

DRAINAGE

- REFER TO CIVIL AND STRUCTURAL SPECIFICATION REPORT - PART R.
- CONTRACTOR SHOULD ENSURE THE LOCAL PLANNING AUTHORITY HAVE APPROVED THE DRAINAGE PROPOSALS PRIOR TO ORDERING MATERIAL OR INSTALLATION.

HYDRAULIC DESIGN

THE SURFACE WATER NETWORK, FLOW CONTROL AND ATTENUATION HAS BEEN DESIGNED USING DRAINAGE SOFTWARE WITH FSR RAINFALL DATA.

STRAATEGY

- DISCHARGE RATE RESTRICTED AT 19 L/s INTO AN ORDINARY WATERCOURSE VIA EXISTING 925mm PIPE. SUBJECT TO LFA APPROVAL. THIS IS BASED ON A QBAR GREENFIELD RATE CALCULATED USING H124 METHOD.
- TOTAL ATTENUATION FOR 100YR+45% CLIMATE CHANGE BELOW GROUND = 815m³ & ABOVE GROUND = 151m³.

FINAL DRAINAGE CONNECTIONS

- WHERE THIRD PARTY APPROVAL IS REQUIRED THESE ARE NOTED AGAINST EACH DISCHARGE POINT ON THE DRAWING.
- NO CONNECTION OR DISCHARGE SHOULD BE MADE UNTIL APPROVAL HAS BEEN RECEIVED. CHECK STATUS OF APPLICATION WITH ENGINEER.
- CONTRACTOR SHOULD INVESTIGATE AND INSTALL FINAL DRAINAGE CONNECTIONS PRIOR TO INSTALLING ANY UPSTREAM DRAINAGE TO AVOID POTENTIAL LEVEL ISSUES.
- EVERY EFFORT HAS BEEN MADE TO PROVIDE ACCURATE INFORMATION. HOWEVER, THE CONTRACTOR IS ADVISED TO CHECK ACTUAL CONDITIONS, I.E. THE LOCATION, ACCESSIBILITY, UNDERGROUND ROUTE, LEVELS, SIZES, CONDITION OF EXISTING SEWERS TO BE RE-USED AND/OR CONNECTED INTO.

GENERALLY:

- DO NOT SCALE FROM THIS DRAWING. WORK TO DIMENSIONS OR CO-ORDINATES PROVIDED.
- REPORT CONFLICTS TO ENGINEER IMMEDIATELY.
- EVERY EFFORT HAS BEEN MADE TO ASCERTAIN TYPE, LOCATION AND DEPTH OF BURIED SERVICES AND/OR OBSTRUCTIONS. HOWEVER, THE CONTRACTOR IS ADVISED TO CARRY OUT OWN INVESTIGATIONS TO ENSURE THERE ARE NO CLASHES WITH THE PROPOSED WORKS.
- CONTRACTOR IS RESPONSIBLE FOR PROTECTING RETAINED SERVICES AND MAKING CONTACT WITH OWNERS OF APPARATUS TO OBTAIN NECESSARY CONSENT FOR EXCAVATION, PROTECTION AND/OR DIVERTING.
- BURIED OBSTRUCTIONS ENCOUNTERED DURING EXCAVATION THAT CONFLICT WITH PROPOSED WORKS SHOULD BE BROKEN OUT AND REMOVED. RESIDUAL VOIDS TO BE BACKFILLED AND COMPACTED AS PER SPECIFICATION.

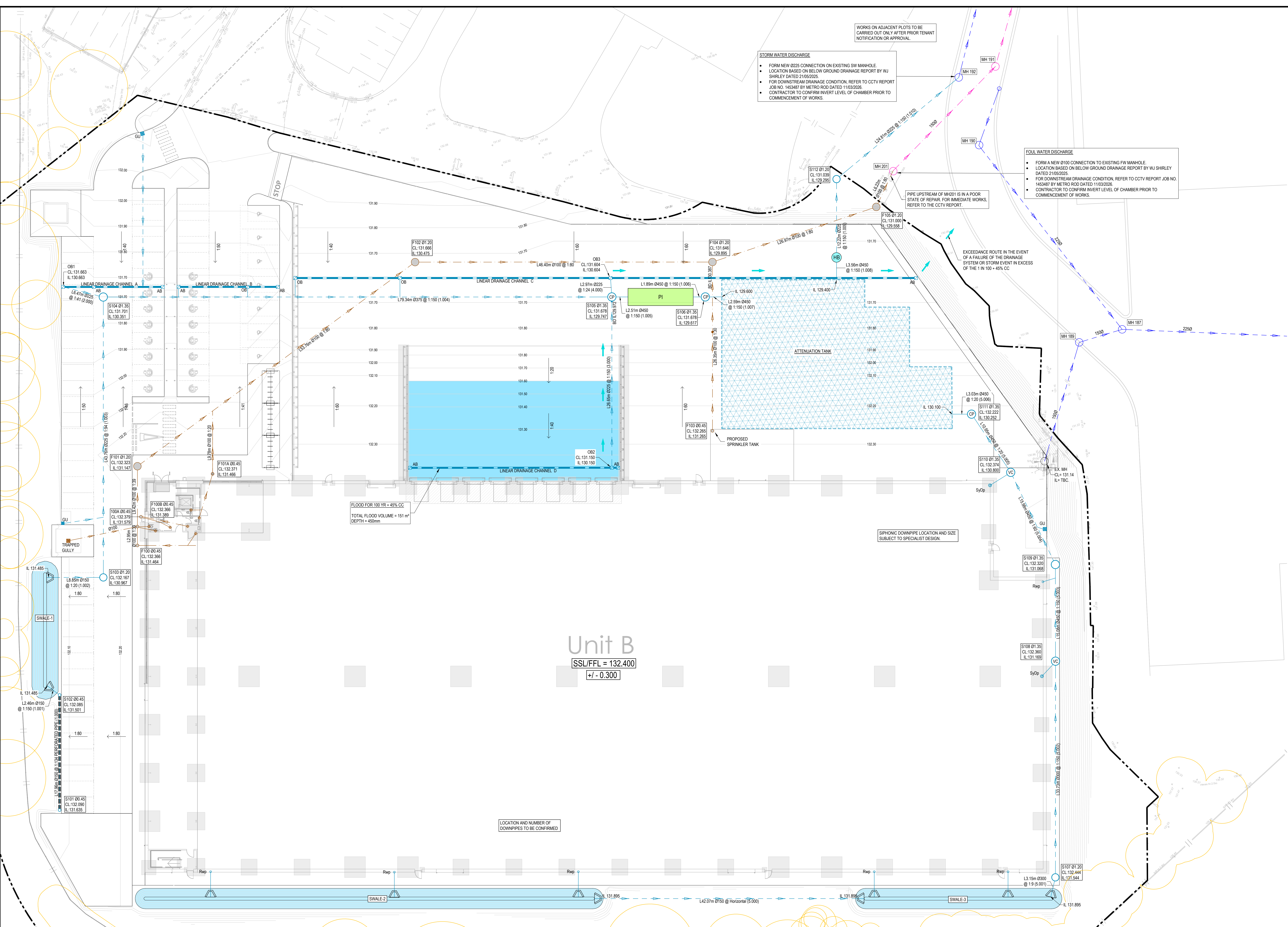
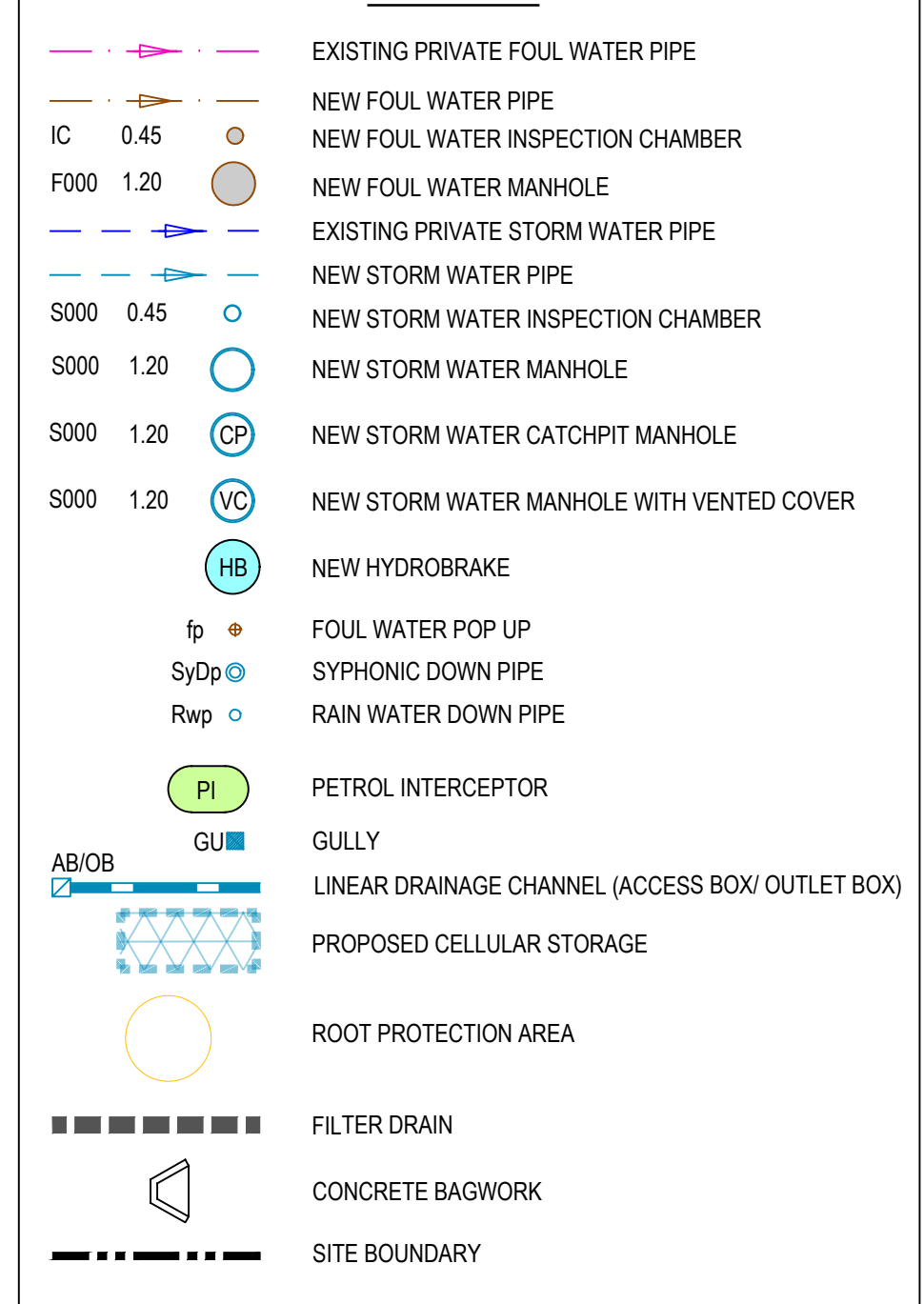
NEW DRAINAGE:

- INTERNAL FLOW POINTS ARE LOCATED AND SET OUT BY THE ARCHITECT.
- TRADITIONAL RAINWATER DOWNPIPES ARE PROVIDED BY THE CLADDING CONTRACTOR AND CO-ORDINATED WITH THE ARCHITECT.
- PREFERRED LOCATIONS OF SIPHONIC DOWNPIPES ARE SHOWN AND ARE TO BE DESIGNED BY A SPECIALIST. THE WAREHOUSE SHOULD NOT DRAIN THROUGH OFFICE AREAS.
- DESIGN ASSUMES THAT ALL WORKS ARE NOT TO BE ADOPTED.
- GRADIENTS OF PIPES ARE AVERAGED. PIPE CONNECTIONS SHOULD BE INSTALLED TO THE STATED INVERT LEVELS.
- COVER LEVELS OF THE MANHOLES ARE AVERAGED. COVER AND FRAME SHOULD BE SET TO SUIT FINISHED GROUND LEVELS.
- ALL PIPEWORK WITHIN MANHOLES ARE TO BE LAID SOFFIT TO SOFFIT (U.N.O), INCLUDING BACKDROP PIPEWORK, WHERE THE ROADING ACCESS LEVEL IS SPECIFIED.
- FLAT LATERAL CONNECTION TO BE 135° "Y" JUNCTIONS (IE 45° OBLIQUE JUNCTIONS) RELATIVE TO MAIN RUN. TO BE USED ON FOUL OR SURFACE WATER RUNS. 90° OR 87° SQUARE JUNCTIONS SUITABLE FOR SURFACE WATER CONNECTIONS ONLY.
- SADDLE CONNECTIONS TO LARGER PIPES SHOULD BE MADE SO THAT THE INVERT LEVEL OF THE SMALLER PIPE DOES NOT ADJOIN BELOW MID HEIGHT OF THE LARGER PIPE.
- PIPES CROSSING WITHIN 200MM OF EACH OTHER ARE TO BE ISOLATED BY CONCRETE FOR A MINIMUM DISTANCE OF 1M BEYOND CROSSING POINT IN ALL DIRECTIONS.
- A CCTV DRAINAGE SURVEY TO BE CARRIED OUT ON COMPLETION TO PROVE THE INTEGRITY OF THE AS-BUILT DRAINAGE SYSTEMS.

ANCILLARY ITEMS

- WHERE PROPOSED CONTRACTOR MUST PROVIDE PROPOSALS FOR SUPPLY OF LINEAR DRAINAGE CHANNELS, KERB DRAINS, INTERCEPTORS, ATTENUATION, PUMPS, HYDROBRAKE, FILTER UNITS.
- WHERE PROPOSED ALLOWANCE SHOULD BE MADE FOR POWER SUPPLY TO INTERCEPTORS AND PUMPS AND FOR INSTALLING CONTROL PANELS.

LEGEND



LINEAR DRAINAGE CHANNEL (LDC) SCHEDULE

CHANNELS TO BE DESIGNED BY SPECIALIST BASED ON 50mm/hr RAINFALL INTENSITY, A 5yr RETURN PERIOD AND THE FOLLOWING PARAMETERS:

REFERENCE	LOCATION	AREA DRAINED	LENGTH	GROUND LEVEL	OUTLET	PIPE	DUTY	PREFERENCE
A	CAR PARK	707m²	16.06m	131.663	INO	2250	C250	SLOT
B	CAR PARK	1,000m²	16.00m	131.66-131.73	INO	2250	C250	SLOT
C	SERVICE YARD	3,970m²	97.25m	131.604	INO	2250	D400	SLOT
D	SERVICE YARD	696m²	32.99m	131.150	INO	2250	D400	SLOT

NUMBER & SPACING OF ACCESS BOXES TO BE SPECIFIED BY SUPPLIER. OUTLET BOXES TO BE SILT TRAP DEEP HEAVY DUTY. OUTLET BOXES TO HAVE SUMP AS FIRST STAGE OF TREATMENT.

ATTENUATION TANK

CONTRACTOR TO OBTAIN DESIGN/QUOTE FROM SUPPLIER BASED ON FOLLOWING PARAMETERS:

AREA DRAINED	TANK - 1
15,970m²	15.97m³
SIZE	715m³ x 1.2m (858.0m³)
WATER VOLUME	815m³
GROUND LEVEL	132.250m-131.610m
TANK TOP	130.600m
TANK BASE	129.400m

ALLOW FOR VENTING, BEDDING & SURROUND, MEMBRANE WITH WELDED JOINTS. ALL CONNECTIONS INTO TANKS TO BE VIA MANIFOLD/REDUCERS TO SUIT MIN. 150 PIPE CONNECTION.

PETROL INTERCEPTOR

CONTRACTOR TO OBTAIN DESIGN/QUOTE FROM SUPPLIER BASED ON FOLLOWING PARAMETERS:

AREA DRAINED	CHAMBER DIA	CHAMBER CL	CHAMBER IL	DESIGN FLOW	IL OUT
7,280m²	Ø2.10m	131.728m	131.645m	19.1 l/s	Ø450 @ 129.730m
131.645m					Ø450 @ 129.630m

ALLOW FOR CONCRETE SURROUND, POWER SUPPLY, CONTROL PANEL, VENTING AND HIGH LEVEL ALARM.

HYDROBRAKE

SUPPLIER HYDRO INT OR SIMILAR APPROVED

CHAMBER DIA	CHAMBER CL	CHAMBER IL	DESIGN FLOW	DESIGN HEAD
Ø2.10m	131.728m	131.645m	19.1 l/s	2.252m

SWALE 1, 2 & 3			
	SWALE-1	SWALE-2	SWALE-3
AREA DRAINED	542m ²	1,325m ²	842m ²
TOP LEVEL	132.085m	132.345m	132.345m
BASE LEVEL	131.485m	131.895m	131.895m
LENGTH	20.35m	72.700m	31.900m
SIDE SLOPE	1:3	1:3	1:3

