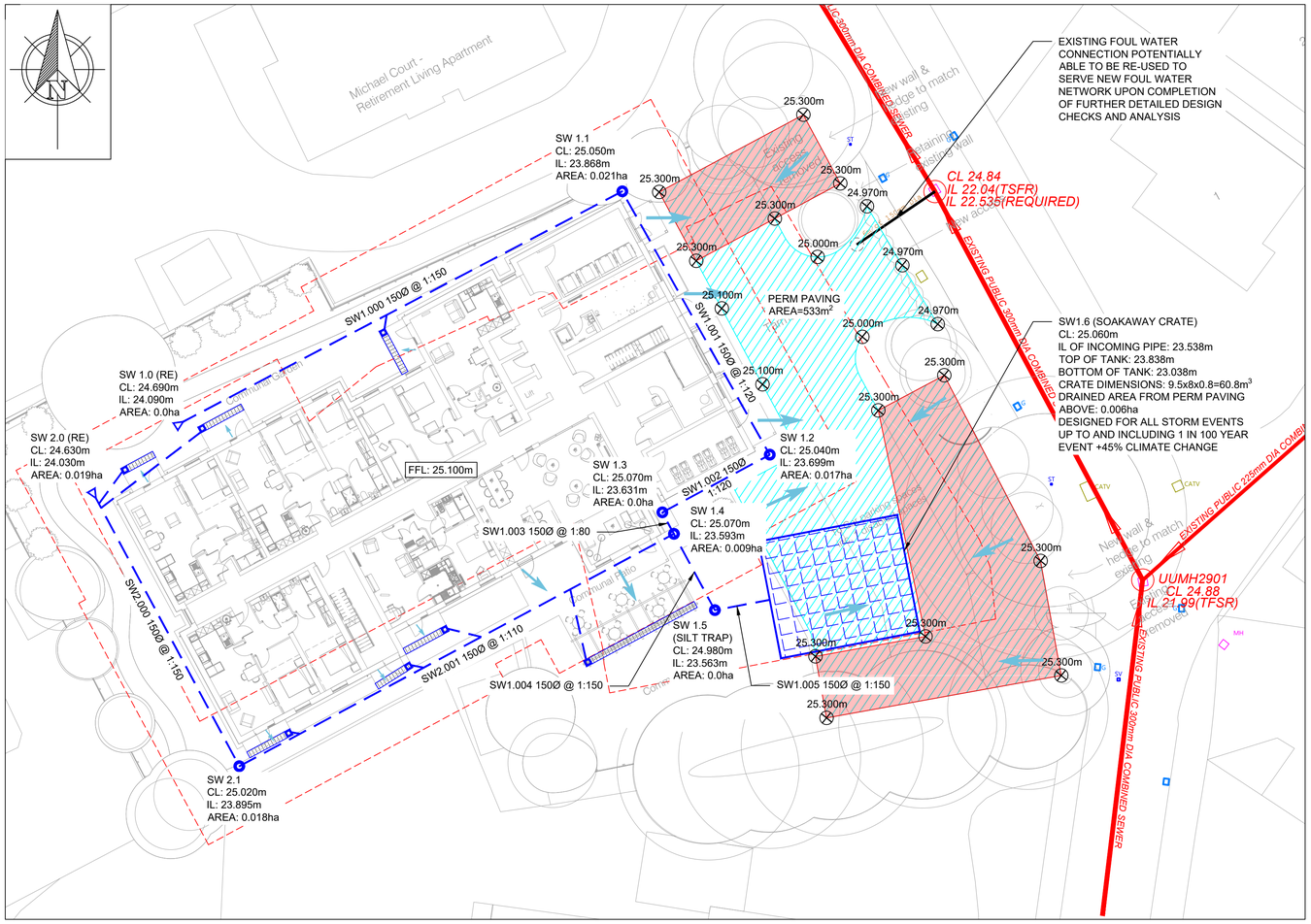

HEALTH SAFETY AND ENVIRONMENTAL RISKS BOX

CONSTRUCTION RISKS	MAINTENANCE RISKS	DEMOLITION/ ADAPTATION RISKS
1. REFER TO EXISTING SERVICES DRAWING AND TO ARCHITECTS SERVICES DRAWINGS FOR DETAILS & LOCATION OF EXTG AND PROPOSED DRAINAGE & SERVICES. **2.** EXISTING DRAINS TO EITHER BE REMOVED OR GRUBBED UP U.N.O. **3.** CONSTRUCTING NEW CONNECTIONS DRAINAGE, POTENTIAL FOR HAZARDOUS GASES. PERMIT TO ENTER EXISTING MANHOLES SHOULD BE OBTAINED FROM UNITED UTILITIES BEFORE UNDERTAKING THE WORK, RELEVANT P.P.E SHOULD BE WORN AT ALL TIMES. IF ANY ASBESTOS CEMENT PIPES ARE FOUND, THEN SAFE SYSTEM OF WORK NEED TO BE PUT IN PLACE WITH ATTENTION DRAWN TO THE CONTROL ASBESTOS AT WORK (AMENDMENT) REGULATIONS 1992. **4.** HIGHWAY WORKS REQUIRED	**1.** CHANNELS AND CHAMBERS REQUIRE THE STANDARD PERIODIC INSPECTION REGIME AND CLEANING ROUTINE TO ENSURE CONTINUED PERFORMANCE. **2.** CONFINED SPACE ENTRY. **3.** ALL MAINTENANCE MUST COMPLY WITH UNITED UTILITIES' REGULATIONS.	**1.** APPARATUS LOCATED IN LANDSCAPED AREAS HAS NOT BEEN DESIGNED TO SUPPORT HEAVY VEHICLE LOADING. 2. THE SURFACE WATER DRAINAGE APPARATUS HAS BEEN DESIGNED TO ACCOMMODATE THE DESIGNED CATCHMENT AREA. NO ADDITIONAL AREAS OF HARDSTANDING CAN BE CONNECTED INTO THE SYSTEM WITHOUT RISK OF LOCALIZED FLOODING ON SITE. 3. HAZARDOUS WASTE MATERIALS

IN ADDITION TO THE HAZARDS & RISKS NORMALLY ASSOCIATED WITH THE TYPE OF WORK DETAILED ON THIS DRAWING, TAKE NOTE OF THE ABOVE. IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR, WORKING WHERE APPROPRIATE, TO AN APPROVED METHOD STATEMENT.

LEGEND:

SW	NEW SURFACE WATER SEWER PIPE AND MANHOLE PIPE 150Ø UNO
	LINEAR SW DRAINAGE CHANNEL & ACCESS CHAMBER
	SOAKAWAY CRATE
	PERMEABLE PAVING WITH 150mm SUB-BASE DEPTH
	NO DIG ZONE
RE	RODDING EYE
	SURFACE WATER EXCEEDANCE FLOW DIRECTION ARROW
XX.XXXm	PROPOSED LEVELS
	5m OFF-SET LINE FROM BOUNDARY AND BUILDING

NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER ENGINEER'S AND ARCHITECT'S DRAWINGS, DETAILS & SPECIFICATIONS.
2. THE EXTERNAL WORKS DESIGN IS BASED UPON BOX ARCHITECTS PLAN NO-2860-3-AC-1002 REV A DATED NOVEMBER 2022
3. TOPOGRAPHICAL SURVEY DRAWING 270522JC-01 DATED 27.05.22 BY CHRIS PARTINGTON LAND SURVEYORS HAS ALSO BEEN USED IN THE DESIGN.
4. REFER TO THE ARCHITECT FOR SETTING OUT OF ALL BUILDINGS & INTERNAL DOWN PIPES & RWP'S
5. REFER TO SERVICE ENGINEERS DRAWINGS FOR FINAL SETTING OUT OF RWP AND SVP'S (BASED ON GUTTER SYSTEM).
6. REFER TO SERVICE ENGINEERS DRAWINGS FOR ABOVE GROUND PLUMBING ROUTES FROM APPLIANCES TO STUB STACKS ETC.
7. ALL EXISTING DRAINAGE THAT IS TO BE ABANDONED TO BE 'PLUGGED' IN WITH MASS CONCRETE (150mm MIN) OR REMOVED ENTIRELY.
8. ANY EXISTING SERVICES TO BE LOCATED AND CLEARLY MARKED PRIOR TO EXCAVATIONS BY CONTRACTOR.
9. ALL LEVELS ARE TO BE CONFIRMED BY THE CONTRACTOR ON SITE PRIOR TO CONSTRUCTION.
10. IT IS ASSUMED THAT ALL SINK AND TOILET DRAINAGE POINTS WILL HAVE RODDING ACCESS AT THE APPLIANCE BASE.
11. CONTRACTOR TO AVOID UNDERMINING ANY EXISTING FOOTPATHS/ BUILDINGS DURING WORKS BY ALLOWING ADEQUATE PROTECTION ADJACENT TO THESE AREAS.
12. ALL RAINWATER DOWN PIPES TO HAVE RODDABLE ACCESS AT THE BASE OF THE VERTICAL SECTION.
13. ALL BELOW GROUND DRAINAGE PIPES WITH LESS THAN 900mm COVER TO SOFFIT LEVEL IN TRAFFICKED AREAS I.E. CAR PARK AND SERVICE YARD AREA TO HAVE CLASS Z BEDDING SURROUND. REFER TO THE MANHOLE SCHEDULE AND DETAIL SHEETS FOR FURTHER DETAILS.
14. ALL BELOW GROUND DRAINAGE WITHIN THE SITE BOUNDARY HAS BEEN DESIGNED TO BSEN 752:2008 AND BUILDING REGULATIONS - PART H:2015.

DRAINAGE STRATEGY

THE SITE IS CLASSIFIED AS BROWNFIELD (BEING PREVIOUSLY USED FOR RESIDENTIAL DEVELOPMENT) KEY POINTS FOR THE STRATEGY ARE AS FOLLOWS:

SURFACE WATER

- AS PER THE SUDS HIERARCHY, THE FIRST CHOICE FOR SURFACE WATER DISPOSAL IS INFILTRATION. UPON COMPLETION OF SOAKAWAY TESTING ON SITE TO BRE 365 STANDARDS AN INFILTRATION RATE OF $7.99x10^{-6}$m/s WAS RECOMMENDED (AS PER SECTION 8.8 OF CCL GROUND INVESTIGATION REPORT).
- CONTROLLING RAINWATER AT SOURCE IS A PREFERRED OPTION. THIS IS PROPOSED TO BE ACHIEVED THROUGH THE PROVISION OF PERMEABLE PAVING TO THE CARPARK AREA. CONTROLLING WATER AT SOURCE FOR THE ROOF IS NOT POSSIBLE FOR THIS BUILDING, DUE TO THE ROOF SHAPE, SO IT WILL BE DISCHARGED TO A TRADITIONAL SOAKAWAY.
- TO UNDERSTAND THE SITE CONSTRAINTS A SPATIAL EVALUATION WAS CARRIED OUT WITH REGARDS TO THE BUILDING AND SITE BOUNDARIES WITH 5m OFF-SETS TO DETERMINE THE SPACE AVAILABLE FOR A TRADITIONAL SOAKAWAY.
- THE PROPOSED DEVELOPMENT HAS AN IMPERMEABLE AREA OF APPROXIMATELY 1373m² (0.137ha). THE ROOF AND THE SURROUNDING PATIO AREAS (825m²) WOULD BE COLLECTED VIA RWPS AND CHANNELS DRAINS AND DISCHARGED TO THE SOAKAWAY TANK. THE REST OF THE AREA, WHICH WAS MAINLY CAR PARKING (548m²), WAS TO BE DEALT WITH VIA PERMEABLE PAVING.
- THE DESIGN IS FOR ALL STORM EVENTS UP TO AND INCLUDING THE 1 IN 100 YEAR EVENT PLUS 45% CLIMATE CHANGE ALLOWANCE WITH NO FLOODING EXPECTED.
- THE 45% CLIMATE CHANGE FIGURE IS AS PER THE 'IRWELL MANAGEMENT CATCHMENT PEAK RAINFALL ALLOWANCES' MAP.
- 50% DRAIN-DOWN TIMES WERE ACHIEVED WITHIN 24 HOURS FOR ALL STORM EVENTS.
- FOR EXCEEDANCE EVENTS LEVELS AROUND THE PERIMETER OF THE BUILDING WILL BE SET LOWER THAN THE FINISHED FLOOR LEVEL AND THE PERMEABLE PAVING WILL BE LOWER AT THE SITE ENTRANCE FROM THE ROAD.

GROUND INVESTIGATION

AN INTRUSIVE GROUND INVESTIGATION HAS BEEN UNDERTAKEN BY CLANCY CONSULTING. PHASE 11 GEO-ENVIRONMENTAL ASSESSMENT DECEMBER 2022. 11 WINDOW SAMPLES BOREHOLES TO 5.45M AND THREE TRIAL PITS. 2 NUMBER BRE 365 TESTS AT 1.5 AND 1.6M BGL.

KEY POINTS REGARDING INFILTRATION

- SUB-SOILS ARE GENERALLY GRANULAR SANDS AND GRAVEL.
- INFILTRATION RATE IS LOW BUT STILL VIABLE FOR SOAKAWAYS.
- WORST CASE RATE WAS 7.99X10-6 M/S.
- NO GROUND WATER WAS ENCOUNTERED EXCEPT FOR 1 WINDOW SAMPLE BH
- WHERE A SMALL AMOUNT OF PERCHED WATER WAS LOCATED WS03 AT 2.3M.
- CONTAMINATION. ELEVATED LEVELS OF ARSENIC WERE ENCOUNTERED IN SHALLOW SOILS.
- IT IS CONFIRMED THAT THIS CONTAMINATION IS NOT CONSIDERED TO POSE A SIGNIFICANT RISK TO CONTROLLED WATERS.
- THE SITE IS NOT WITHIN A SOURCE PROTECTION ZONE.

CONSIDERING THE ABOVE, BOTH PERMEABLE PAVING (TYPE A) AND DEEPER TRADITIONAL SOAKAWAYS WILL BE SUITABLE FOR THIS SITE

POLLTUION HAZARD MITIGATION

THE POLLUTION HAZARD LEVELS FOR THIS SITE ARE:-

ROOF AREAS - VERY LOW
CAR PARK AREAS - LOW

FOR VERY LOW HAZARDS NO SPECIFIC MEASURES ARE REQUIRED.
A SILT TRAP WILL BE PROVIDED PRIOR TO THE BELOW GROUND SOAKAWAY.

FOR LOW HAZARD PARKING AREAS PERMEABLE PAVING HAS BEEN PROVIDED. THIS WILL PROVIDE A FILTER FOR ANY CONTAMINANTS PRIOR TO DISCHARGE TO THE GROUND.

PRELIMINARY DRAWING

THIS DRAWING IS FOR PRELIMINARY INFORMATION PURPOSES ONLY AND MUST NOT BE READ AS A CONSTRUCTION ISSUE. IT INDICATES DESIGN INTENT ONLY AND IS SUBJECT TO AMENDMENT DURING FINAL DESIGN DEVELOPMENT

SCALE 1:200m 0m 2m 4m 6m 8m 10m 12m 14m 16m 18m 20m

Rev	Date	Description	By	Check	App.
P1	27.01.23	ISSUE FOR PLANNING	CN	CD	GS

Client: McCARTHY & STONE

Project: 35 OAKFIELD ROAD
SALE

Office: NORWICH 01603 305190

Discipline: CIVIL ENGINEERING

Title: DRAINAGE STRATEGY
GENERAL ARRANGEMENT

Scale @ A1: 1:200

Status: PRELIMINARY

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Originator	Job Number	Discipline	Building/Zone
CCL	1/21541	C	SAL
Type	**Level**	**Drawing No.**	**Revision**
GA	DRN	4400	P1