Title:	Drainage Strategy Technical Note
Date:	26th May 2023
Author:	Rob Lowe
Reference:	23191-JUBB-XX-XX-RP-C-001
Revision:	P1

1.0 Introduction

1.1.1 Jubb have prepared this Technical Note alongside the associated drawings to address the Drainage requirements for a full planning application in relation to the proposed change of use of Unit 2 to Sui Generis and the construction of the necessary infrastructure including: tanker offloading shelter, bulk acid storage, fume scrubber, driver welfare room, control room, associated pipework, modifications to internal layout and a covered link between units 1 & 3. This report will address the impact of these changes on the existing surface water drainage network.

1.1.2 The site currently comprises of three warehouse units with permission for B1c, B2 use and B8 use with accompanying A3 units. Planning permission was granted under planning permission **21/02881/ROC** and **19/02725/FUL** and included the construction of 3 warehouse units (one B1, B2, and B8 unit and two Class A3 units).

1.1.3 The surface water networks were constructed in accordance with the approved plans designed by RLRE included within their Flood Risk Assessment & Drainage Strategy document 19292-RLL-19-XX-RP-C-001. The strategy is based on the use of infiltration drainage with the use of soakaways located across the site.

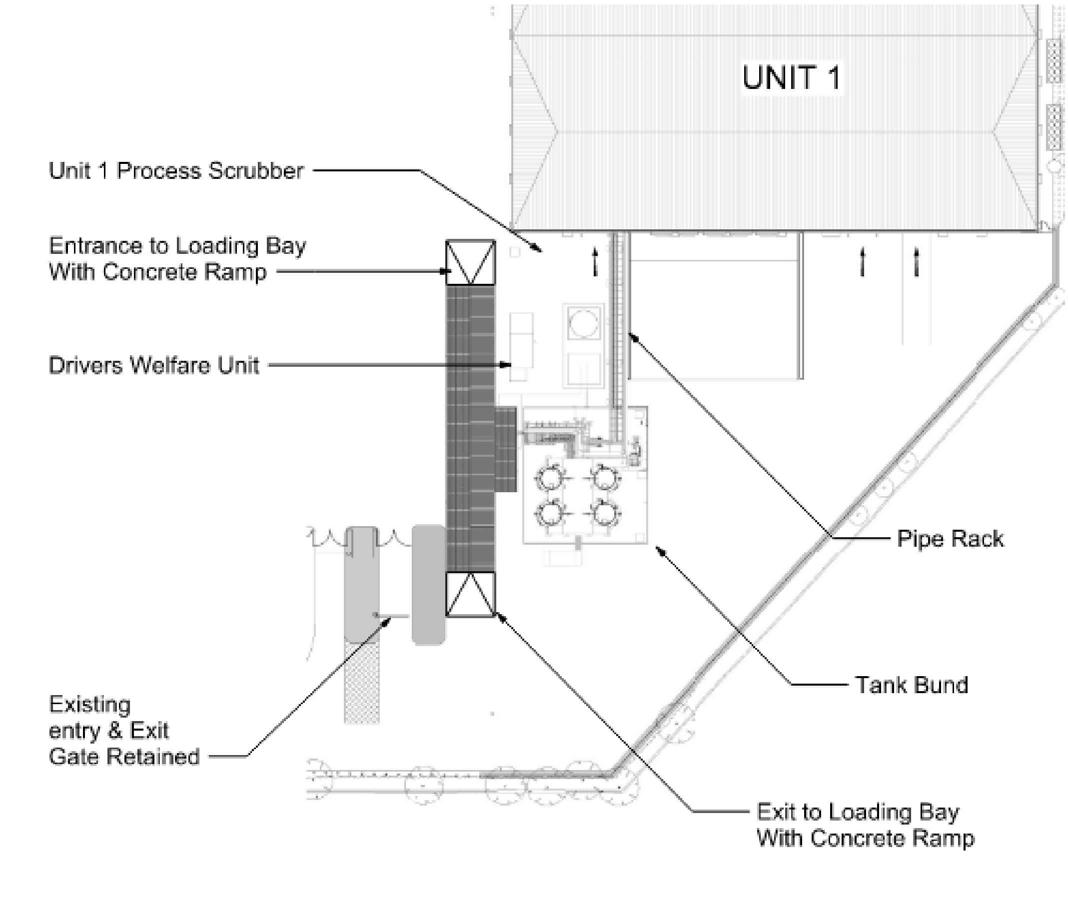

Figure 1. Proposed Layout Amendments for Acid Delivery

2.0 Surface Water Drainage

2.1 Existing Surface Water Drainage

2.1.1 A new surface water drainage network will be required to service the proposed development changes to drain surface water runoff from the amended areas described in section 1.1.1.

2.1.2 The existing surface water network discharges to ground via infiltration. This is done by a number of soakaways placed around the site. There are 2no located within the yard for Unit 3 near to the area proposed for the acid delivery apparatus. Due to the nature of the chemicals being delivered and used on site, the proposed development alterations will utilise a closed network which will not connect to the existing network.

2.2 Offloading Bay Drainage

2.2.1 The proposed network has been designed by OLG and is fully described within their document 1567-2R-001-4 Acid Bulk Storage Tanks Process Description. This document details that the deliveries will be undertaken within a covered and bunded offloading bay. This bay will contain a sump which will have a capacity for a full tanker spill to be collected, with additional ullage to allow any spill to be diluted via water spray so that any release of fumes is limited.

2.2.2 The offloading bay will only accommodate one tanker at a time, so the maximum number of tankers that can be processed in a day will be subject to scheduling and work patters. The design is to ensure that tankers do not have to reverse to gain access in and out of the bay.

2.2.3 At the end of all deliveries, the hoses will be emptied prior to disconnection to prevent any residual spillage from this action.

2.3 Acid Storage Tank Drainage

2.3.1 The acid storage tanks will be sized to hold 1 weeks' worth of production due to the contingency needed for supplier's plant downtime.

2.3.2 The Acid Storage Tanks will be contained within a tertiary level of protection consisting of tanks, self-bunding, and a bund encapsulating the tank farm. The tertiary bund will be sized such that it complies with CIRIA C736 for volume. This volume is 110% of the largest tank, plus additional allowance for storm rainfall, surge and freeboard. An additional allowance of $35m^3$ is required to account for the water volume required to dilute any acid spillage to the level at which HCl no longer 'fumes'.

2.3.3 The need to size for jetting will not be required due to the secondary containment afforded by the self-bunded design and the additional splash guards specified for the suppled level of the tanks.

2.4 Impacts the Existing Drainage System

2.4.1 Due to the location of the proposed Acid Processing & Storage equipment there will need to be minor adjustments to the existing surface water network. This will cover the removal of a length of drainage channel to prevent ingress of potential spills.

2.4.2 Any existing manholes located within the bunded areas will need to be sealed with new suitable covers to prevent ingress of potential spills.

3.0 Conclusions

3.1.1 It has been demonstrated the proposed development changes will not affect the existing surface water drainage. The risk of spills entering the environment through the existing network has been mitigated through the measures described.

Appendix A: OLG Documentation

LevertonHELM

Acid Bulk Storage Tanks

Process Description

1567-2R-001-4

Sheets 9

Document Reference

4	For Detailed Design	SJF	MA	MAT	23-Mar-23
3	Client Comments & Acid Dosing Inclusion	WDW/MPH	SJF	WDW	25-Nov-22
2	For FEED Report	CMM	MAT	MAT	06-Sep-22
1	Internal Issue	CMM	WDW	WDW	11-Jul-22
0	For Review	CMM	WDW	WDW	20-Jun-22
REV	DESCRIPTION	PREPARED	CHECKED	APPROVED	DATE

Contents

1 Glossary

Term	Definition
EFT	Evaporator Feed Tank
HDPE	High Density Polyethylene
PAT	Product Adjustment Tank
PIT	Pressure Indicator and Transmitter

2 Introduction

This document describes the process flow of the offloading, storage and distribution for the hydrochloric acid (36% w/w) facilities at LevertonHELM. The scope of this document begins at the acid tanker offload point and ends at the acid inlet to the users. The users for the process are a trio of main reactors, a series of Product Adjustment Tanks (PATs) and a pair of Evaporator Feed Tanks (EFTs). It also includes the scrubbing of the acid vapours, safety sprinkler and shower systems. It is recommended that this report be read in conjunction with the Offloading and Storage Process Flow Diagram (1576-PFD-001) and Piping and Instrumentation Diagrams (1567-PID-101 to 109).

3 Process Description

3.1 Process Overview

3.1.1 Acid Tanker Offloading

Tankers are received onsite and will be directed to the offloading bay. Deliveries of acid will arrive in up to 24 m^3 (c. 28,000 kg) tankers and may discharge their contents via either the onsite pump system or via their onboard pressurised system, depending on the supplier.

The tanker will be parked in the required bay and a sample taken to confirm acid strength/purity before it is connected to the designated bulk storage tank. Bulk storage tank levels will be clearly visible from the loading bays on a local HMI. If the tanker is discharged via its onboard compressor system, then the tanker will be connected to the bulk tank inlet line. If the tank is to be emptied via the on-site pump system, then the tanker liquid outlet will be connected to the pump suction and the bulk tank vent line will be connected to the tanker vapour space to achieve a balanced pressure filling circuit. In both cases the vent scrubber will need to be running to permit the tanker offload to start. Once started, the tanker will be fully discharged to the designated tank.

The target tanker offloading time is c. 1 hour. The anticipated offloading rates are c. 25 m^3/hr for the pressurised case and 24 m^3/hr for the pumped case.

At the end of the offload the hoses will be emptied prior to disconnection.

As well as permitting offloading of the acid, the bay is to permit tanker hose washing, tanker sampling and loading of tankers to take away liquid waste.

The tanker bay will provide a sump to enable a full tanker spill to be collected. The sump will have additional ullage to allow any spill to be diluted via water spray so that any release of fumes is limited.

The offloading bay will only accommodate one tanker at a time, so the maximum number of tankers that can be processed in day will be subject to scheduling and work patterns. The design is to ensure that tankers do NOT have to reverse to gain access into and out of the bays.

3.1.1.1 Pressurised Tanker Discharge

The pressurised discharge route is used if the tanker has an onboard compressor system. The tanker will be connected to the bulk tank inlet line (TIP-101).

The vent hose (FH-0100) is connected from the common hydrochloric acid storage tank vent line to the tanker. Tanker discharge hose (FH-0101) is connected to the tanker and the inlet pipework to the hydrochloric acid tanks (T-101, T-102, T-103 or T-104). Manual valve HV0110 is opened. The receiving hydrochloric acid storage tank is selected via the HMI in the Bulk Acid Storage Tanks Control Room, this will pre-set the required actuated valve directing the hydrochloric acid to the required tank.

The onboard compressor system is then started to enable pressurised transfer of hydrochloric acid to the select hydrochloric acid storage tank. The transfer is then initiated by a start button on the local tanker offloading HMI.

Transfer of hydrochloric acid is stopped when either a) the transfer is completed, or b) the high-high level is detected in the respective hydrochloric acid storage tank. The transfer completion is determined by a phase change detection by FS-0100, indicating that the tanker is empty, or when 24 m^3 of acid has been transferred to a tanker as measured by FQI-0101. All actuated valves return to their safe position once the addition is complete.

Excess pressure in the tanker may then be vented by opening the vent valve on the tanker and running the vent process which will open the actuated valve to the selected tank. The transfer line and hoses may then be blown through into the tank using the local utility station if required.

3.1.1.2 Pumped Tanker Discharge

If the tanker does not have an on-board compressor system, the tanker contents are transferred using the site tanker offloading pumps (P-101A/B, duty/standby).

The vent hose (FH-0100) is connected from the common hydrochloric acid storage tank vent line to the tanker. Tanker discharge hose (FH-0101) is connected to the tanker and the inlet pipework (TIP-100) to the hydrochloric acid tanks (T-101, T-102, T-103 or T-104). Manual valve HV0101 is opened. The receiving hydrochloric acid storage tank is selected via the HMI in the Bulk Acid Storage Tanks Control Room, this will pre-set the required actuated valve directing the hydrochloric acid to the required tank.

The offloading pump is then started via a start button on the local tanker offloading HMI to enable transfer of hydrochloric acid to the select hydrochloric acid storage tank.

Transfer of hydrochloric acid is stopped (P-101A/B stopped) when either a) the transfer is complete, or b) the high-high level is detected in the respective hydrochloric acid storage tank. The transfer completion is determined by a level switch in the pump suction determining that the tanker is empty or when 24 m^3 of acid has been transferred to a tanker as measured by FQI-0101. All actuated valves return to their safe position once the addition is complete.

The transfer line and hoses may then be blown through into the tank using the local utility station if required.

3.1.2 Acid Storage Tanks

Once received onsite, the aqueous solution of hydrochloric acid (36% w/w) is transferred from the tankers and pumped into one of four storage tanks (T-101, T-102, T-103, T-104). At the maximum production rate, acid will be consumed at a rate of approximately 200 m^3/week. The acid tank farm will be sized to hold 1 weeks' worth of production due to the contingency needed for supplier's plant downtime.

Due to environmental concerns the acid will be stored in self-bunded tanks. The largest commercially available size advised to be used in bulk storage is 50 m^3. Therefore, 4 off tanks will be provided to meet the total storage volume required of 200 m^3. The materials of construction for the tanks are to be HDPE. Tank fittings to be PVC, CPVC, or Hastelloy C276 with Viton gaskets.

The acid will be contained to a tertiary level consisting of the tanks, self-bunding and a bund encapsulating the tank farm. This tertiary bund will be sized such that it complies to CIRIA C736 for volume, which is summarised as 110% of the largest tank, plus an additional allowance for storm rainfall, surge and freeboard.

An additional 35 m^3 allowance is required to account for the water volume required to dilute any acid spillage to the level at which HCl no longer "fumes". The need to size for jetting will NOT be required due to the secondary containment afforded by the self-bunded design and the additional splash guards specified for the upper level of the tanks.

The tanks (T-101, T-102, T103 and T-104) will be fitted with level measurement, which will have local read-outs such that visual clarity is provided prior to filling via road tanker.

The tanks will "breathe" via an external scrubber (SC-101), see section 3.1.4, such that any vapour displaced during tank filling and diurnal breathing is suitably abated prior to release to atmosphere [HOLD 2]. The tanks will be fitted with an additional local overflow/vent such that any emergency pressure excursion, either under or over pressure, can be safely released.

The storage tanks will have tertiary containment, but should any spillage occur, then a water deluge system is available to dilute the acid from 36% w/w to < 24% w/w to ensure that damaging fumes are minimised. The initiation of the deluge system is to be either via manual pushbutton or via gas detectors fitted around the bund [HOLD 4].

Consideration is to be given to the use of telemetry such that the supplier(s) can monitor tank levels and hence schedule tanker deliveries.

3.1.3 Acid Distribution

The acid storage tanks will be discharged via a pump system consisting of two sets of duty/standby pump arrangements, P-103A/B and P-104A/B, to the users. P-103A/B serves the larger flowrates to the trio of reactors, while P-104A/B serves the fine dosing requirements to the reactors, PATs and EFTs.

P-103A/B and P-104A/B will be equipped with variable speed drives and will only operate when acid is requested from downstream users. When acid is requested by a reactor, the flow controller and associated valve on the line to the reactor will activate and pump P-103A/B will start and ramp up to the required charging rate of 4 m^3/hr. The flow controller will totalise the flow and maintain a steady charging rate. Once a pH of 3.5 (c. 90% of the required volume of acid) has been reached in the reactor, P-103A/B will be stopped. P-104A/B will then start, with the flowrate controlled by the pH control loop on the reactor via the flow controller and valve on the dosing line. This will dose acid at 100-150 L/hr to the reactor, stopping and starting as required, until the reaction is complete (steady pH of 1-1.5 is achieved).

When acid is requested by a PAT or EFT, P-104A/B will start, with the flowrate controlled by the pH controller on the respective PAT/EFT via the flow controller and valve on the dosing line. Up to 150 L/hr will be supplied to each PAT/EFT, with the flowrate decreasing as the pH set-point is approached (pH 7 for PATs and pH 8-9 for EFT).

All three reactors may operate simultaneously, as well as up to two PATs and one EFT. When multiple units are operating simultaneously, the pumps will increase their discharge rate and the flow controllers on the dosing lines will adjust their control valves to balance the flow and maintain the correct dosing rate to each user. The pump speeds will be controlled by a master flow controller.

The pumps will be equipped with a spillback line to prevent hydraulic shock if sudden closing of valves on the dosing lines occur. This will also ensure a minimum flow in maintained if there is a break of acid supply during supply tank changeover.

Each reactor requires an approximate flowrate of 4 m^3/hr, and if each reactor is to be operated simultaneously then a flowrate of up to 12 m^3/hr is required via P-104A/B.

P-104A/B will be utilised for the smaller dosing requirements, with a maximum flowrate of 0.9 m^3/hr. Due to the smaller dosing flow requirement, P-104A/B will be a peristaltic pump. The dosing flowrate will be approximately 0.15 m^3/hr per user, with a maximum off 6 users at one time: 3 reactors, 2 PATs and 1 EFT.

The duty/standby arrangements will have automatic switchover. On detection of running failure, the pump will automatically switch to the standby pump. Additionally, PITs are installed on the pump discharges. When the pump is running but the pressure on the pump outlet falls below a set value, indicating that there is a problem, the duty pump will be shut down and the standby pump will be brought online. This allows the process to continue without interruption. There is sufficient isolation around the pumps so that the broken pump can be safely removed, repaired and reinstalled while the process is running.

3.1.4 Vent Scrubber System (SC-101)

Due to the nature of the fumes emitted from 36% w/w hydrochloric acid, all bulk tank vents will be directed via a scrubber, which will neutralise the fumes, via a caustic liquor, before allowing them to pass to atmosphere.

Typically, the vapour will be vented to the system during vessel filling/tanker offloading, as well as for bulk tank diurnal breathing. The vent system will direct the acidic vapour to a scrubber in which it will be neutralised utilising a 10% w/w sodium hydroxide solution. The scrubbed air vapour will then be discharged to atmosphere. Spent liquor will be periodically discharged to the waste tank for offsite disposal.

It should be noted that the scrubber operation/availability will be used as a permissive for the road tanker offloading operation.

3.1.5 Process Users

The bulk acid storage is for use within the new process building. There are several users that require acid throughout the process and additions are controlled via pH measurement within the recipient equipment.

Each user will be fed through a separate line. In order to reduce the flow of acid as the pH approaches the desired value a globe valve will be installed in the line for modulation. For control, logistical and optimisation purposes, a flowmeter is installed in each dosing line.

3.1.5.1 Reactors

The main user of the acid will be three 10,000 L nominal capacity reactors. The reactors will be dosed with approximately 90% of the required acid (c. 6,000 L) until a pH of 3.5 is reached in the reactor.

The final 10% of acid will be dosed by P-104A/B, utilising a fine control system to precisely dose acid until the required pH of 1-1.5 is reached. After the addition of acid there will be fluctuation in pH, therefore the reaction is considered finished when the pH remains stable at 1-1.5 for a set period of time.

3.1.5.2 Evaporator Feed Tanks

The evaporation system for this process requires a pH < 10 to prevent damage to the titanium plates within the heat exchanger. In order to prevent damage to the evaporation system, the pH before feeding will be checked in the feed tanks. If the pH is > 10, then a small amount of acid (50-100 L) will need to be dosed to the EFT using P-104A/B. Only one tank will need adjustment at any given time.

3.1.5.3 Adjustment Stage

Downstream of the acid tanks, there is an adjustment stage where the lithium chloride product will be adjusted from pH 10 to between pH 6-8 for final product specification (target pH 7), via the 4 Adjustment Tanks (1a/1b and 2a/2b). This will be done by the fine dosing system against pH measurement. Up to two lines will need to be dosed at any time. As with the EFTs, the dosing will be carried out via peristaltic pump P-104A/B. Approximately 30 L is expected to be required per tank for adjustment.

4 Holds

Hold Reference	Hold Description
Hold 1	Resolved.
Hold 2	Emission concentration to be agreed – to meet permit requirements.
Hold 3	Resolved.
Hold 4	Resolved.
Hold 5	Resolved.
Hold 6	Resolved.
Hold 7	Resolved.

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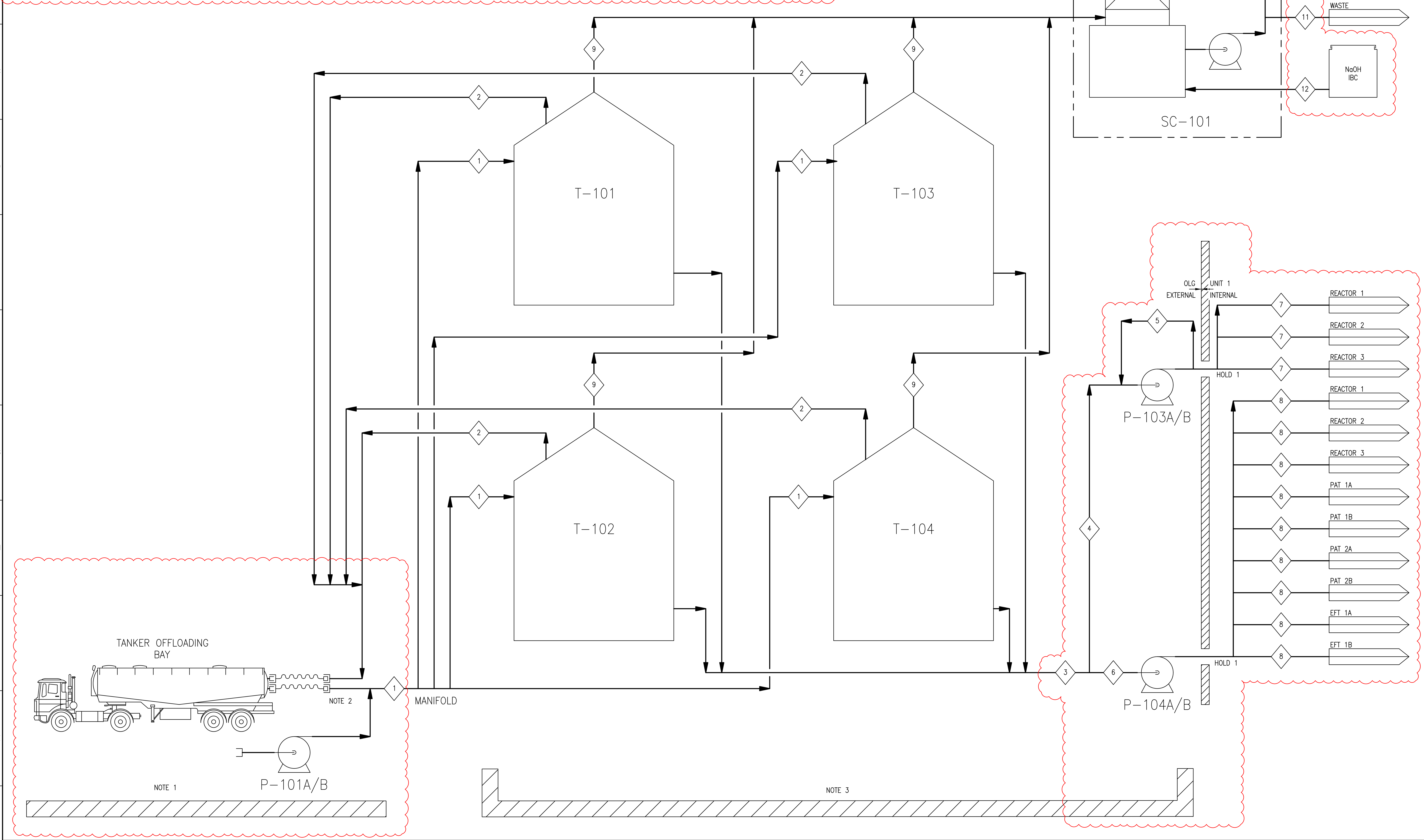
Stream Number	1	2	3	4	5	6	7	8	9	10	11	12
Description	Offloading to Tank	Tanker Vapour Return	Common Pump Suction	Bulk Acid Pumps	Bulk Acid Pumps Recirculation	Acid Dosing Pumps	HOLD 1 Single Bulk Acid User	HOLD 1 Single Acid Dosing User	Tank Vents to Scrubber	Scrubber Vent	HOLD 2 Scrubber Waste	HOLD 2 Fresh Scrubber Fluid
Material	HCl solution	HCl Vapour	HCl solution	HCl solution	HCl solution	HCl solution	HCl solution	HCl solution	HCl Vapour	Scrubbed Vapour	Scrubber Waste	Sodium Hydroxide
Flowrate [m^3/hr]	24.0	24.0	12.9	12.0	2.5	0.9	4.0	0.15	24.0	18.4	0.1	0.1
Density [kg/m^3]	1178	1.27	1178	1178	1178	1178	1178	1178	1.27	1.2	1100	1100
Temperature [°C]	15	15	15	15	15	15	15	15	15	15	15	15
Pressure [bar(g)]	0	0	0	0	0	0	0	0	0	0	0	0
Batches/Day	1	1	N/A	N/A	N/A	N/A	3	TBC	1	N/A	1.0	1.0
Batch Size [kg]	28272	30	N/A	N/A	N/A	N/A	7068	118	30	22	99	90



NOTES:

1. TANKER SPILL PIT.
2. PUMP DISCHARGE IS CONNECTED TO MANIFOLD FOR DISTRIBUTION TO STORAGE TANKS.
3. BUND ENCLOSING ALL FOUR BULK HCL TANKS, OFFLOADING PUMPS AND SUPPLY PUMPS.
4. DELETED.
5. DELETED.
6. DELETED.

HOLDS:

1. HCL DISTRIBUTION TO BE CONFIRMED AS PART OF UNIT 1 DESIGN.
2. SCRUBBER FLOWRATES TO BE CONFIRMED FOLLOWING VENDOR INFORMATION.

REVISION	DRAWN BY & DATE	ENGINEERED BY & DATE	CHECKED BY & DATE	REVIEWED BY E,C&I & DATE	REVIEWED BY PIPING & MECH & DATE	REVIEWED BY SAFETY & DATE	APPROVED BY ENG & DATE	APPROVED BY PROJ & DATE	DESCRIPTION
3									
2	SJF 23-03-23	SJF 23-03-23	MA 23-03-23					MAT 23-03-23	FOR DESIGN
1	FAM 08-09-22	CMM 08-09-22	WDW 08-09-22					WDW 08-09-22	FOR FEED REPORT
0	FAM 20-06-22	CMM 20-06-22	RSA 20-06-22					WDW 20-06-22	FOR COMMENT

PROJECT: HCL TANK FARM

CLIENT: LEVERTONHELM

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TITLE: BULK ACID STORAGE TANKS

SCALE @ A1: N.T.S

DRG NO.: 1567-PFD-001

REV: 2

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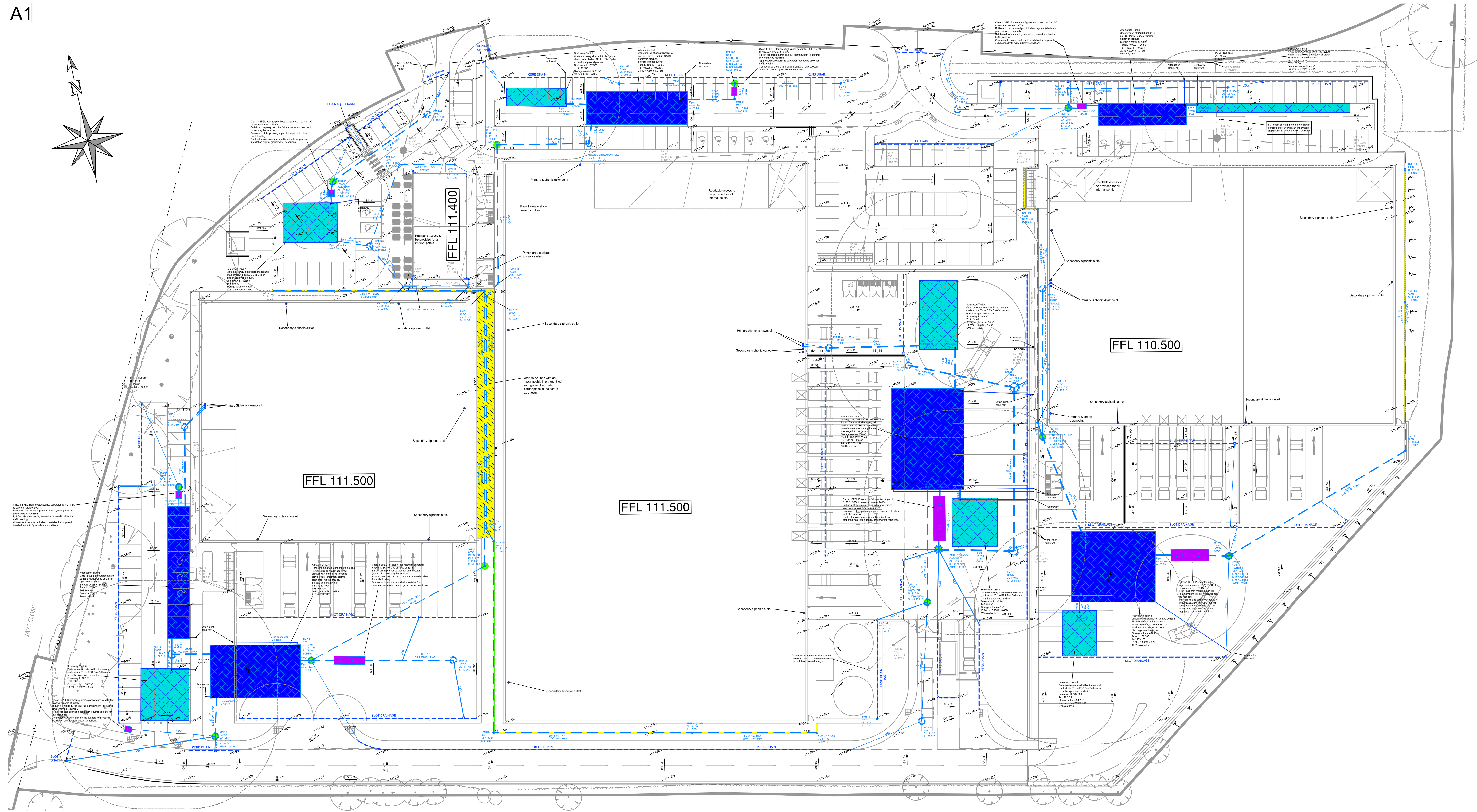
Appendix B: Existing Site Wide Surface Water Strategy Drawing

A1



General Notes

1. This drawing is to be read in conjunction with all other relevant Engineering and Architect's details.

2. All dimensions are in metres unless otherwise stated.

3. The Contractor shall be responsible for checking all tie-ins for line and level with existing foul and surface water systems before commencing any works.

4. The Engineer shall be notified immediately, in writing, should any errors or discrepancies be found prior to the commencement or continuation of any works.

5. All work is to be carried out in accordance with current British Standards, Building Regulations and NHBC Standards.

6. All drainage work is to be strictly in accordance with the requirements of the Building Regulations 2010, Approved Document Part H, "Drainage and waste disposal". (2015 Edition)

7. It is the responsibility of the Contractor to execute the works at all times in strict accordance with the requirements of the Health and Safety at Work Act 1974, and the C.D.M. Regulations 2015. The Contractor will be deemed to have allowed for full compliance with the Principal Designer within his rates.

8. This drawing is for information purposes only and should not be used for construction purposes.

Key

Proposed surface water drainage

Proposed foul water drainage

Proposed linear drainage channel

Existing foul public sewer

Proposed filter drain - Filter drain to be lined with an impermeable membrane

Proposed bypass / full retention separator sized in accordance with PPG3

Proposed attenuation tank - refer to ESS Design drawings for details. ESS to confirm any protection requirements

Proposed crate soakaway with 20m buffer shown unless noted otherwise

rwp — Indicative rainwater downpipe with lateral connection shown - final number and location to be confirmed by Architect

svp — Indicative soil vent pipe with lateral connection shown - final number and location to be confirmed by Architect

1.800 + Proposed finished level

1.80 Existing level

Soakaway

Attenuation tank

Filter Drain

Petrol interceptor

Catchpit manhole

SuDS Drainage Maintenance Plan

Manholes/Catchpits and Sewers - To be inspected quarterly and immediately after extreme rainfall events.

Inspect Manhole/Catchpit cover and frame for any defects; repair and replace as necessary.

Inspect Manhole/Catchpit Interior, benching and incoming and outgoing pipe connections for the build up of silt and debris. Removal of silt and debris to be by means of vacuum suction and/or jetting/rodding.

Inspect Manhole/Catchpit Interior for evidence of Vermin. Sewers and structures are to be dusted or baited when evidence of infestations are observed during an inspection or in response to a service request or complaint.

Ensure Manhole access steps/ladders are secured and inspect for corrosion.

Inspect for any deleterious industrial waste and noxious odours.

Ensure there is no evidence of settlement above sewer lines.

Ensure that contractor is fully aware of the depths of pipe drains and other services present, to ensure these are not damaged.

Keep a detailed log of when the drainage systems are inspected, maintained, emptied and serviced. Also record specific events relating to the drainage systems such as cleaning, repairs, accidents and incidents.

Gullies and Channels - To be inspected quarterly and immediately after extreme rainfall events.

Inspect cover and frame for any defects; repair and replace as necessary.

Inspect channels for the build up of silt and debris. Removal of silt and debris to be by means of vacuum suction and/or jetting/rodding.
Inspect sumps and outgoing pipework for the build up of silt and debris. Removal of silt and debris to be by means of vacuum suction and/or jetting/rodding.

Keep a detailed log of when the drainage systems are inspected, maintained, emptied and serviced. Also record specific events relating to the drainage systems such as cleaning, repairs, accidents and incidents.

Petrol and Oil Separators in accordance with PPG3

Every six months, or in accordance with manufacturer's instructions, experienced personnel should:

Physically inspect the integrity of the separator and all mechanical parts

Assess the depth of accumulated oil and silt
Service all electrical equipment such as alarms and separator management systems

Check the condition of any coalescing device and replace it if necessary

Some heavily used or high-risk sites might require more frequent inspections.

Keep a detailed log of when the separator is inspected, maintained, emptied and serviced. Also record specific events relating to the separator system such as cleaning, repairs, accidents and incidents.
Maintenance should be carried out in accordance with the manufacturer's instructions.

For all waste removal operations, make sure that the waste removal company has experience in emptying separators and that they do not allow any of the contents to escape from the outlet during emptying.

Every five years it is recommended that separators be emptied and given a general inspection to test the integrity and performance of the system.

Attenuation Tanks

Tanks should be inspected regularly in accordance with the recommended maintenance schedule further below. Inspections and maintenance should be undertaken by experienced and qualified personnel.

Maintenance should be in accordance with the Manufacturer's guidance.

All waste should be removed and deposited off site in accordance with the relevant guidelines.

Maintenance Schedule	Required Action	Recommended Frequency
At Commission	Inspect all areas to ensure free from construction debris and silt	Once at commission
Regular Maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial actions.	Monthly for 3 months and then every 6 months
	Debris removal from catchment surface where it may affect performance	Monthly and after every large storm
	Remove sediment from pre-treatment structures such as catchpits	Refer to previous section
Remedial Actions	Repair / rehabilitation of inlets, outlet, overflows and vents	As required
Monitoring	Inspect / check inlets, outlet, overflows and vents to ensure in good condition and operating as required	Annually and after every large storm

Soakaways

Soakaways should be inspected regularly in accordance with the recommended maintenance schedule further below. Inspections and maintenance should be undertaken by experienced and qualified personnel.

Maintenance should be in accordance with the Manufacturer's guidance.

All waste should be removed and deposited off site in accordance with the relevant guidelines.

Maintenance Schedule	Required Action	Recommended Frequency
At Commission	Inspect all areas to ensure free from construction debris and silt	Once at commission
	Inspect and identify any areas that are not operating correctly or that are damaged. If required, take remedial actions.	Monthly for 3 months and then every 6 months
	Debris removal from catchment surface where it may affect performance	Monthly and after every large storm
	Remove sediment from pre-treatment structures such as catchpits	Refer to previous section
	Remove silt from carrier pipe.	Every 6 months and after every large storm
Remedial Actions	Repair / rehabilitation of inlets, outlet, carrier pipes, overflows, filter membranes and vents	As required.
Monitoring	Inspect / check inlets, outlet, carrier pipes, overflows and vents to ensure in good condition and operating as required	Annually and after every large storm
	Water level should be monitored to make sure water is infiltrating away.	Annually and after every large storm

Filter Drains

Filter drains should be inspected regularly in accordance with the recommended maintenance schedule further below. Inspections and maintenance should be undertaken by experienced and qualified personnel.

Maintenance should be in accordance with the Manufacturer's guidance, where relevant to proprietary products or systems that are used within the overall SuDS component.

All waste should be removed and deposited off site in accordance with the relevant guidelines.

Maintenance Schedule	Required Action	Recommended Frequency
At Commission	Inspect all areas to ensure free from construction debris and silt	Once at commission
Regular Maintenance	Remove litter (including leaf litter) and debris from filter drain surface, access chambers and pre-treatment devices	Monthly or as required
	Inspect perforated pipes for silt accumulation and remove silt	Every 6 months
Monitoring	Inspect filter drain surface, inlet/outlet pipework for blockages, clogging, standing water and structural damage.	Monthly

General Guidance

All SuDS features should be maintained in accordance with the Manufacturer's guidance and also with reference to CIRIA guidance C753 and also Building Regulations Part H.

Management and Responsibility

All SuDS systems/components will be managed by St Modwen. however this responsibility may be transferred to the relevant Unit owner. The owner should set up a management structure on commission or on transfer of ownership, with records of inspections, maintenance and remedial actions logged and stored.

Rev	Date	Amendments	By	Chk
P02	18.06.21	Final Issue	AWM	SN

Client

ST MODWEN DEVELOPMENTS

Project

ITT VIABLES INDUSTRIAL ESTATE BASINGSTOKE

Drawing Title

SuDS DRAINAGE MANAGEMENT PLAN

Status

FINAL ISSUE

Scale	Drawn	Checked	Date
A1@1:500	ML	SN	01.02.21

Drawing No. 19292-RLL-20-XX-DR-C-2015 Rev. P02

Scale Bar: 1:500 10 20 30

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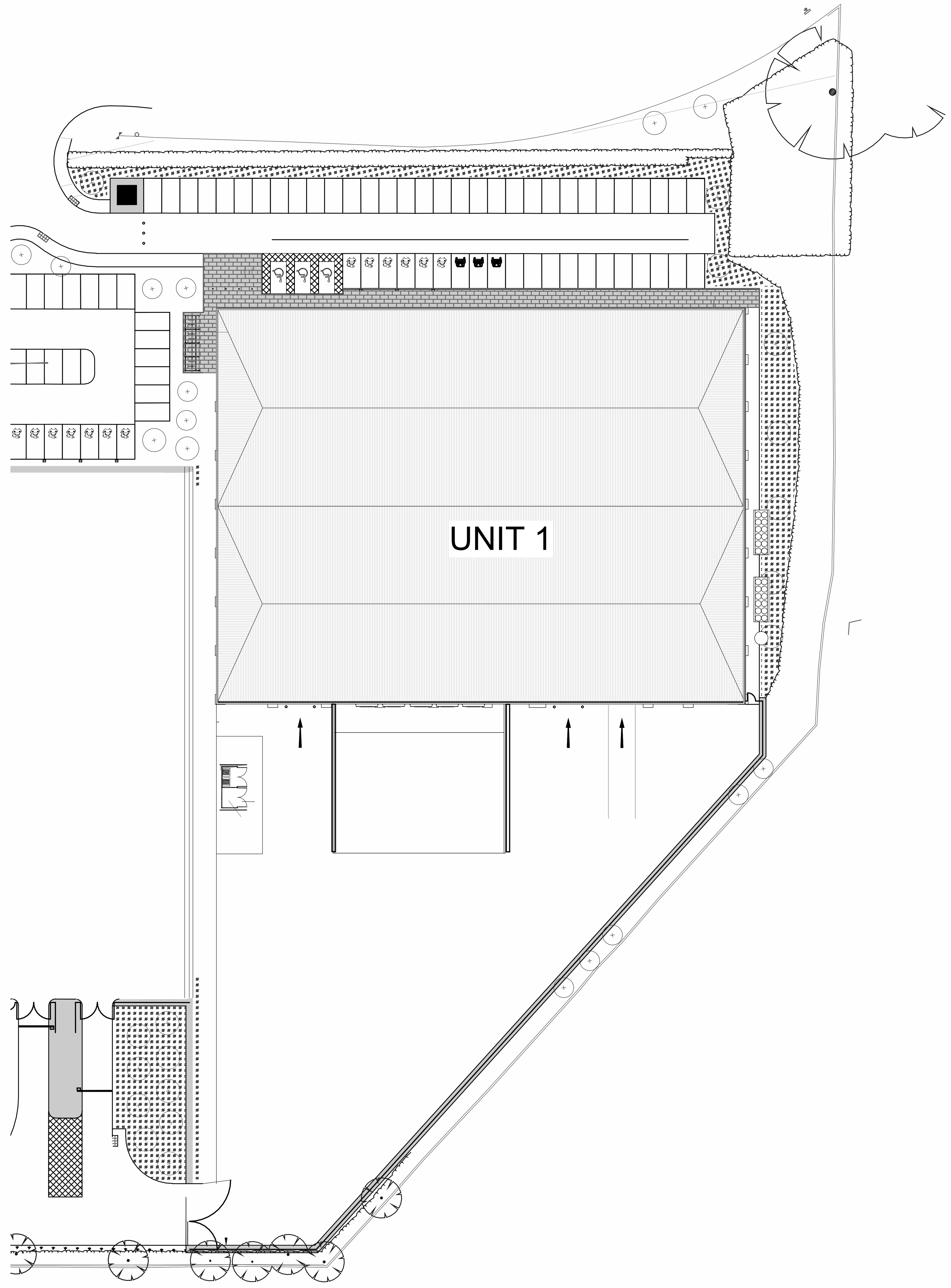
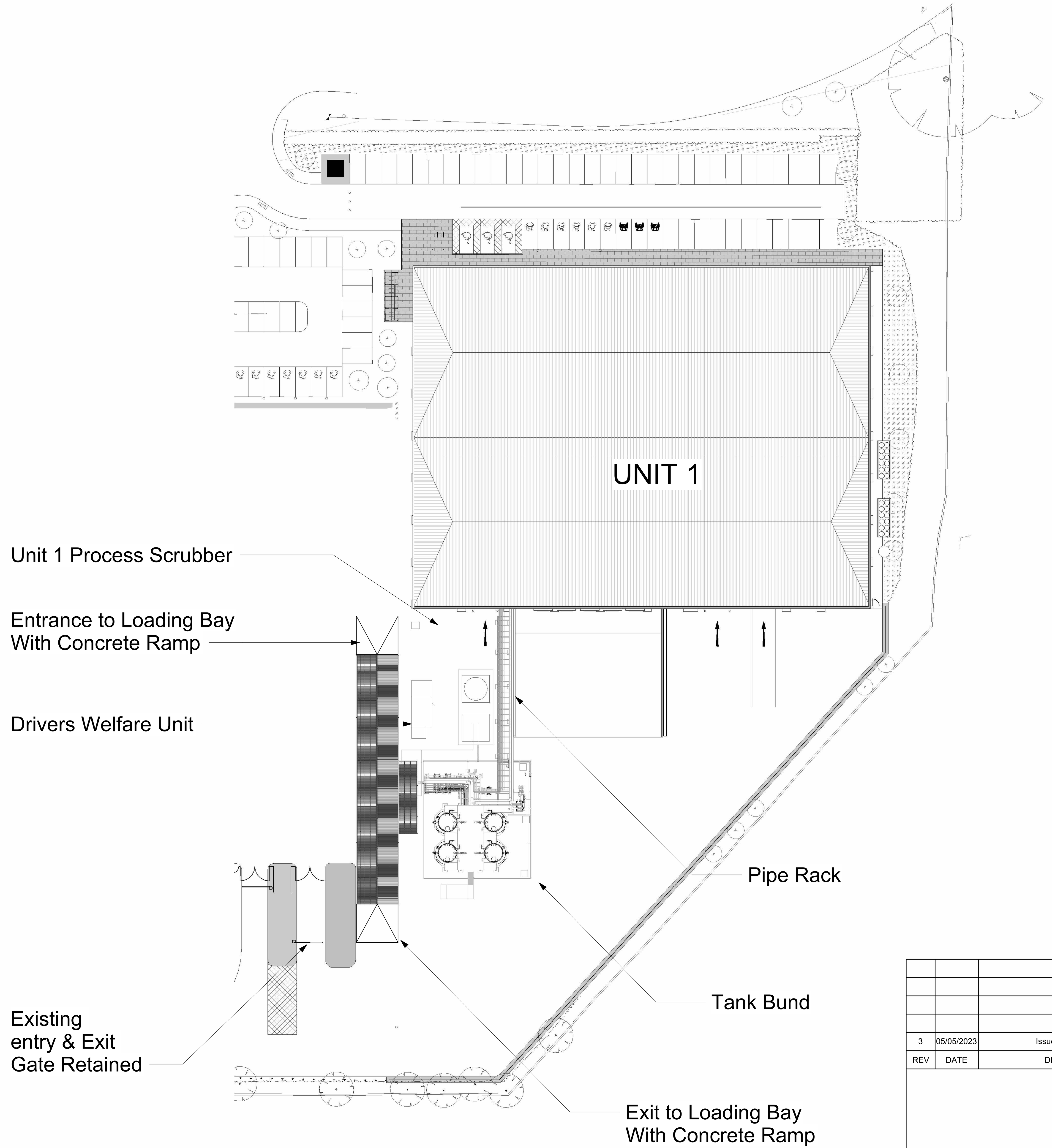
Appendix C: Proposed Layout of Acid Storage



2 Existing Plan of Site
1 : 500



1 Proposed Bulk Acid Tank Farm
1 : 500

REV	DATE	DESCRIPTION	BY	CHK	APP
3	05/05/2023	Issued For Planning	JHZ	NR	MJR

OLG ENGINEERING

DRAWN BY	JHZ	JOB REF	1598
DATE	04/27/23	CLIENT REF	
CLIENT	LLC	CLIENT APP	

TITLE

Leverton Helm Bulk Storage Tanks Plan Existing & Proposed

SCALE	DRAWING NUMBER	REV.
1 : 500	1567-GAD-4004	3

(A1 BORDER)
ISSUE No: