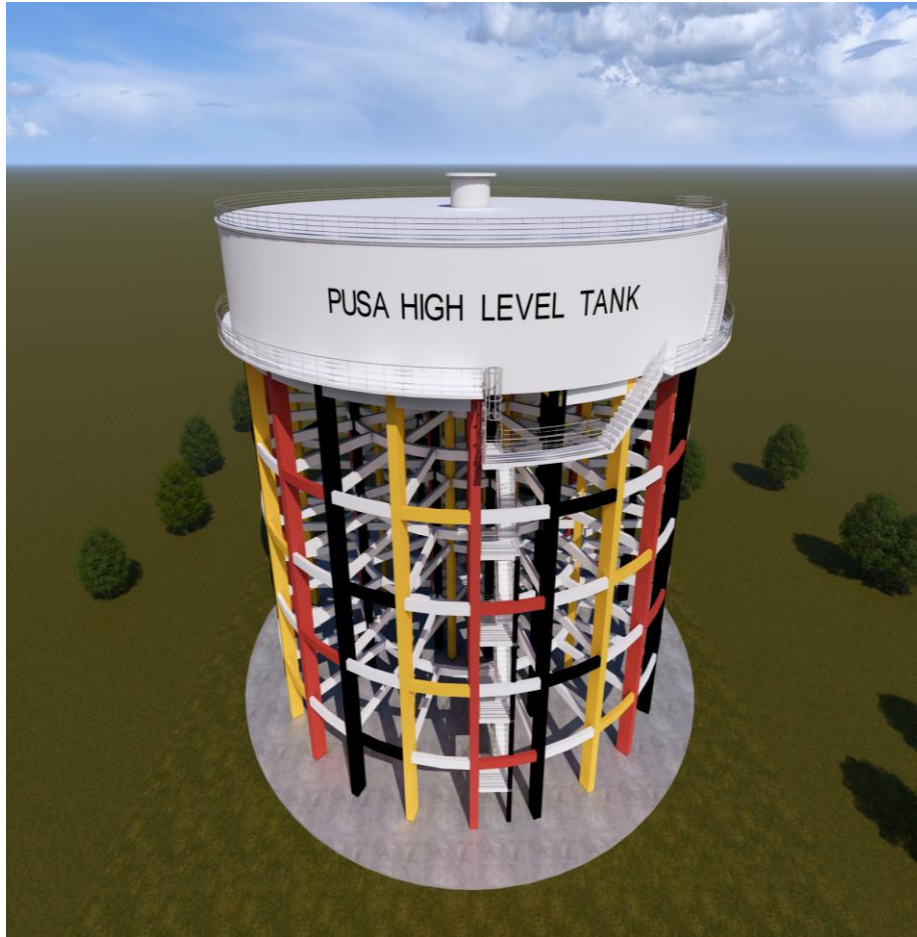


3.0 ML HLT

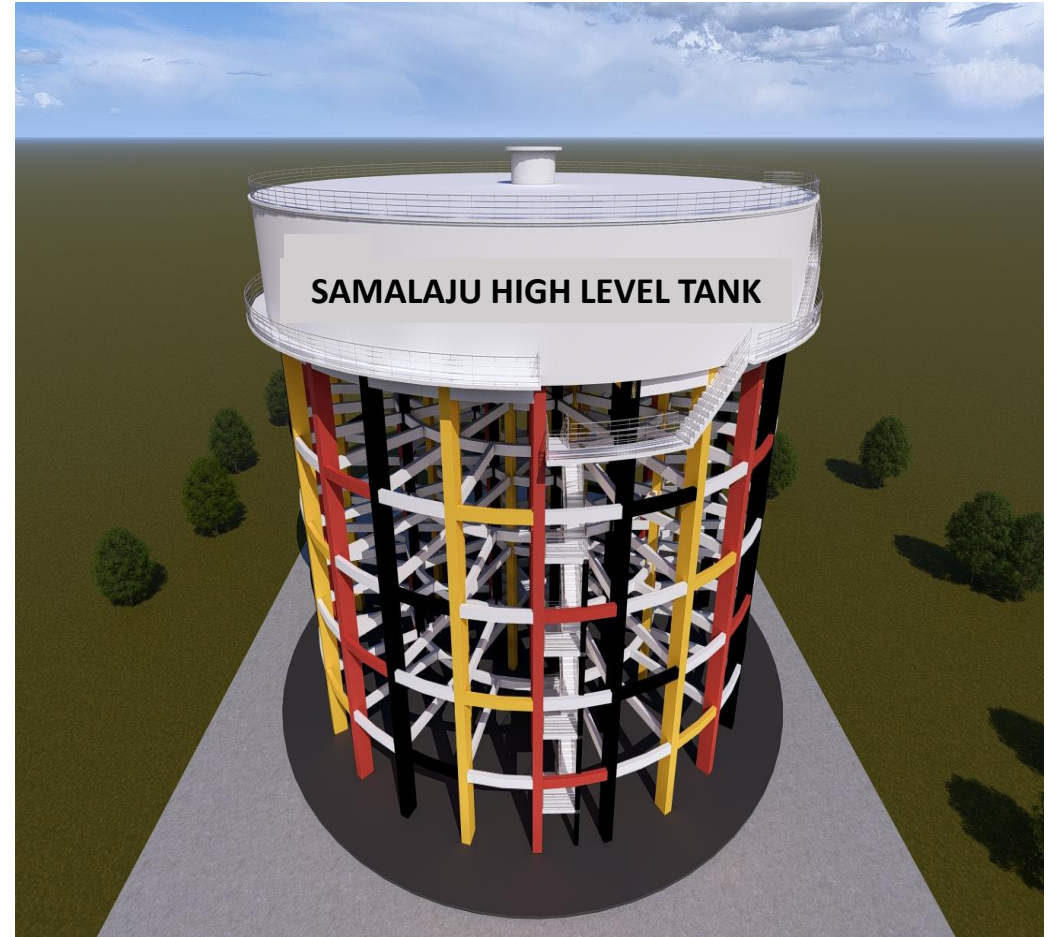


1.7

ARTIST IMPRESSION



4.5 ML HLT



5.0 ML HLT

2.0

Reservoirs / Ground Tanks



**2.1**

RESERVOIRS / GROUND TANKS



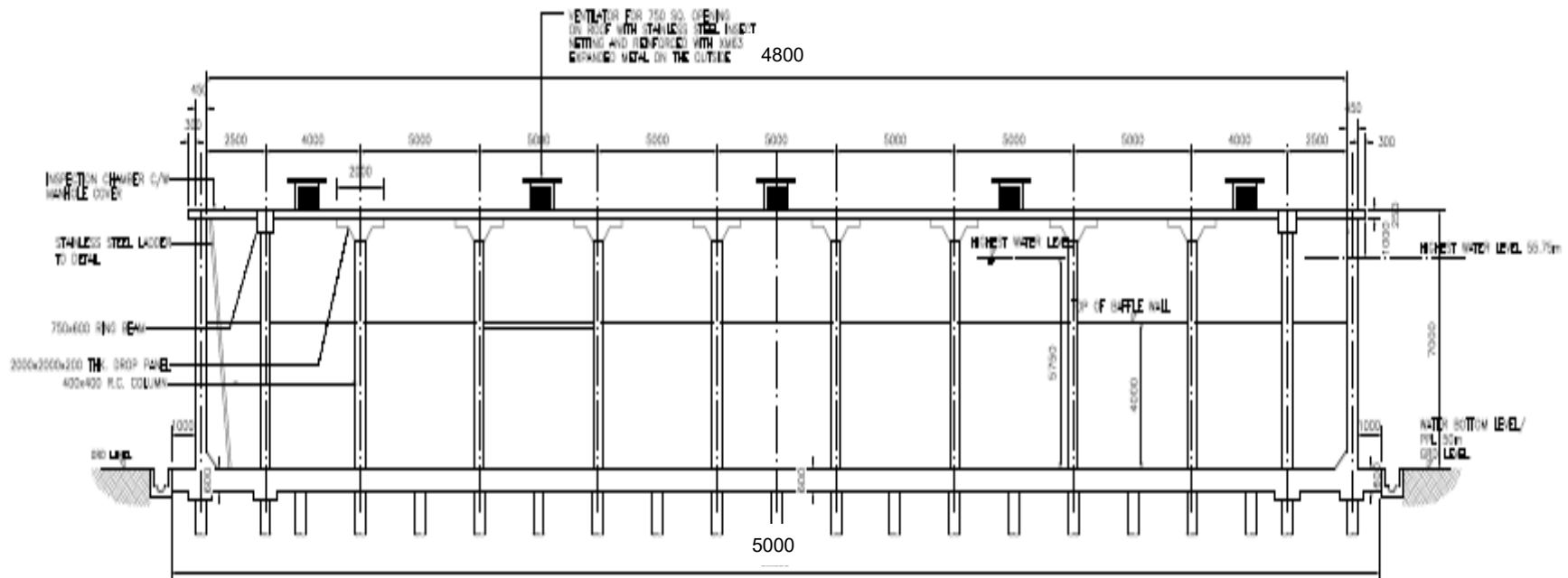
STORAGE CAPACITY	TANK SIZE	TANK WALL HEIGHT	MIN. LAND SIZE REQUIRED*
0.1 ML	5.5m x 5.5m (L x W)	3.50m	0.3 acres
0.2 ML	8.4m x 8.4m (L x W)	3.70m	0.4 acres
0.5 ML	15m (Inner Dia.)	4.00m	0.5 acres
1.0 ML	20m (Inner Dia.)	4.50m	0.8 acres
2.0 ML	25m (Inner Dia.)	5.50m	1.0 acre
3.0 ML	27m (Inner Dia.)	6.50m	1.2 acres
5.0 ML	34m (Inner Dia.)	7.00m	1.5 acres
8.0 ML	43m (Inner Dia.)	7.00m	2.0 acres
10.0 ML	48m (Inner Dia.)	7.00m	2.3 acres
18.0 ML	58m (Inner Dia.)	8.00m	3.0 acres
20.0 ML	60m (Inner Dia.)	8.50m	3.2 acres

- Min. Land Size does not take into consideration of area required for cut or fill.
- All Reservoirs/Ground Tanks shall be designed and constructed as cast in-situ reinforced concrete (RC) structures.



2.2

TYPICAL DESIGN



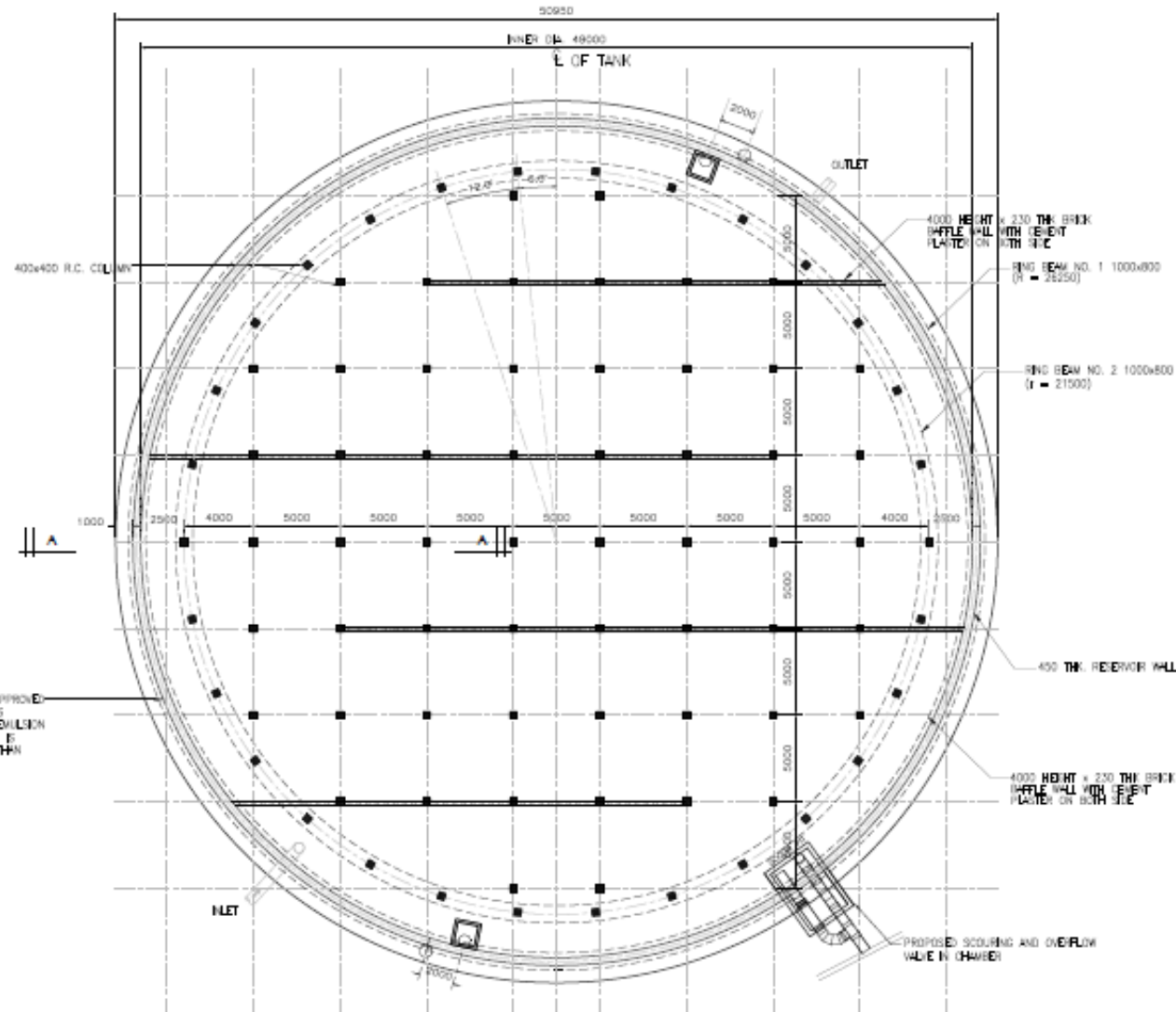


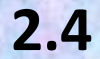
2.3

FLOOR PLAN



TO APPLY AND PAINT ONE (1) COAT OF APPROVED
WATER-REPELTING PRIMER SEVEN FOLLOWING
BY TWO (2) COATS OF WEATHER-SHIELD EMULSION
PAINT. (FOR IDEAL PAINT PERFORMANCE IT IS
CRUCIAL FOR DAMPNESS LEVEL TO LESS THAN
17% ON PHOTO-METER)







2.5

ARTIST IMPRESSION



1 ML RESERVOIR



2.6

ARTIST IMPRESSION



3 ML RESERVOIR



2.7

ARTIST IMPRESSION



5 ML RESERVOIR



2.8

ARTIST IMPRESSION



10 ML RESERVOIR

3.0

Booster Pumping Stations





3.1

BOOSTER PUMPING STATIONS



TYPE 1A / 1B

PROPOSED STANDARD BOOSTER PUMP STATIONS TO PUMP WATER FROM GRID PIPELINE TO RESERVOIRS AND HIGH LEVEL TANKS

PUMPING CAPACITY	BUILDING LENGTH	BUILDING WIDTH	BUILDING HEIGHT	MIN. LAND SIZE REQUIRED*
0.1 MLD	10m	8.5m	5m	0.3 acres
0.2 MLD	12m	8.5m	5m	0.4 acres
0.5 MLD	15m	8.5m	5m	0.5 acres
1.0 MLD	20m	8.5m	5m	0.5 acres
2.0 MLD	22m	8.5m	5m	0.6 acres
3.0 MLD	23m	8.5m	5m	0.6 acres
4.5 MLD	25m	8.5m	5m	0.7 acres
5.0 MLD	26m	8.5m	5m	0.7 acres
6.0 MLD	27m	8.5m	5m	0.8 acres

* Min. Land Size does not take into consideration of area required for cut or fill.



3.1

BOOSTER PUMPING STATIONS (Cont.)



TYPE 1A / 1B

PROPOSED STANDARD BOOSTER PUMP STATIONS TO PUMP WATER FROM GRID PIPELINE TO RESERVOIRS AND HIGH LEVEL TANKS

PUMPING CAPACITY	BUILDING LENGTH	BUILDING WIDTH	BUILDING HEIGHT	MIN. LAND SIZE REQUIRED*
8.0 MLD	29m	8.5m	5m	0.8 acres
9.0 MLD	30m	8.5m	5m	0.8 acres
12.0 MLD	32m	9m	5m	0.9 acres
13.0 MLD	33m	9m	5m	1.0 acre
15.0 MLD	35m	9m	5m	1.0 acre
20.0 MLD	38m	9m	5m	1.3 acres
30.0 MLD	46m	12m	5m	2.2 acres
45.0 MLD	47m	12m	5m	2.3 acres
50.0 MLD	50m	15m	5m	2.6 acres

* Min. Land Size does not take into consideration of area required for cut or fill.

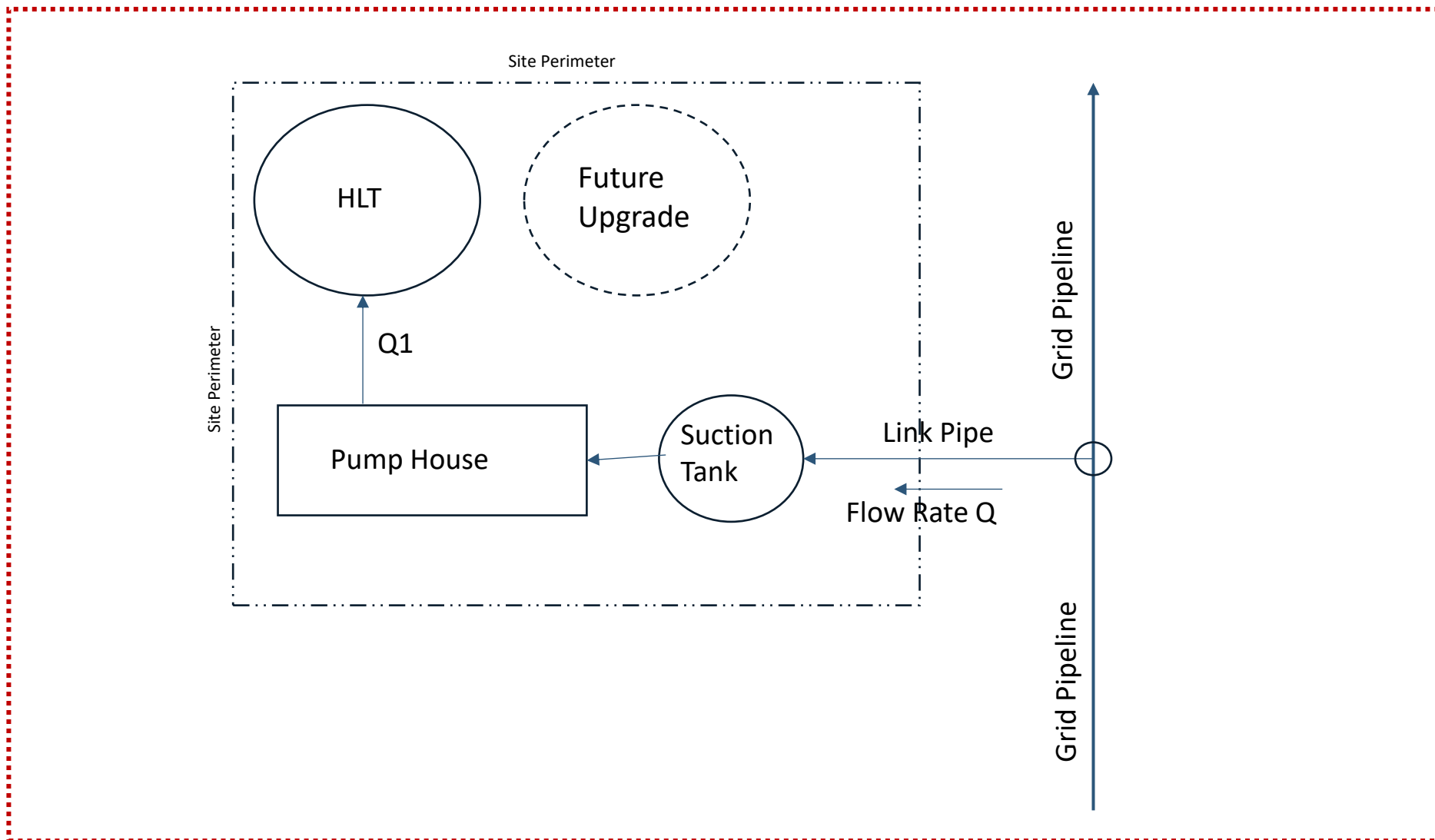


3.1.1

BOOSTER PUMPING STATION (TYPE 1A)



- ❑ To fill a HLT for local supply area.
- ❑ Required where there is insufficient pressure in the grid pipeline to fill direct to HLT



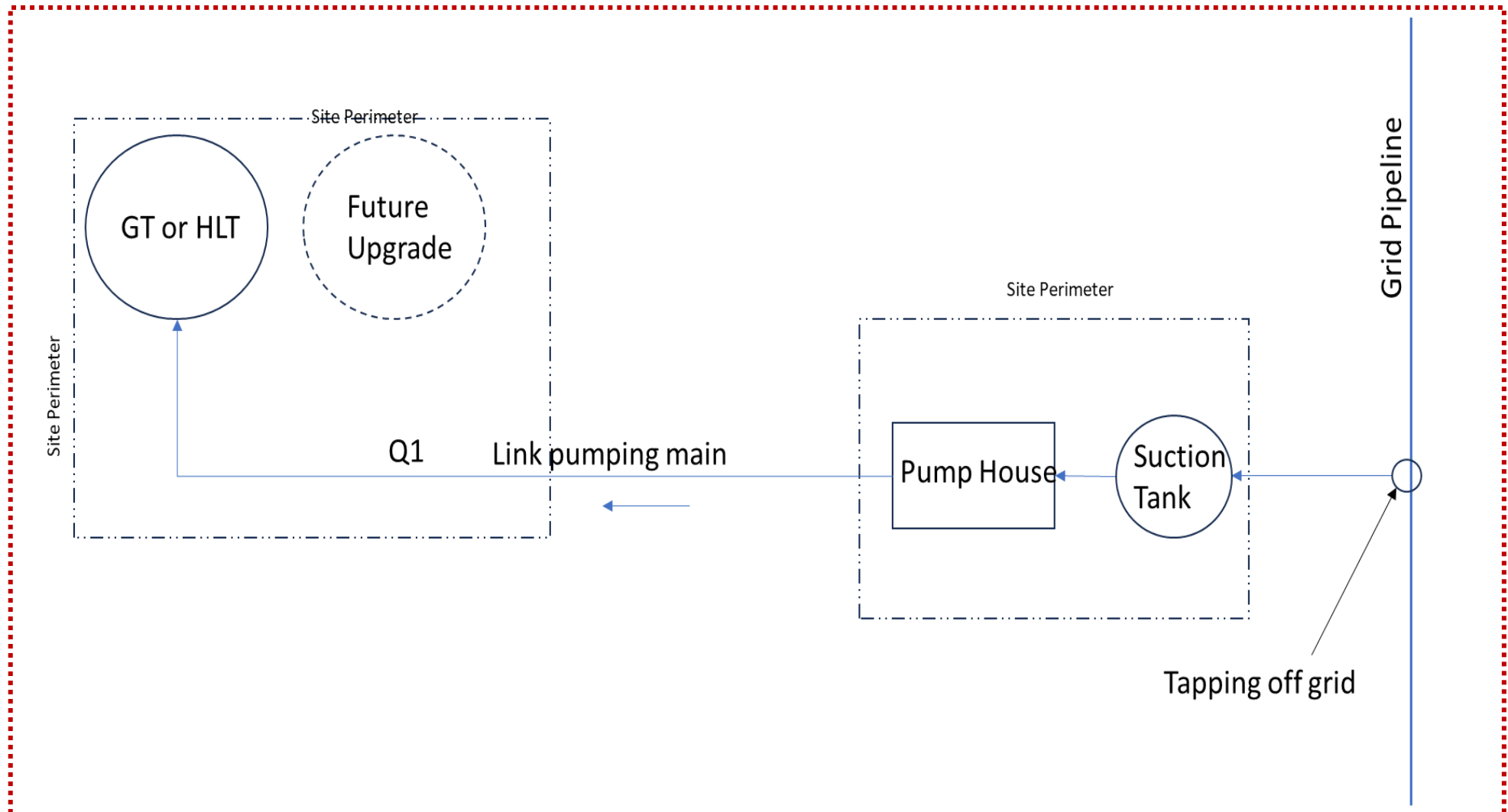


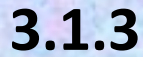
3.1.2

BOOSTER PUMPING STATION (TYPE 1B)

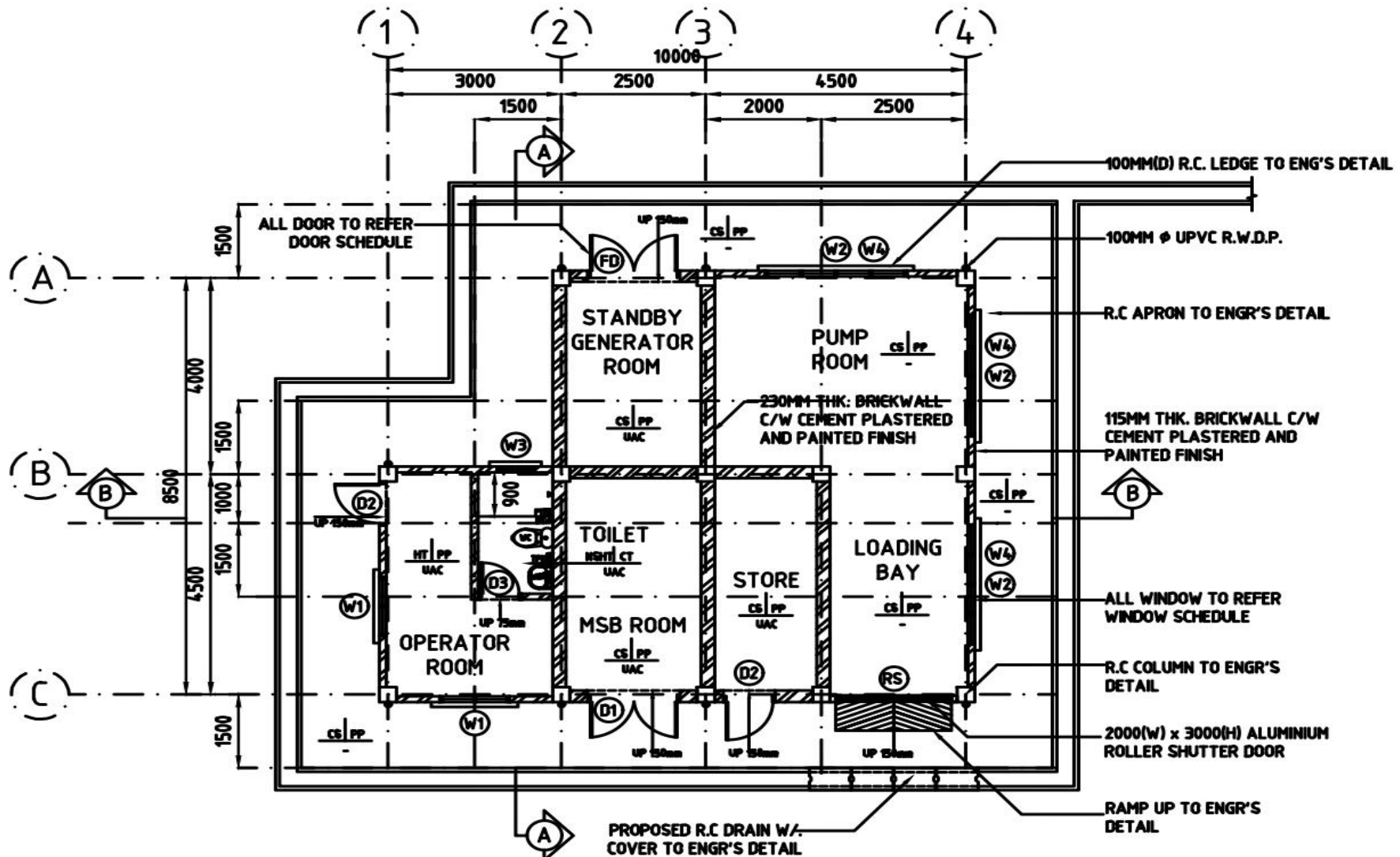


- ❑ As per Type 1A but BPS is remote from HLT site due to significant difference in HGL elevation





LAYOUT PLAN





3.1.4

ARTIST IMPRESSION



Front View

BPS TYPE 1A/1B



3.1.5

ARTIST IMPRESSION



Rear View

BPS TYPE 1A/1B



3.1.6

ARTIST IMPRESSION



BPS TYPE 1A/1B



3.1.7

ARTIST IMPRESSION



Side View

BPS TYPE 1A/1B



3.2

BOOSTER PUMPING STATIONS



TYPE 2 / 3

PROPOSED STANDARD BOOSTER PUMP STATIONS ALONG GRID PIPELINE

PUMPING CAPACITY	BUILDING LENGTH	BUILDING WIDTH	BUILDING HEIGHT	MIN. LAND SIZE REQUIRED*
1.0 MLD	22.5m	8.5m	5m	0.5 acres
3.0 MLD	28m	8.5m	5m	0.6 acres
4.0 MLD	31m	8.5m	5m	0.7 acres
5.0 MLD	33m	8.5m	5m	0.7 acres
6.0 MLD	35m	8.5m	5m	0.8 acres
7.0 MLD	36m	9m	5m	0.8 acres
8.0 MLD	36.5m	9m	5m	0.8 acres
9.0 MLD	37m	9m	5m	0.8 acres
10.0 MLD	38m	9m	5m	0.8 acres

* Min. Land Size does not take into consideration of area required for cut or fill.



3.2

BOOSTER PUMPING STATIONS (Cont.)



TYPE 2 / 3

PROPOSED STANDARD BOOSTER PUMP STATIONS ALONG GRID PIPELINE

PUMPING CAPACITY	BUILDING LENGTH	BUILDING WIDTH	BUILDING HEIGHT	MIN. LAND SIZE REQUIRED*
12.0 MLD	40m	9m	5m	0.9 acres
13.0 MLD	41m	9m	5m	1.0 acre
17.0 MLD	44m	10m	5m	1.1 acres
18.0 MLD	45m	10m	5m	1.2 acres
20.0 MLD	47m	10m	5m	1.3 acres
25.0 MLD	49m	11m	5m	1.4 acres
30.0 MLD	51m	12m	5m	2.2 acres
45.0 MLD	55m	12m	5m	2.3 acres
50.0 MLD	57m	15m	5m	2.6 acres
60.0 MLD	61m	18m	5m	2.8 acres

* Min. Land Size does not take into consideration of area required for cut or fill.

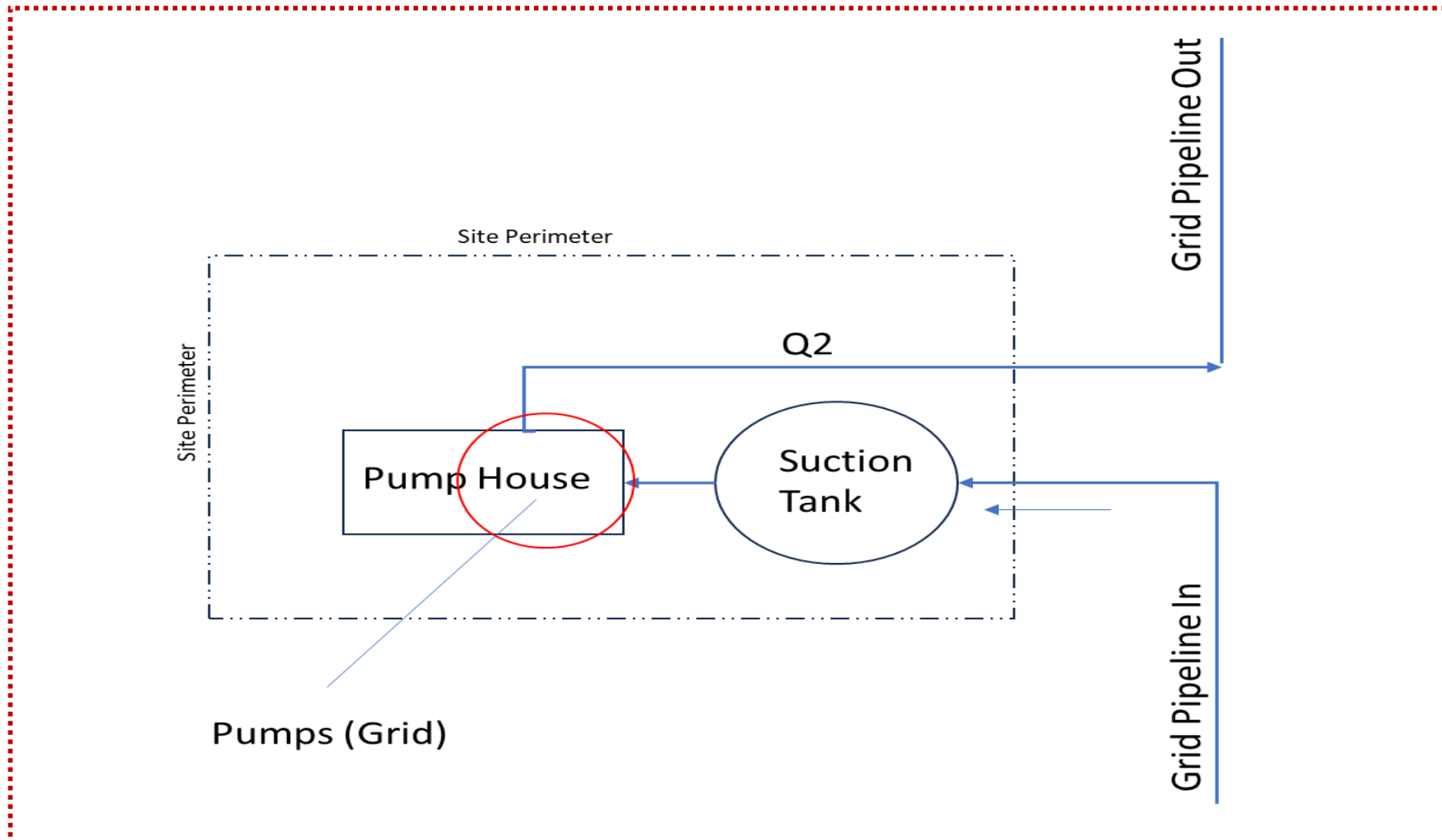


3.2.1

BOOSTER PUMPING STATION (TYPE 2)



- ❑ To provide & maintain sufficient pressure in the grid pipeline



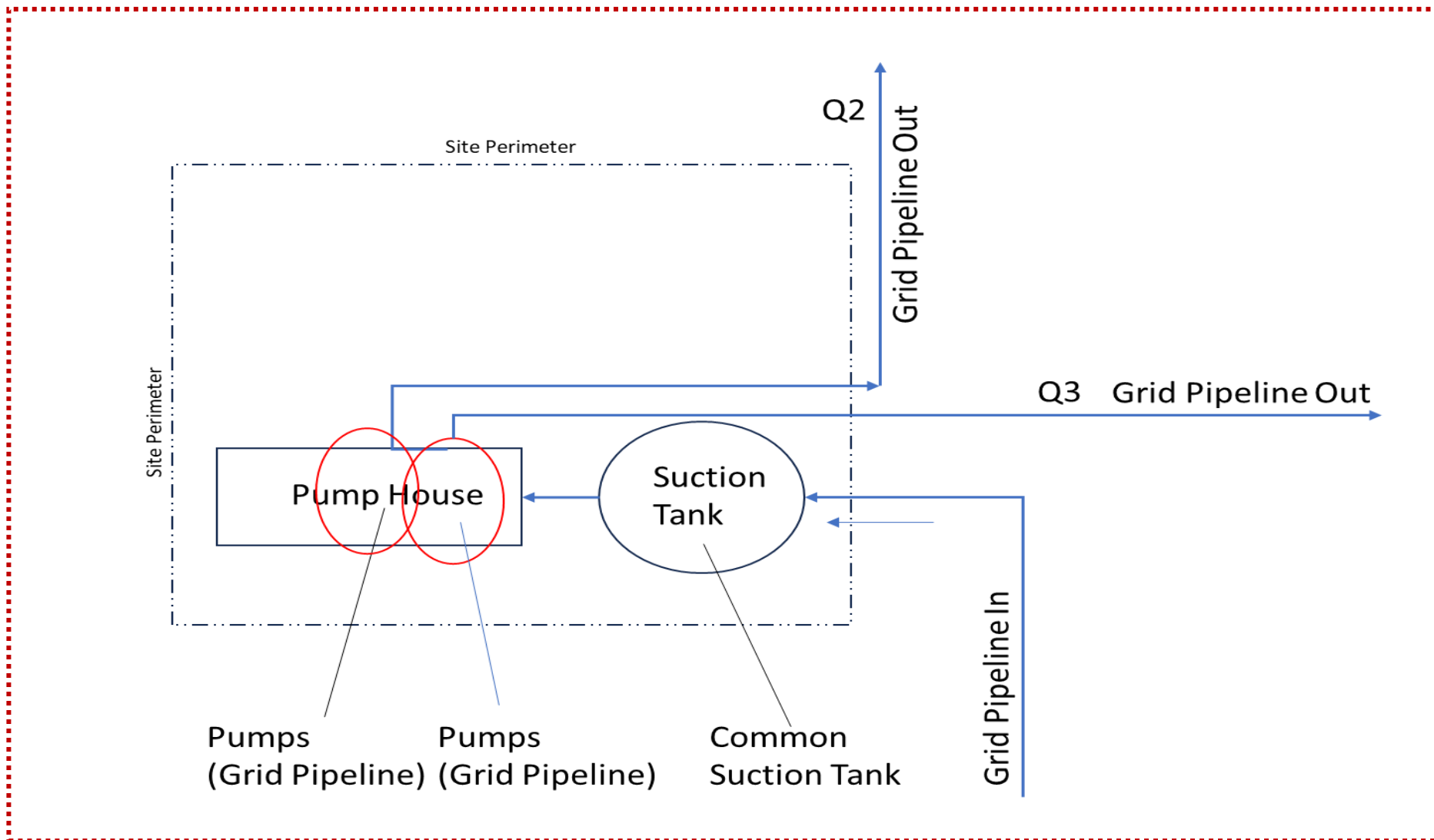


3.2.2

BOOSTER PUMPING STATION (TYPE 3)



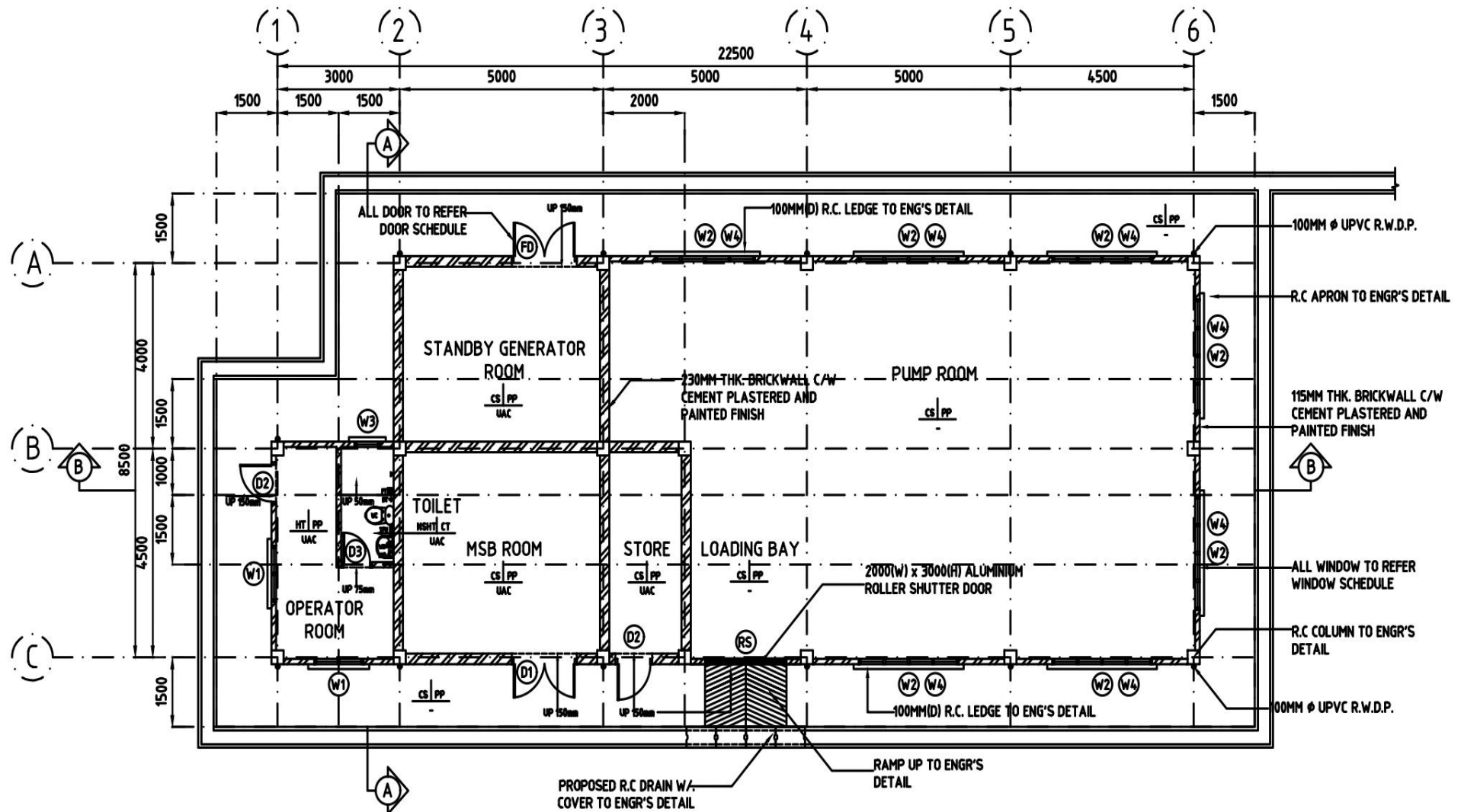
- As per Type 2 but two outflow pipelines with two pump sets





3.2.3

LAYOUT PLAN





3.2.4

ARTIST IMPRESSION



Front View

BPS TYPE 2/3



3.2.5

ARTIST IMPRESSION



Rear View

BPS TYPE 2/3



3.2.6

ARTIST IMPRESSION



Side View

BPS TYPE 2/3



3.2.7

ARTIST IMPRESSION



Side View

BPS TYPE 2/3



3.3

BOOSTER PUMPING STATIONS



TYPE 2A / 2B

PROPOSED STANDARD BOOSTER PUMPING STATIONS TO PUMP WATER FROM GRID PIPELINE TO RESERVOIRS AND HIGH LEVEL TANK & GRID PIPELINE

PUMPING CAPACITY	BUILDING LENGTH	BUILDING WIDTH	BUILDING HEIGHT	MIN. LAND SIZE REQUIRED*
1.0 MLD	22.5m	8.5m	5m	0.5 acres
3.0 MLD	28m	8.5m	5m	0.6 acres
4.0 MLD	31m	8.5m	5m	0.7 acres
5.0 MLD	33m	8.5m	5m	0.7 acres
6.0 MLD	35m	8.5m	5m	0.8 acres
7.0 MLD	36m	9m	5m	0.8 acres
8.0 MLD	36.5m	9m	5m	0.8 acres
9.0 MLD	37m	9m	5m	0.8 acres
10.0 MLD	38m	9m	5m	0.8 acres

* Min. Land Size does not take into consideration of area required for cut or fill.



3.3

BOOSTER PUMPING STATIONS (Cont.)



TYPE 2A / 2B

PROPOSED STANDARD BOOSTER PUMPING STATIONS TO PUMP WATER FROM GRID PIPELINE TO RESERVOIRS AND HIGH LEVEL TANK & GRID PIPELINE

PUMPING CAPACITY	BUILDING LENGTH	BUILDING WIDTH	BUILDING HEIGHT	MIN. LAND SIZE REQUIRED*
12.0 MLD	40m	9m	5m	0.9 acres
13.0 MLD	41m	9m	5m	1.0 acre
17.0 MLD	44m	10m	5m	1.1 acres
18.0 MLD	45m	10m	5m	1.2 acres
20.0 MLD	47m	10m	5m	1.3 acres
25.0 MLD	49m	11m	5m	1.4 acres
30.0 MLD	51m	12m	5m	2.2 acres
45.0 MLD	55m	12m	5m	2.3 acres
50.0 MLD	57m	15m	5m	2.6 acres
60.0 MLD	61m	18m	5m	2.8 acres

* Min. Land Size does not take into consideration of area required for cut or fill.

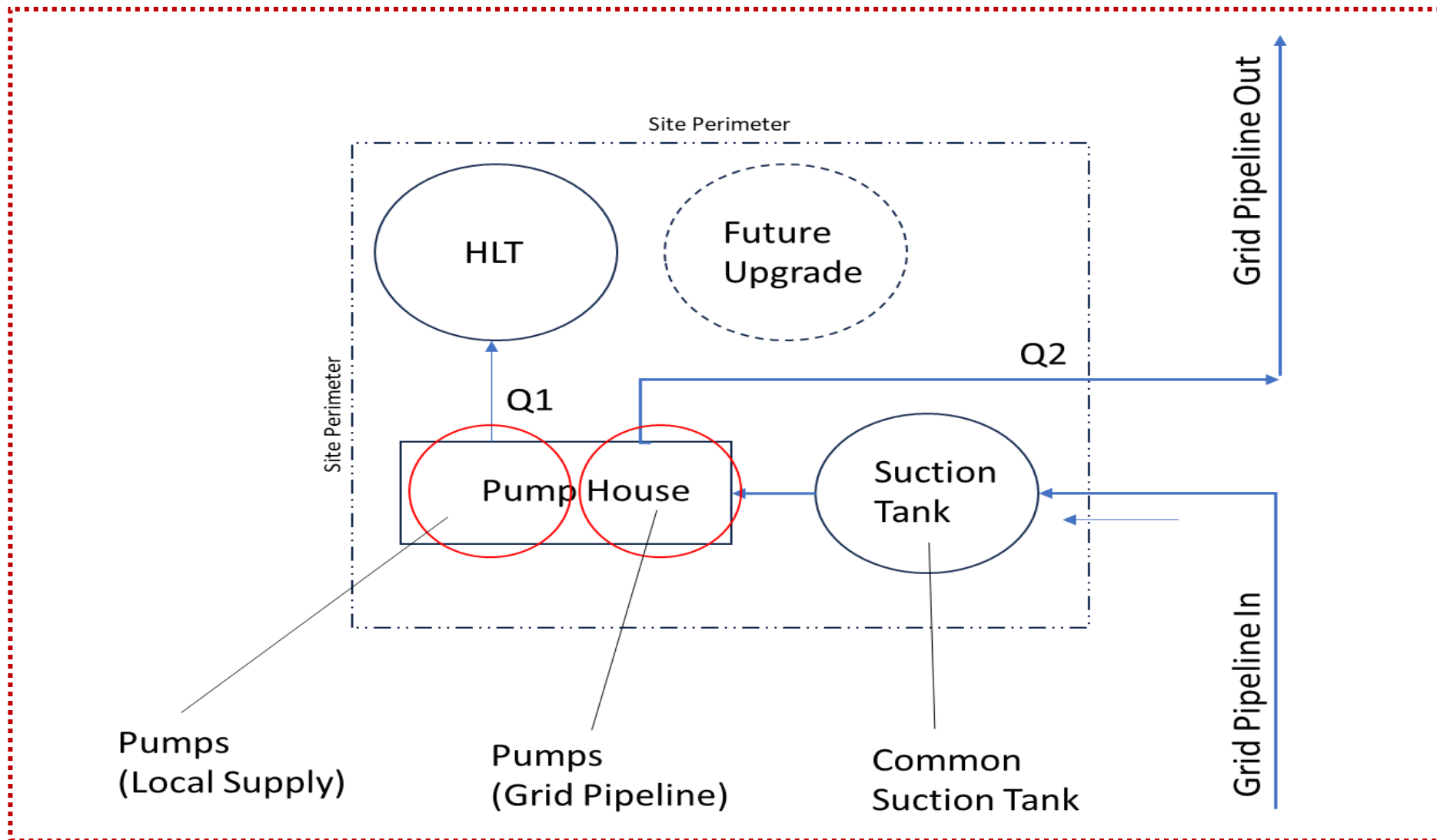


3.3.1

BOOSTER PUMPING STATION (TYPE 2A)



- As per BPS Type 2 but with pumping water to HLT for local supply



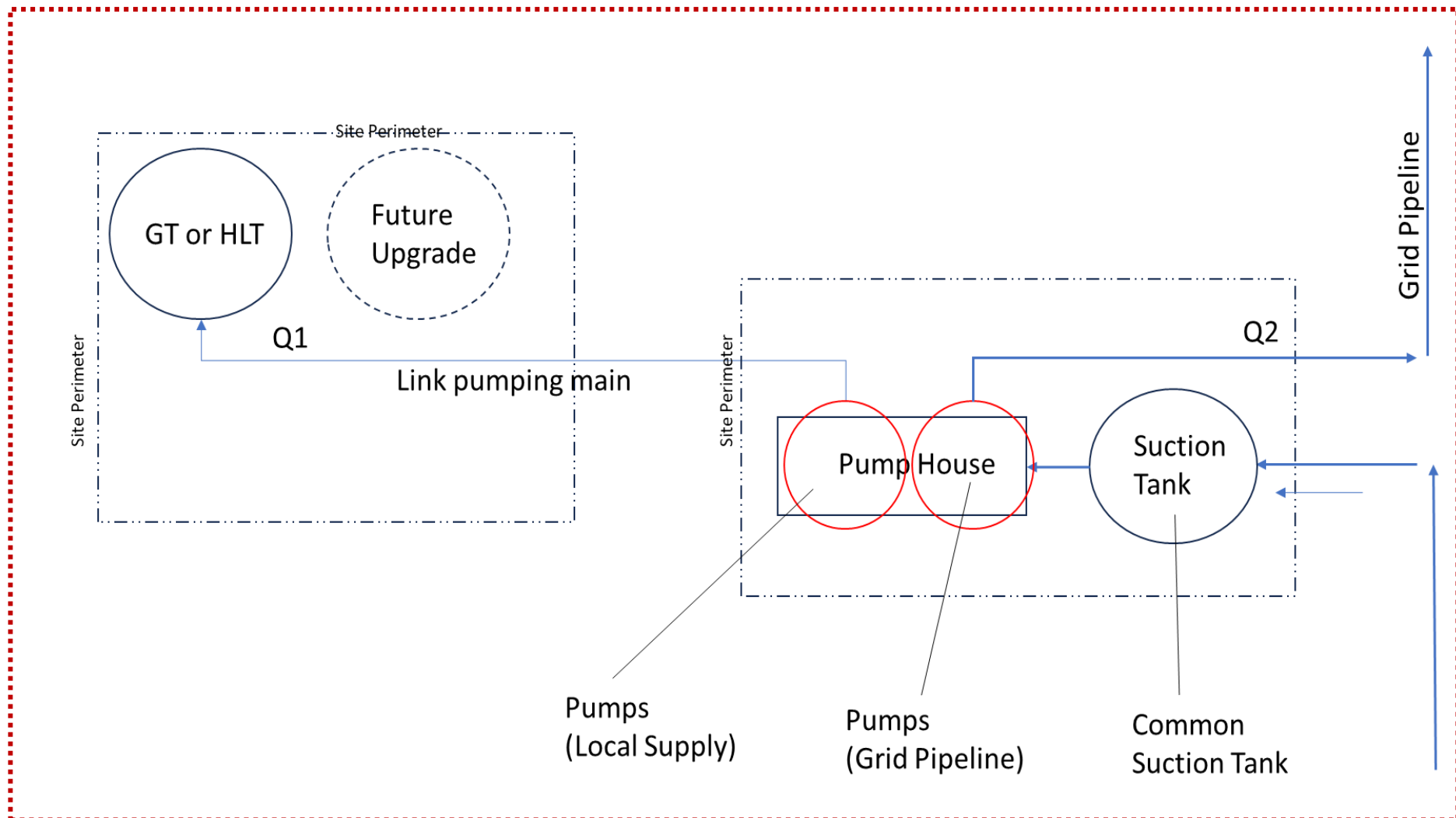


3.3.2

BOOSTER PUMPING STATION (TYPE 2B)



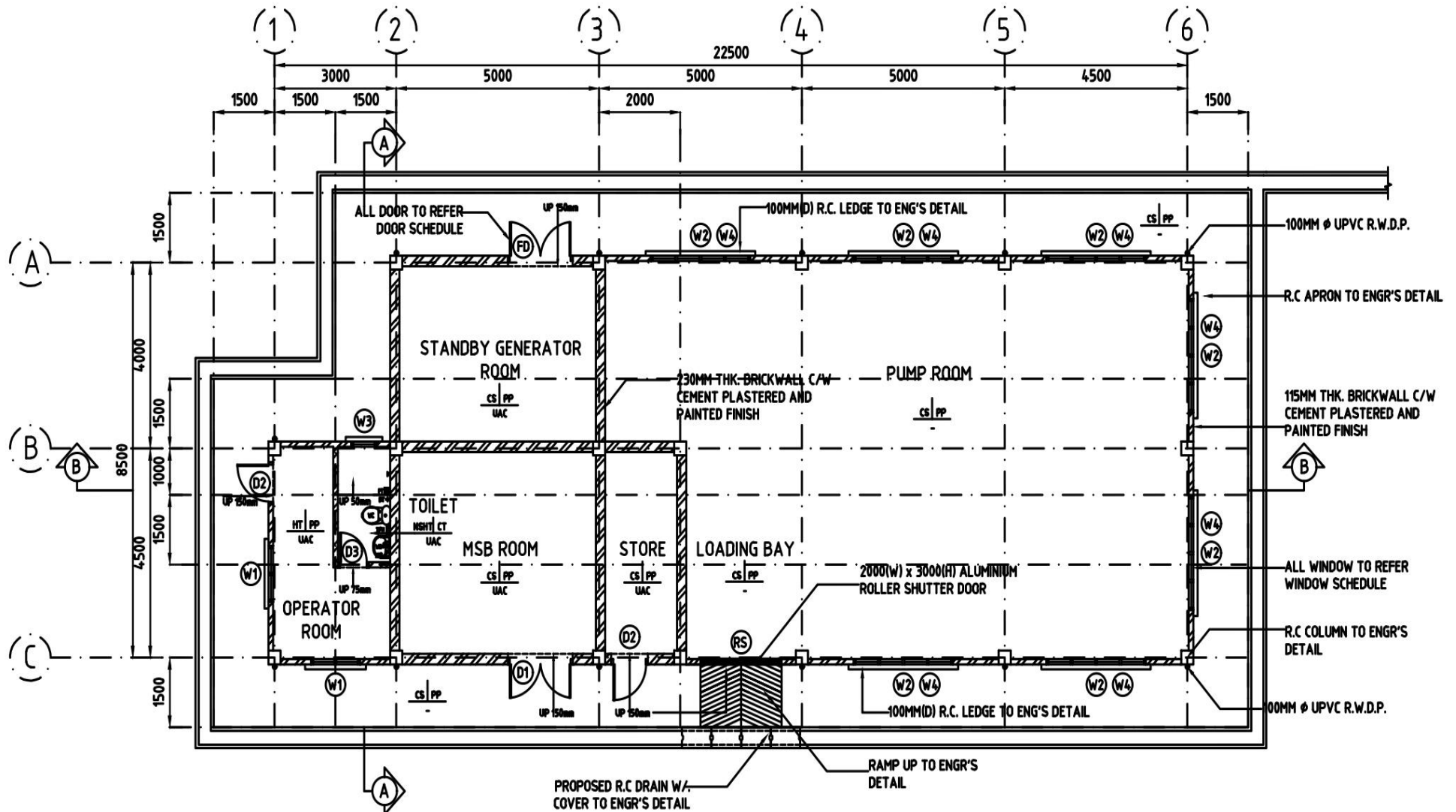
- As per BPS Type 2A but with pumping water to GT or HLT for local supply at different site





3.3.3

LAYOUT PLAN





3.3.4

ARTIST IMPRESSION



Front View

BPS TYPE 2A /2B



3.3.5

ARTIST IMPRESSION



Rear View

BPS TYPE 2/3



3.3.6

ARTIST IMPRESSION



Side View

BPS TYPE 2/3



3.3.7

ARTIST IMPRESSION



Side View

BPS TYPE 2/3



3.4

BOOSTER PUMPING STATIONS



TYPE 3A / 3B

PROPOSED STANDARD BOOSTER PUMPING STATIONS TO PUMP WATER FROM GRID PIPELINE TO RESERVOIRS AND HIGH LEVEL TANK & GRID PIPELINE

PUMPING CAPACITY	BUILDING LENGTH	BUILDING WIDTH	BUILDING HEIGHT	MIN. LAND SIZE REQUIRED*
3.0 MLD	30.5m	9m	5m	0.6 acres
6.0 MLD	38m	9m	5m	0.8 acres
9.0 MLD	40m	9m	5m	0.8 acres
13.0 MLD	43m	12m	5m	1.0 acre
20.0 MLD	50m	12m	5m	1.3 acres
30.0 MLD	55m	15m	5m	2.2 acres
45.0 MLD	58m	15m	5m	2.3 acres

* Min. Land Size does not take into consideration of area required for cut or fill.

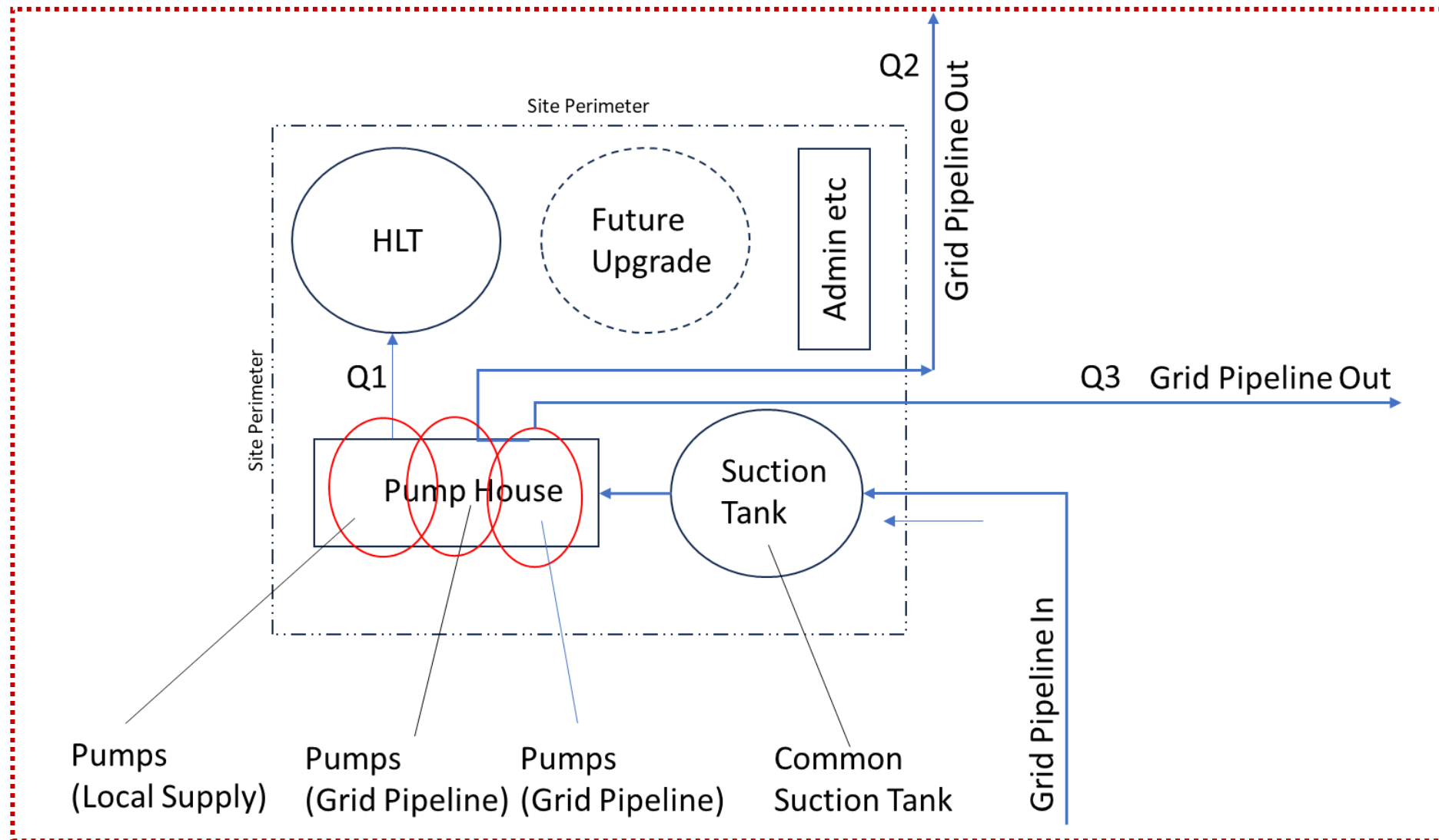


3.4.1

BOOSTER PUMPING STATION (TYPE 3A)



- As per BPS Type 3 but with pumping water to HLT for local supply



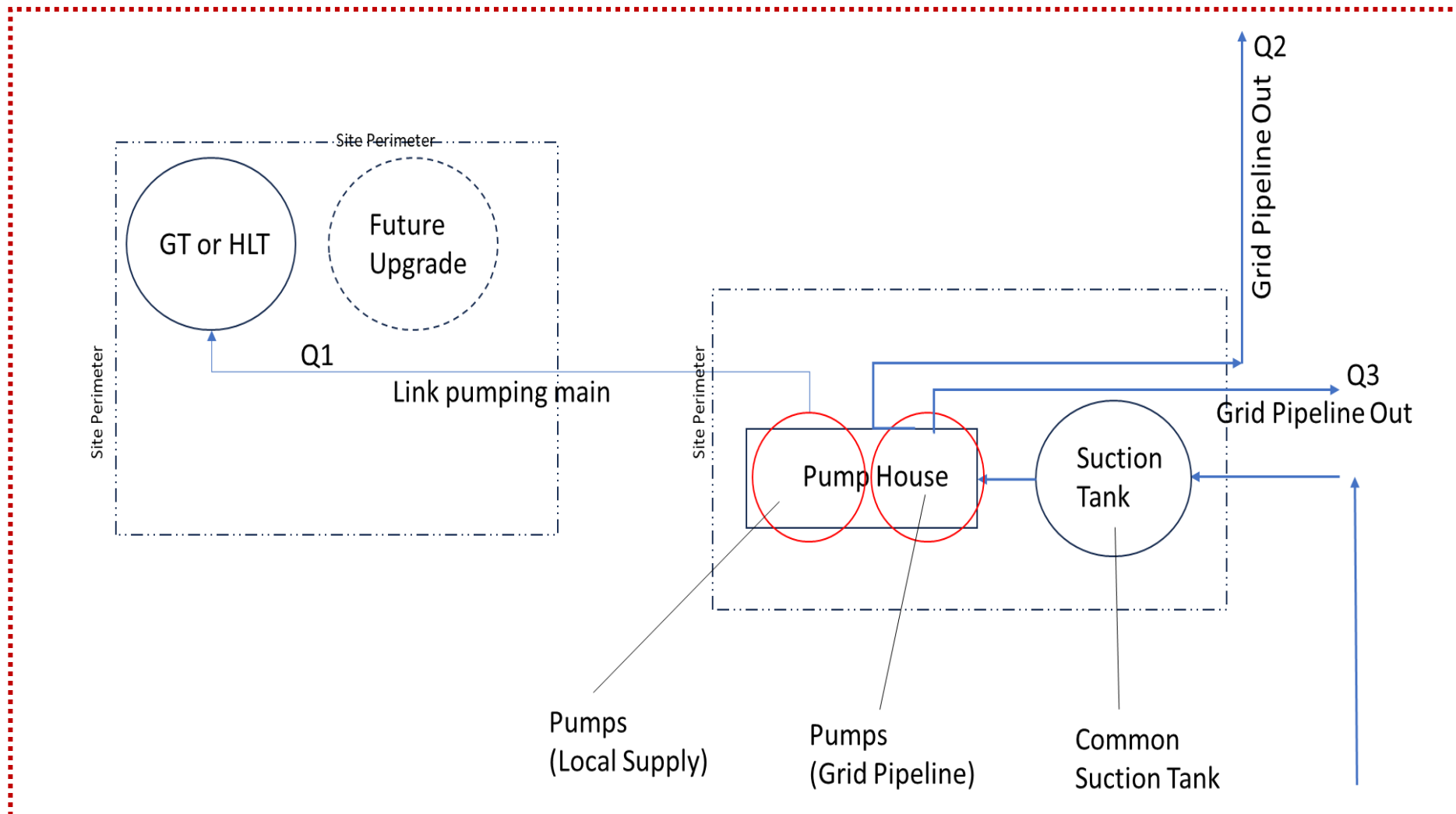


3.4.2

BOOSTER PUMPING STATION (TYPE 3B)



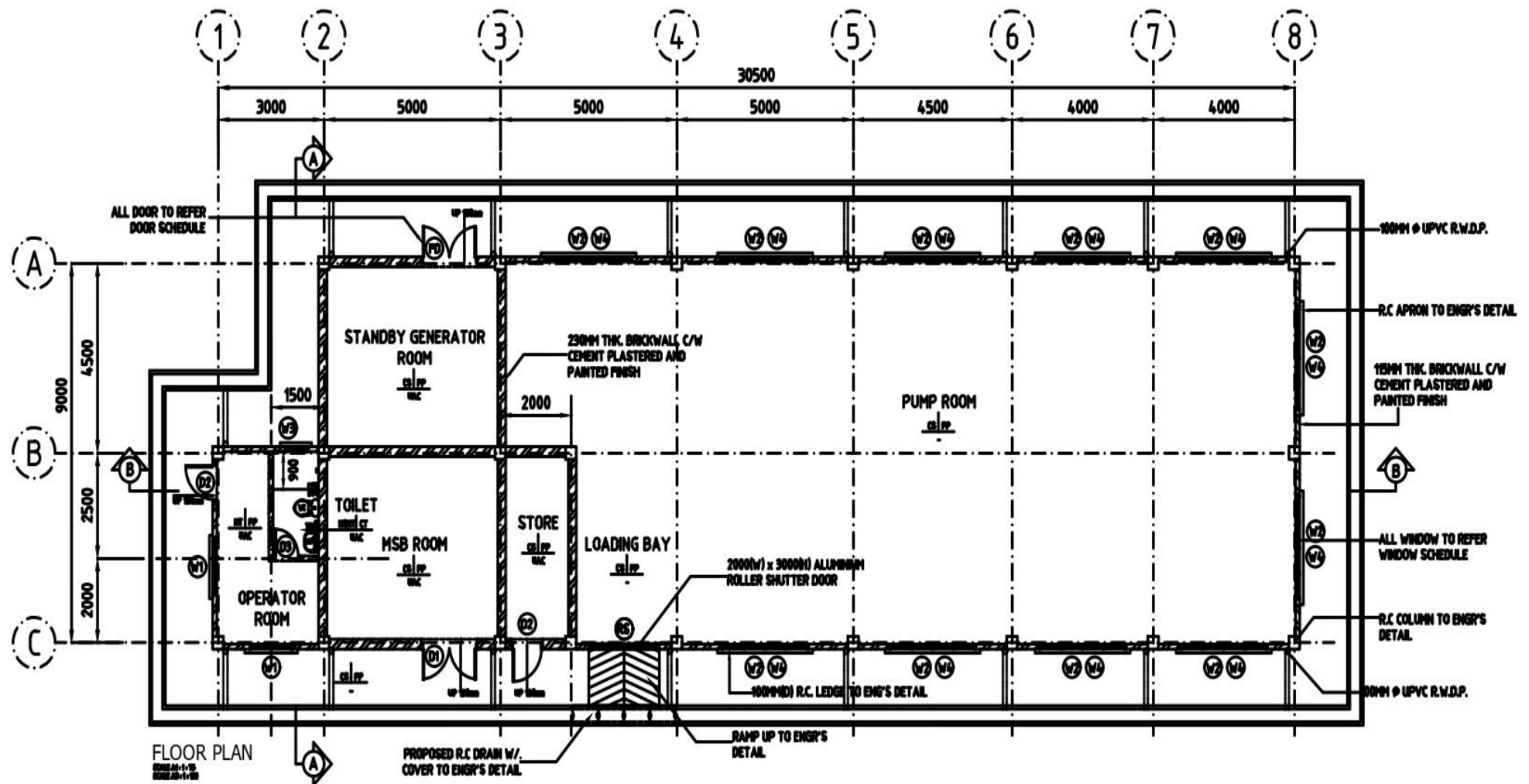
- As per BPS Type 3A but with pumping water to HLT for local supply at different site





3.4.3

LAYOUT PLAN





3.4.4

ARTIST IMPRESSION



Front View

BPS TYPE 3A / 3B



3.4.5

ARTIST IMPRESSION



Rear View

BPS TYPE 3A / 3B



3.4.6

ARTIST IMPRESSION



Side View

BPS TYPE 3A / 3B



3.4.7

ARTIST IMPRESSION



Side View

BPS TYPE 3A / 3B



4.0

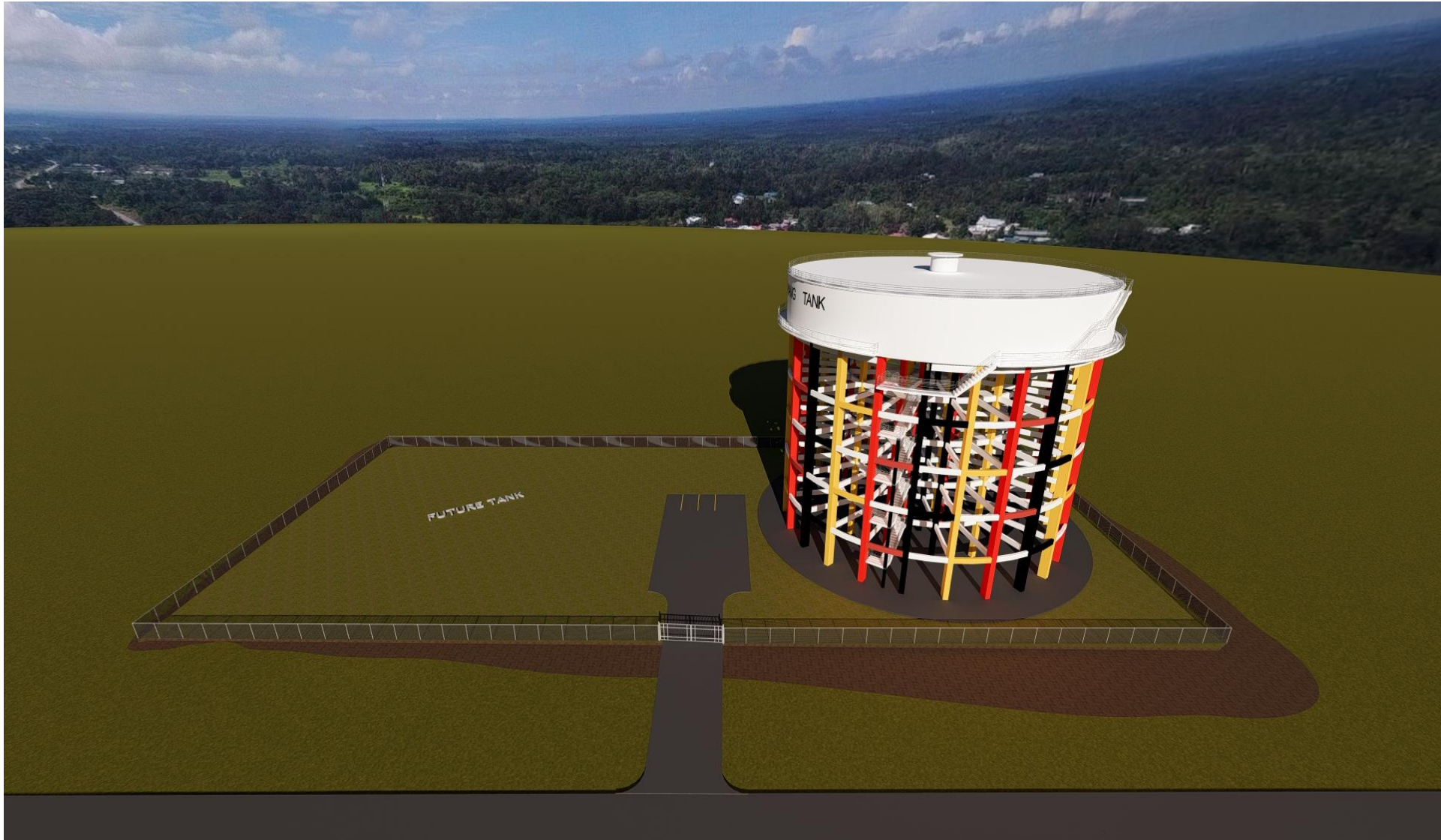
OVERVIEW OF BPS & RESERVOIR





5.0

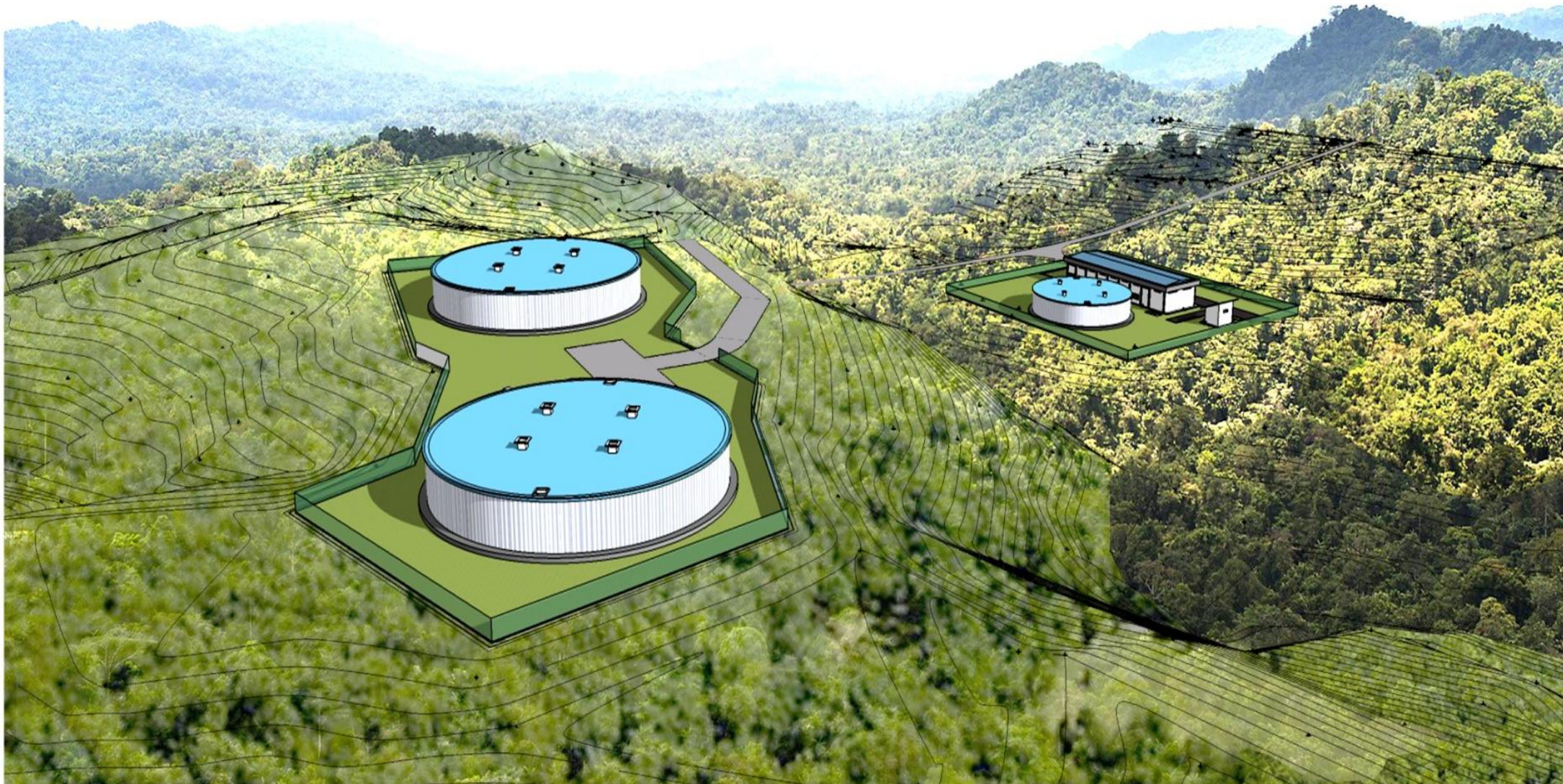
OVERVIEW OF ELEVATED HLT





6.0

OVERVIEW OF RESERVOIR





7.0

SPA REQUIREMENTS



STATE PLANNING AUTHORITY
MINISTRY OF URBAN DEVELOPMENT & NATURAL RESOURCES
SPA CIRCULAR NO.7/2018 - BUILDING HEIGHT CONTROL :
ONE-THIRD (1/3) HEIGHT RULE

1. The State Planning Authority had decided during its meeting on the 26.10.2018 on the revision of item **10.3** in the **Development Control Standards Manual** from the '**half(1/2)-height**' rule to the '**one-third(1/3) height**' rule as the maximum permitted building height control.
2. Currently the 'one-third' height rule is only applicable to Residential Type of Building (SPA Circular No.1/2016), with this revision the ruling is now applicable to **any type of high rise building** such as hotels, offices, service apartment & commercial complexes **State wide** with a **minimum setback of six(6) meters to the lot's boundary**.

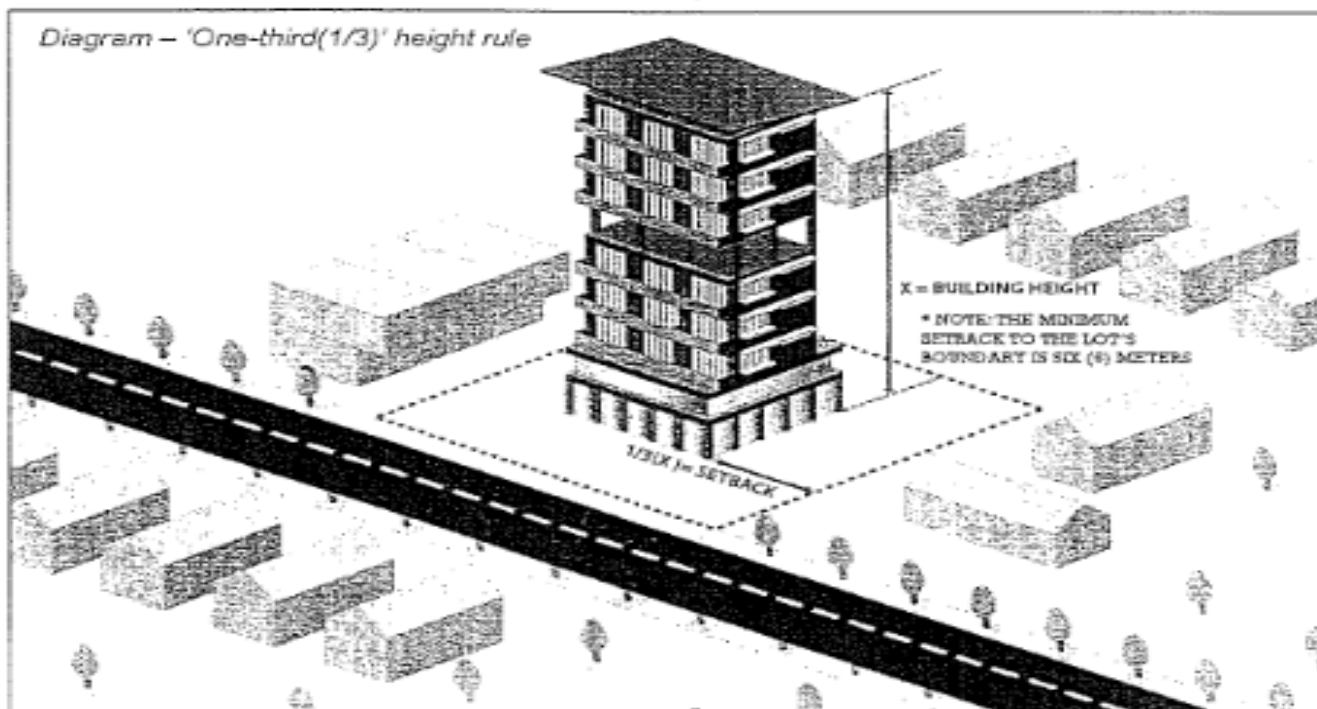


7.0

SPA REQUIREMENTS (Cont.)



4. Example/guidelines on the application of the 'one-third' height rule:



Example No.	Minimum Setback (1/3 (X))	Maximum Permitted Building Height (X)
i	6.00 m	18.00 m
ii	12.5 m	37.50 m
iii	7.72 m	23.16 m



8.0

OTHER REQUIREMENTS



Siting
Approval

SUStoM

SEB

Relevant
Approval





9.0

APPROVED DETAILED BUILDING PLAN

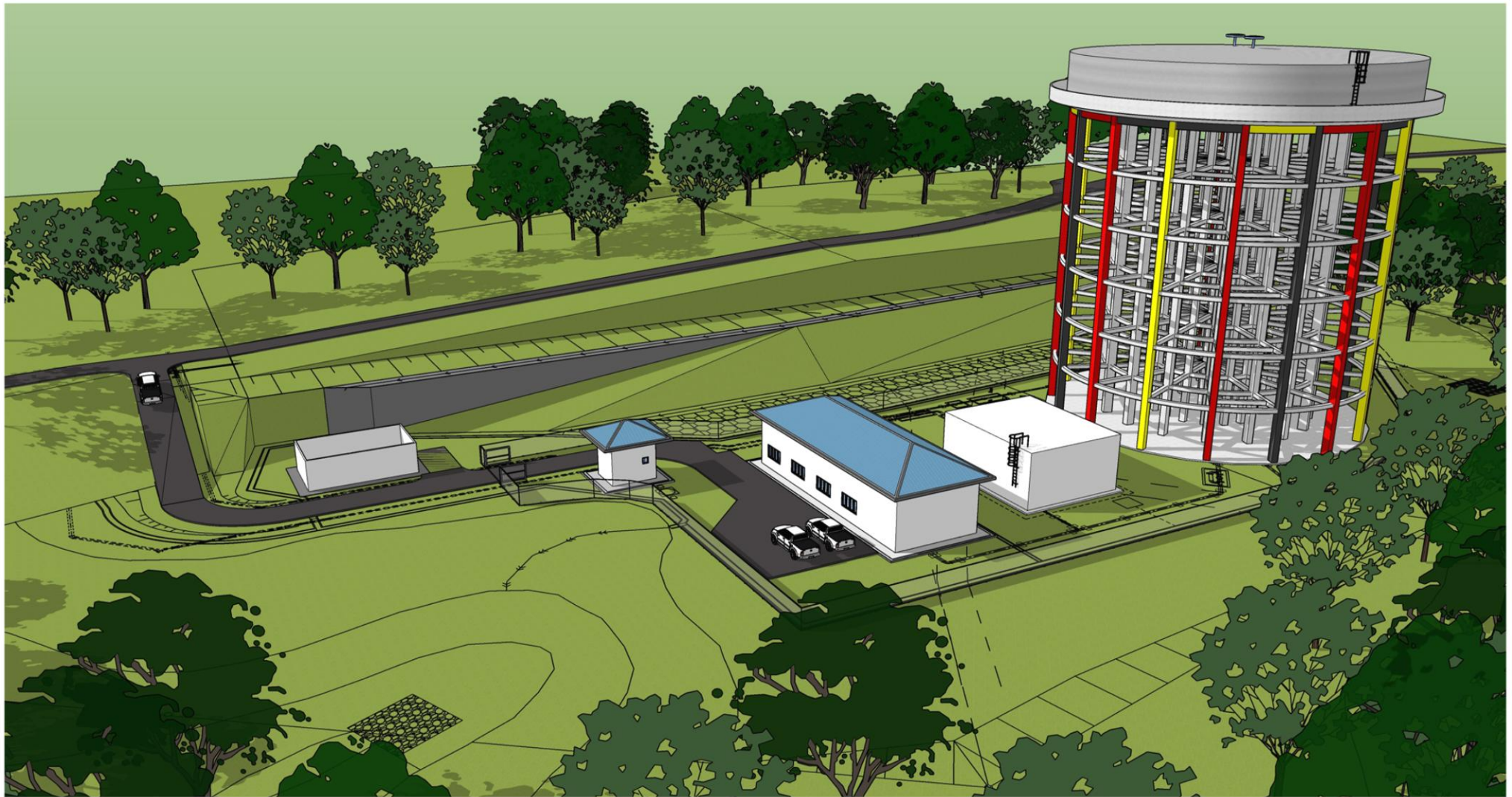


3D & PERSPECTIVE VIEWS



9.1

ARTIST IMPRESSION

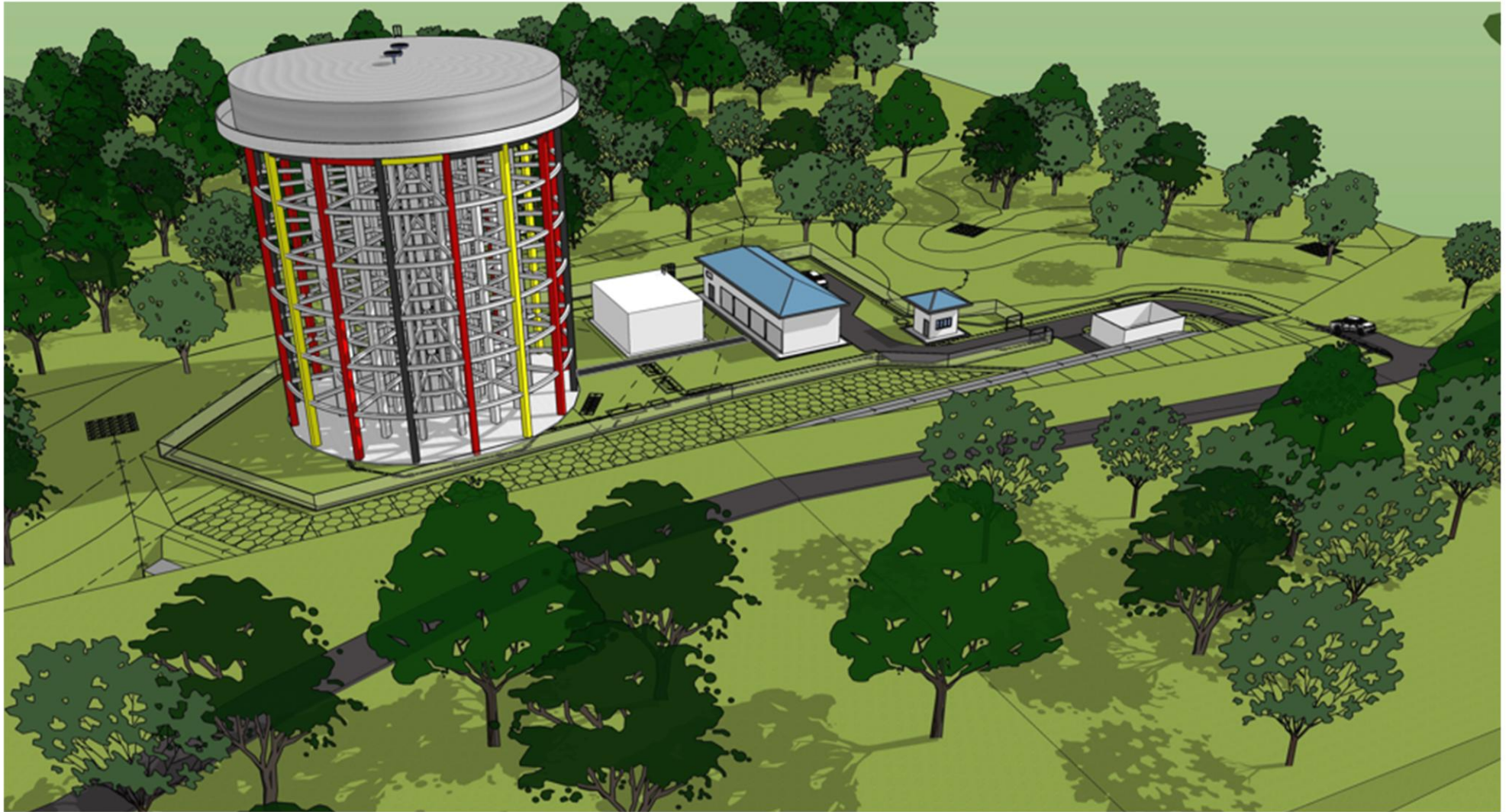


High Level Tank /BPS/Reservoir Site Aerial View 1



9.2

ARTIST IMPRESSION

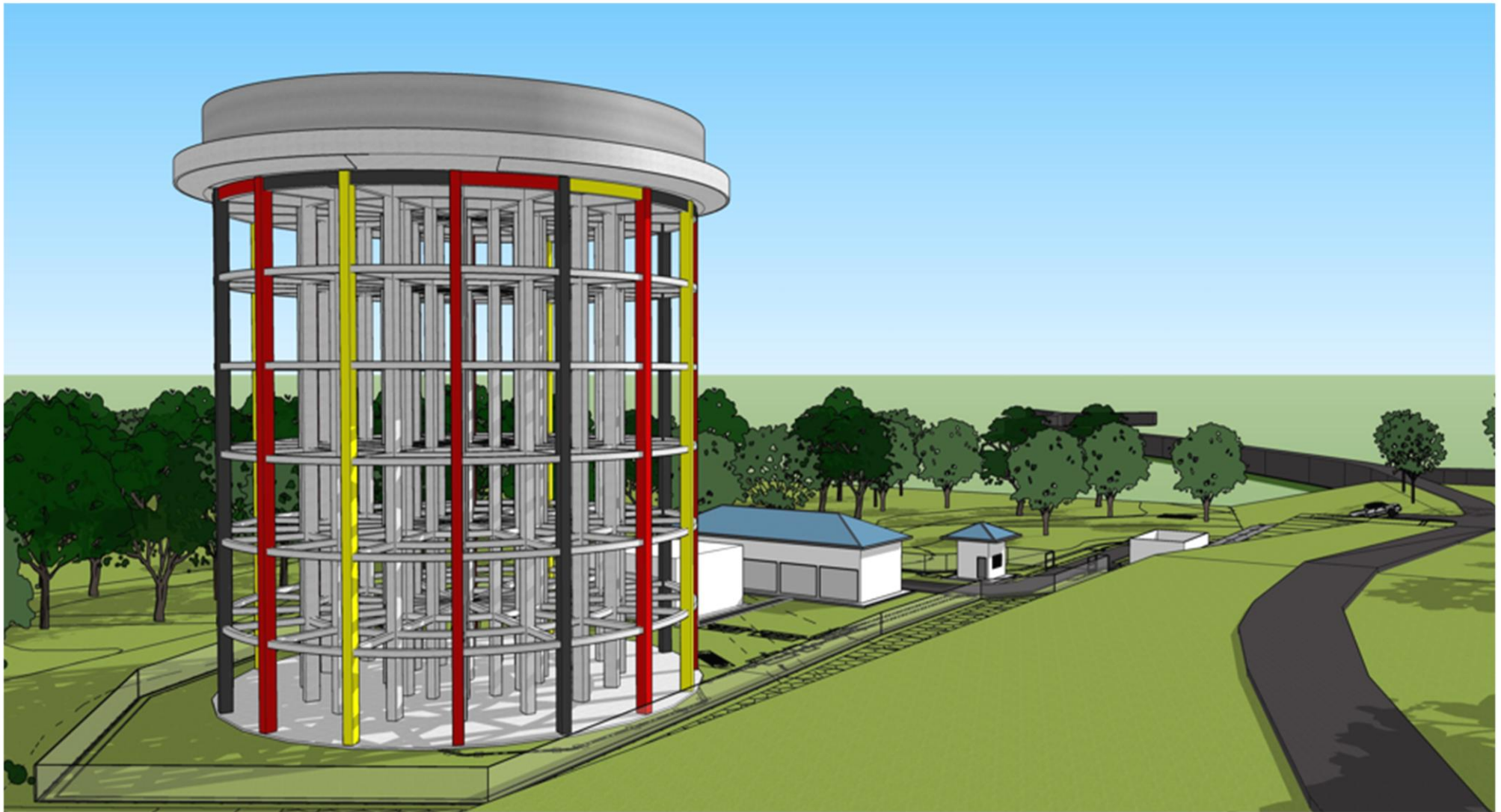


High Level Tank /BPS/Reservoir Site Aerial View 2



9.3

ARTIST IMPRESSION

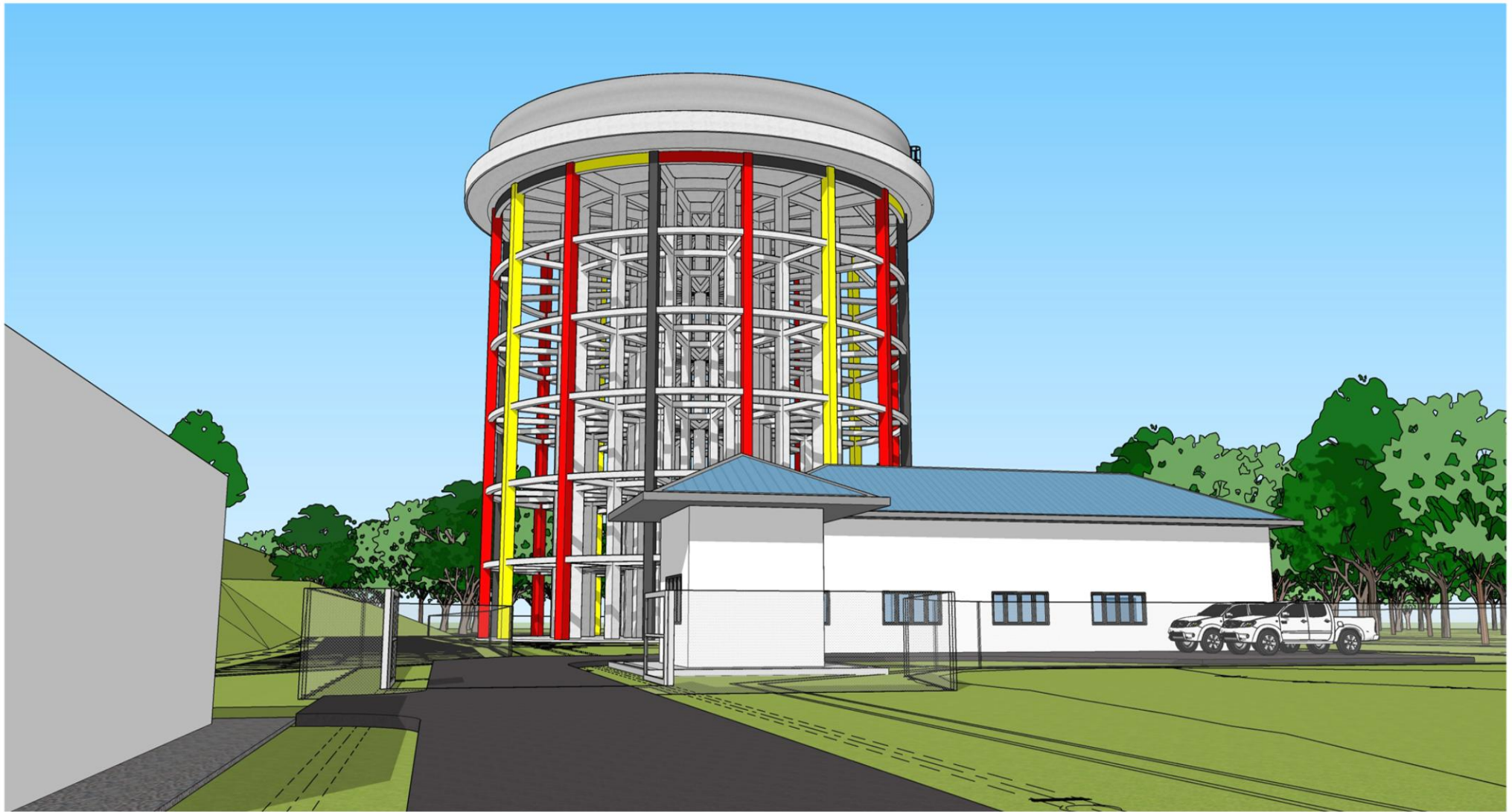


High Level Tank /BPS/Reservoir Site Aerial View



9.4

ARTIST IMPRESSION



High Level Tank /BPS/Reservoir Site Entrance View



**JABATAN BEKALAN AIR LUAR BANDAR
(JBALB)
SARAWAK**

"AN HONOUR TO SERVE"

"SAFE RELIABLE WATER"

Thank you!

