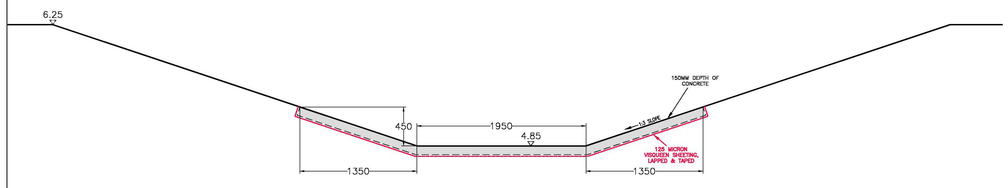

TYPICAL CROSS-SECTION OF SWALE
SCALE 1:20

SURFACE WATER STRATEGY

1. All roof water to be positively collected and discharged to Balancing Pond and/or Eastern Swale.
2. All hardstanding drainage to be positively collected.
3. Area around building to be drained to channels at face of kerb on outer side of circulatory road. Channels to discharge to pipework below road. Water will pass through a Full Retention Oil Separator and then outfall to Balancing Pond and/or Eastern Swale. Penstock protection shall be provided to contain any spillages from entering the swale.
4. Surface water flow to be attenuated in swales. Swales to be unlined and will act as bio retention / bio remediation areas.
5. Discharge from swales to be via Hydrobrakes to restrict discharge rate to existing ditches to total of 35 litres / second maximum.

FOUL WATER STRATEGY:

1. Domestic foul connections from offices in plant and freestanding offices to be discharged to underground storage tank.
2. Underground storage tank to be pumped out weekly and tankered to disposal off site.

PROCESS WATER STRATEGY:

1. Process water to be pumped from sumps at drainage channels within Process Building, Argent North Building and Boiler Room, to Wastewater Storage Tank, then discharged for treatment to Phase 1.
2. Rainwater from Tank Bund to be drained to sumps. Water quality to be monitored: water to be pumped into surface water system, provided that the required standard is met. In the event of spillages, the sump will be pumped for treatment to the Wastewater Storage Tank, then to Phase 1.
3. Tanker loading/unloading station to be drained to surface water. Interlocking valves to be provided so that the surface water drainage connection is shut off during loading operation.
4. Blow down water from Boiler Room and transformer bund drainage to be gravitated to pumping station west of bund, then pumped over bridge to Phase 1.

NOTE: LOWEST LAYER OF TENSAR GEOGRID TO BE RUN THROUGH BELOW ALL DRAINAGE RUNS. THIS WILL INVOLVE SOME ADDITIONAL LOCAL EXCAVATIONS - SEE DRG. NO. AA4814/EW/10A

ITEMS IN ABEYANCE / TO BE CONFIRMED

1. DETAILED SPECIFICATION FOR CHEMICAL RESISTANT PIPEWORK.
2. DETAILED SPECIFICATION FOR VALVES.

EXISTING SITE FIRE WATER STORAGE TANKS

SITE ENTRANCE

HEADWALL AT HW6 TO BE FITTED WITH ALTHON KSA-MD 250 PENSTOCK FOR COMPLETE SHUT-OFF OF SYSTEM RELATIVE TO ESSAR

RED AREA TO BE CONCRETE PROTECTED, SEE DETAIL

CHAMBER CONTAINING HYDRO-BRAKE OPTIMUM MD-SHE-0147-1100-0900-1000 FLOW CONTROL TO OUTLET TO LIMIT FLOW TO 10 l/s.

BOUNDARY FENCE LINE

EASTERN SWALE

DISABLED PARKING (2No.)

120 CUBIC METRES OF FLOOD STORAGE PROVIDED FOR ATTENUATION IN THE EVENT OF A 1 IN 100 YEAR PLUS CLIMATE CHANGE RAINFALL EVENT. MAXIMUM TOP WATER LEVEL = 5.60m

ALTHON KSA-MD 250 PENSTOCK FITTED TO INLET HEADWALL

ALTHON KSA-MD 400 PENSTOCK FITTED TO INLET HEADWALL

LANDSCAPE BUND

WEIGHBRIDGE CATCHPIT

WEIGHBRIDGE

OFFICES

25m³ UNDERGROUND STORAGE TANK FOR FOUL WASTE TANK 11.5m LONG x 2.012m Ø BY MARSH INDUSTRIES OR EQUIVALENT APPROVED. BEDDED AND SURROUNDED BY 225mm (MIN) OF CONCRETE TO MANUFACTURERS REQUIREMENTS

ADDITIONAL MODULE

KLARGESTER NSFA080 CLASS 1 FULL RETENTION SEPARATOR WITH 375mmØ INLET / OUTLET PIPES ORIENTATED AS SHOWN OR SIMILAR APPROVED

PEDESTRIAN ACCESS

PEDESTRIAN ACCESS GATE

SURFACE WATER VALVES ON CONNECTION FROM UNLOADING STATION AREA TO BE MANUALLY CLOSED PRIOR TO UNLOADING OIL TO UNLOADING STATION. VALVE TO HAVE LIMIT SWITCH CONNECTED TO BDI'S PCS WHICH WILL ALLOW OIL TO BE UNLOADED FROM TANKER VEHICLES ONLY WHEN THE SW VALVE IS CLOSED. IN THE EVENT OF A SPILLAGE, SUMPS/LOADING SLAB TO BE PUMPED OUT INTO MOBILE TANKER.

EXIT

SINGLE UNLOADING STATION

SINGLE LOADING STATION

PUMP DISCHARGE TO ABOVE GROUND FLANGED CONNECTION

RAINWATER FROM TANK BUND TO BE TESTED THEN, IF CLEAN, DISCHARGED BY PUMPING TO SURFACE WATER DRAIN

PROCESS WATER TO BE PUMPED ALONG PIPE BRIDGE

TANK BUND

WASTEWATER STORAGE TANK

PROCESS WATER PUMPED FROM TANK TO PHASE 1

DOUBLE LOADING STATION

COOLING TOWER

DOSING PACKAGE

TYCO FIREFIGHTING KIOSK

GULLY FOR 150mmØ DRAIN FROM FIREFIGHTING KIOSK

DOUBLE GULLY

BDI PROCESS BUILDING

WORKSHOP

AIR PRODUCTS

MCC ROOM (CONTROL ROOM/ OFFICES OVER)

FABRICATED STEEL STEPS

STAIR 'C'

STAIR 'B'

STAIR 'A'

ARGENT NORTH BUILDING

FLUE GAS STACK

STEAM BOILER ROOM

MCC ROOM

ABOVE GROUND PROCESS WATER CHANNEL

NOTE: CHANNEL TO BE PLATED RATHER THAN GRATING

SUMP IN DRAINAGE CHANNEL; PROCESS WATER TO BE PUMPED TO HOLDING TANK IN ARGENT NORTH BUILDING THEN FROM HOLDING TANK TO WASTEWATER STORAGE TANK IN TANK BUND.

SUMP IN DRAINAGE CHANNEL; PROCESS WATER TO BE PUMPED TO PHASE 1 FOR TREATMENT VIA TANK BUND

SUMP IN DRAINAGE CHANNEL; PROCESS WATER TO BE PUMPED TO PHASE 1 FOR TREATMENT

335 CUBIC METRES OF FLOOD STORAGE PROVIDED FOR ATTENUATION IN THE EVENT OF A 1 IN 100 YEAR PLUS CLIMATE CHANGE RAINFALL EVENT. MAXIMUM TOP WATER LEVEL = 5.65m WITH 450mm FREEBOARD PROVIDING ADDITIONAL STORAGE OF 291 CUBIC METRES.

BALANCING POND

HEADWALL AT HW2 TO BE FITTED WITH ALTHON KSA-MD 250 PENSTOCK FOR COMPLETE SHUT-OFF OF SYSTEM RELATIVE TO ESSAR

ALTHON KSA-MD 500 PENSTOCK FITTED TO INLET HEADWALL

SURFACE WATER VALVES ON CONNECTION FROM UNLOADING STATION AREA TO BE MANUALLY CLOSED PRIOR TO UNLOADING OIL TO UNLOADING STATION. VALVE TO HAVE LIMIT SWITCH CONNECTED TO BDI'S PCS WHICH WILL ALLOW OIL TO BE UNLOADED FROM TANKER VEHICLES ONLY WHEN THE SW VALVE IS CLOSED. IN THE EVENT OF A SPILLAGE, SUMPS/LOADING SLAB TO BE PUMPED OUT INTO MOBILE TANKER.

SURFACE WATER VALVES ON CONNECTION FROM LOADING STATION AREA TO BE MANUALLY CLOSED PRIOR TO LOADING OIL FROM LOADING STATION. VALVE TO HAVE LIMIT SWITCH CONNECTED TO BDI'S PCS WHICH WILL ALLOW OIL TO BE LOADED TO TANKER VEHICLES ONLY WHEN THE SW VALVE IS CLOSED. IN THE EVENT OF A SPILLAGE, SUMPS/LOADING SLAB TO BE PUMPED OUT INTO MOBILE TANKER.

SURFACE WATER VALVES ON CONNECTION FROM LOADING STATION AREA TO BE MANUALLY CLOSED PRIOR TO LOADING OIL FROM LOADING STATION. VALVE TO HAVE LIMIT SWITCH CONNECTED TO BDI'S PCS WHICH WILL ALLOW OIL TO BE LOADED TO TANKER VEHICLES ONLY WHEN THE SW VALVE IS CLOSED. IN THE EVENT OF A SPILLAGE, SUMPS/LOADING SLAB TO BE PUMPED OUT INTO MOBILE TANKER.

NOTE: RUNS Y2-Y3-Y4-Y5: PIPE LIES (IN PART) BELOW EXISTING SITE FORMATION LEVEL. FORMATION TO BE DROPPED TO BELOW PIPE AND TENSAR GEOGRID RUN THROUGH BELOW PIPE

ALL PROCESS PIPEWORK BETWEEN STEAM BOILER ROOM AND WET WELL & COOLING TOWER TO BE HATHENWARE THERMACHEM WITH SUITABLE SEALS

PROCESS WATER PUMPED TO PHASE 1

SOUTHERN PIPE BRIDGE TO ADJACENT PHASE 1 SITE

Scale 1:250

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NOTES.

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
3. ALL MATERIALS AND WORKMANSHIP ARE TO BE IN ACCORDANCE WITH "SEWERS FOR SCOTLAND" 3rd EDITION (2015).
4. FOUL AND SURFACE WATER SEWER PIPES AND PIPE FITTINGS ARE TO BE VITRIFIED CLAY TO BS EN 295, OR PLASTIC, MARLEY QUANTUM SEWER SYSTEM OR EQUIVALENT TO N.W WATER APPROVAL. PLASTIC TO BE USED UP TO 300mm ⌀, PIPES LARGER THAN THIS WILL BE VITRIFIED CLAY OR CONCRETE.
5. PIPES ARE TO BE BEDDED AND SURROUNDED (150mm) WITH 10mm SINGLE SIZED PEA GRAVEL, OTHER THAN WHERE COVER IS LESS THAN 900mm : A MINIMUM OF 150mm CONCRETE SURROUND IS TO BE PROVIDED (VITRIFIED CLAY) OR A REINFORCED CONCRETE SLAB WHICH BRIDGES THE TRENCH IS TO BE PROVIDED (PLASTIC OPTION).
6. ALL GULLY CONNECTIONS ARE TO BE 150mm DIAMETER AND INSTALLED TO A MINIMUM GRADIENT OF 1:150.
7. ALL MANHOLE COVERS AND FRAMES ARE TO BE DUCTILE IRON TO EN 1224: 1994 WITH A 675 x 675 mm CLEAR OPENING. FOR STANDARD MANHOLE DETAILS SEE DRG NO. AA4814/EW/08 & 09
8. THE INVERT LEVELS OF THE EXISTING DITCHES AT CONNECTION POINTS ARE TO BE CHECKED ON SITE PRIOR TO COMMENCING CONSTRUCTION, AND ANY DISCREPANCIES FROM LEVELS GIVEN ON ATTACHED SCHEDULES ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.

KEY: (EXISTING)

- EXISTING SERVICES
- STREETLIGHTING CABLE — SL
- EXISTING STREETLIGHT
- SURFACE WATER SEWER — S
- FOUL SEWER — F
- PROCESS WASTE WATER SEWER — PW
- COMBINED SEWER — C
- BT OVERHEAD — OT
- BT UNDERGROUND — T
- WATER MAIN — W
- GAS MAIN — G
- ELECTRICITY — E
- ELECTRICITY (OVERHEAD) — E
- EXISTING LEVEL · 12.304

PROPOSED EXTERNAL LEVELS + 5.75

PROPOSED INTERNAL LEVELS + 5.90

KEY: PROPOSED DRAINS

- PROCESS WASTE WATER GRAVITY DRAIN (IN HATHENWARE THERMACHEM UNLESS OTHERWISE NOTED) — PW
- PROCESS WATER PUMPED MAIN — P
- FOUL DRAIN — F
- FOUL PUMPING MAIN — P
- YARD WATER DRAIN — Y
- YARD DRAIN WITH VALVE — Y
- ROOF WATER DRAIN — R
- MANHOLE — S1
- CHANNEL DRAINAGE (SURFACE WATER) (FOR DETAILS SEE DRG. No. AA4814/EW/14)
- CHANNEL DRAINAGE (EXTERNAL HIGH RISK AREA) (FOR DETAILS SEE DRG. No. AA4814/EW/14)
- MEGA GULLY (675x675mm CATCHPIT, SEE DRG. AA4814/EW/13) — MG
- GULLY — G
- DOWNPIPE — DP
- 'HIGH RISK' AREAS

Rev.	Amendment	By	Checked	Approved	Date
W	CONCRETE PROTECTION ADDED TO SWALES. TYPICAL SWALE CROSS-SECTION ADDED.	PRH	KGA	KGA	13.10.15
V	PENSTOCKS ALTERED. PIPE RUNS MH Y17-Y19, MH Y27-Y29, MH Y30-Y28, MH R9–Y31-Y29, MH Y25-Y25A-Y26-Y22, MH Y2-Y2A-Y28-Y3-Y4, MH Y9-Y10-Y4, & Y13A-Y13B-Y13 ALTERED. NOTES TO OIL SEPARATORS ALTERED.	WAM	KGA	KGA	28.09.15
U	HYDROBRAKE SPECIFICATIONS AT EASTERN SWALE & BALANCING POND CORRRECTED.	WAM	KGA	KGA	28.09.15
T	PIPES PW1-PW3, R4-R5A, & Y23-Y24 DELETED. PIPE RUNS Y11-Y5, R1-R2, & PW4-WET WELL ALTERED. CHANNEL AT MH Y24 EXTENDED, CHANNEL AT MH Y11 ADDED, CHANNEL AT MH PW4 ALTERED. RADIUS KERB AT MH Y24 ALTERED. GULLY ADDED TO KEY. CHAMBER SET-UP AMENDED AT VALVE POSITIONS . ITEMS IN ABEYANCE UPDATED.	WAM	KGA	KGA	23.09.15
S	CHANNEL WITH PLATING ADDED EXTERNAL TO BOILER ROOM. TANK BUND SINGLE UNLOADING STATION LENGTHENED. LOADING/UNLOADING STATIONS LENGTHENED TO 16.4 METRES. MEGA GULLIES ADDED TO CHANNELS IN LIEU OF SUMP GULLIES. VALVE AT Y26 SHIFTED TO Y25.	DO	KGA	KGA	16.09.15
R	LAYOUT UPDATED AS PER DRG. AA4814/EW/02W. MINOR ADJUSTMENTS TO PROCESS WATER PIPE POSITIONING AROUND THE TYCO FIREFIGHTING KIOSK AND THE FOUL PIPES AT OFFICES. Y23 - Y24 SHIFTED NORTH AS A RESULT OF KERB SHIFT. "HIGH RISK' AREAS EXTENDED AROUND LOADING/UNLOADING STATIONS. SUMP CONNECTIONS FROM LOADING/UNLOADING STATIONS REMOVED. Y1 & Y14 DELETED. Y25 RELOCATED.	DO	KGA	KGA	09.09.15
Q	MINOR ADJUSTMENTS TO YARD WATER DRAINAGE LEVELS. POSITIONING OF DOWNPIPES ON BDI BUILDING ADJUSTED. DOWNPIPE REFERENCES ADDED. ITEM 5 IN ABEYANCE REMOVED. ALL TANK BUND SUMP PUMPS NOW DISCHARGING TO Y26.	GDH	KGA	KGA	14.04.15

CONSTRUCTION

Status | Appd. | Date

Client: ARGENT ENERGY

Project: BIODIESEL FACILITY, PHASE 2
OIL SITES ROAD,
ELLESMERE PORT

Title: EXTERNAL WORKS
DRAINAGE LAYOUT

Drawn	Date	Checked	Date	Approved	Date
DO	11.09.15	KGA	11.09.15	KGA	11.09.15

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Scales: 1:250 @ A0

Job No. AA4814

Client Drawing No.

Drawing No. AA4814/EW/03 Rev. W