



SPORTS PITCHES TO BE DESIGNED BY SPECIALIST. IT IS ASSUMED THAT PITCHES WILL BE A PERMANENT SURFACING ALTHOUGH WILL REQUIRE AN OUTFALL.

OUTFALL IS SUBJECT TO DETAILED DESIGN AND APPROVAL FROM THE LFA.

R.02

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EXISTING POND
DESIGNED VOLUME: 855m³
TOP WATER LEVEL: B850+7
WATER LEVEL: 1100 + 10% CCI: B8400m

OUTFALL IS SUBJECT TO DETAILED DESIGN AND APPROVAL FROM THE LFA.

R.02

SURFACE WATER PRINCIPLES

NPPG HIERARCHY OF SURFACE WATER DRAINAGE

THE NATIONAL PLANNING PRACTICE GUIDANCE ANY NPPG SUSTAINABLE DRAINAGE SYSTEMS GUIDANCE, 2022, UPDATE, SETS OUT THE HIERARCHY OF DRAINAGE TO PRIORITISE THE USE OF SUSTAINABLE DRAINAGE SYSTEMS, BY ALIGNING MODERN DRAINAGE SYSTEMS WITH NATURAL WATER PROCESSES. THE AIM OF HIERARCHY OF DRAINAGE, IS TO DRAIN SURFACE WATER RUN-OFF AS SUSTAINABLE, AS REASONABLY PRACTICABLE.

AS STATED IN THE NATIONAL PLANNING PRACTICE GUIDANCE, THE AIM SHOULD BE TO DISCHARGE SURFACE WATER RUN-OFF AS HIGH UP THE DRAINAGE HIERARCHY, AS REASONABLY PRACTICABLE:

- INTO THE GROUND (INFILTRATION),
- TO A SURFACE WATER BODY,
- TO A SURFACE WATER SEWER, HIGHWAY DRAIN, OR ANOTHER DRAINAGE SYSTEM,
- TO A COMBINED SEWER.

INFILTRATION

ATKINS HAVE PREVIOUSLY UNDERTAKEN SITE INVESTIGATION WORKS ON THE DEVELOPMENT SITE. PWAGED HAVE REVIEWED THE GROUND CONDITIONS ON THE SITE AND HAVE PROVIDED A REPORT ON THE GROUND CONDITIONS WHICH WERE FOUND ON THE SITE. IT HAS BEEN PRESENTED THAT IN 2018 THE MAJOR GROUND WAS FOUND AT DEPTHS OF 1m TO 4.1m AND BELOW THIS A 1.5m - 2.0m THICK BAND OF SOT SILTY CLAY WAS FOUND. THEREFORE, WITH THESE FINDS ON SITE, IT IS SUGGESTED THE SOAKWAYS ARE NOT PROPOSED IN MAJOR GROUND DUE TO THE RISK OF CONTAMINATED GROUNDWATER, AND ALSO WITH CLAY BEING PRESENT ON THE SITE, IT IS SUGGESTED THAT INFILTRATION WILL NOT MEET SUFFICIENT RATES TO PROVIDE THIS AS A VIABLE SOLUTION FOR THE SITE.

WATERCOURSE

IF INFILTRATION HAS BEEN DISCOUNTED AS A VIABLE SOLUTION, THE NEXT METHOD IN PRIORITY SHOULD BE TO DISCHARGE TO A WATERCOURSE OR SURFACE WATER BODY.

AN ASSESSMENT OF LOCAL WATERCOURSES HAS BEEN UNDERTAKEN AND THE RIVER RIVELL IS APPROXIMATELY WEST 60M OF THE PROPOSED SITE.

ALTHOUGH THE POND WHICH IS LOCATED BETWEEN THE TWO SITES CURRENTLY DISCHARGES INTO THE EXISTING RIVER VIA A SURFACE WATER SEWER WHICH RUNS THROUGH THE SITE.

PLANNING PORTAL PRESENTS THE DRAINAGE STRATEGY WHICH WAS UNDERTAKEN FOR THE CONSTRUCTION OF THE POND. THE POND DESIGN INCLUDED AN ALLOWANCE FOR THE AREA ON THE SITE. THEREFORE, IT IS PROPOSED THAT THE EAST SITE CONNECTS INTO THE POND AT A RESTRICTED RATE TO MINIMISE SURFACE WATER FLOOD RISK.

SURFACE WATER DESIGN

FURTHER TO THE ASSESSMENT OF THE SURFACE WATER HIERARCHY, THE DESIRED OUTFALL FOR THE SURFACE WATER DRAINAGE IS THE EXISTING POND ON SITE WHICH ULTIMATELY DISCHARGES TO RIVER WEST OF THE SITE.

A PREVIOUS DRAINAGE STRATEGY HAS BEEN PREPARED FOR THE WHOLE INDUSTRIAL ESTATE WHICH DISCHARGES INTO THE POND. AN ASSESSMENT HAS BEEN UNDERTAKEN TO DETERMINE THAT THE DESIGNED AND THE AS-BUILT AREAS ARE SIMILAR, WHICH IT IS BELIEVED THAT THE AS-BUILT AREAS ARE SLIGHTLY LESS THAN THE DESIGNED AREA. THE DISCHARGE RATE FROM THE POND FLOWS INTO THE PROPOSED SITE AREA, AND THE OVERALL DISCHARGE RATE FROM THE POND HAS BEEN SET AS A GREENFIELD DISCHARGE RATE. THEREFORE, IT IS PROPOSED THAT THE SITE AREA DISCHARGES INTO THE EXISTING POND AT AN UNRESTRICTED RATE, BUT RESTRICTED BY THE POND'S HYDROLOGICAL.

AN ASSESSMENT OF THE PROPOSED IMPERMEABLE AREAS FOR THE DEVELOPMENT HAS RESULTED IN A TOTAL DRAINED AREA OF 14,60M² (1.66HA). FOR THE REVIEW OF IMPERMEABLE AREAS, IT HAS BEEN DETERMINED THAT A 2.34% ALLOWANCE WITHIN THE DESIGN WAS ALLOWED FOR PHASE 2 (THE PROPOSED DEVELOPMENT SITE).

SUSTAINABLE DRAINAGE COMPONENTS (BIORETENTION, TREES AND RAIN WATER HARVESTING) IS PROPOSED TO REDUCE THE QUANTITY OF WATER LEAVING THE SITE. IT IS ALSO PROPOSED THAT THESE WILL PROVIDE SOME TREATMENT, ALTHOUGH TO PROVIDE BETTERMENT. BYPASS SEPARATORS HAVE BEEN PROPOSED FOR IMPROVEMENT OF WATER QUALITY.

CLIMATE CHANGE

IN LINE WITH THE LATEST WHICH GUIDANCE SETS CLIMATE CHANGE ALLOWANCES BASED ON RIVER BASIN MANAGEMENT CATCHMENTS, THE CLIMATE CHANGE ALLOWANCES FOR THE DEVELOPMENT SHOULD BE SET IN LINE WITH THE BELOW:

RIVELL MANAGEMENT CATCHMENT PEAK RAINFALL ALLOWANCES

2070S EPOCH - UPPER ALLOWANCE UTILISED (AS PER PRE PLANNING ENQUIRY WHICH STATES CRITICAL INFRASTRUCTURE IS NEARBY THEREFORE, THIS SHOULD BE CONSIDERED)

3.3% (1 IN 30 YEAR) 40%
1% (1 IN 100 YEAR) 45%

A 70% CLIMATE CHANGE FOR THE 1 IN 100 YEAR STORM EVENT HAS BEEN USED FOR ANY MODELING RELATING TO THE POND.

FOUL WATER DESIGN

AFTER A REVIEW OF THE LOCAL WATER AUTHORITY SEWER RECORDS, THERE ARE NO SUITABLE FOUL OR COMBINED SEWERS WITHIN THE VICINITY OF THE SITE.

AN EXISTING COMBINED PUBLIC SEWER RUNS ADJACENT TO THE EASTERN BOUNDARY. THEREFORE, IT IS PROPOSED THAT THE FOUL WATER FROM THE SITE IS DISCHARGED INTO THERE, IN LINE WITH THE PRE-DEVELOPMENT ENQUIRY RESPONSE FROM UNITED UTILITIES.

NOTES:

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KEY

- EXISTING SURFACE WATER SEWER
- EXISTING SURFACE WATER MANHOLE
- EXISTING FOUL WATER SEWER
- EXISTING FOUL WATER MANHOLE
- EXISTING COMBINED WATER SEWER
- EXISTING COMBINED WATER MANHOLE
- PROPOSED SURFACE WATER SEWER
- PROPOSED SURFACE WATER MANHOLE
- PROPOSED SURFACE WATER INSPECTION CHAMBER
- PROPOSED CHANNEL
- PROPOSED Gully
- PROPOSED SUDS SYSTEM (BIORETENTION OR FREE TFI)
- TREE-ROOT AREA
- BOTTOM OF POND
- TOP OF POND
- PROPOSED FOUL WATER SEWER
- PROPOSED FOUL WATER MANHOLE
- PROPOSED FOUL WATER INSPECTION CHAMBER
- SITE BOUNDARY

PROPOSED DRAINAGE IS PRELIMINARY ONLY AND IS SUBJECT TO DETAILED DESIGN.

NOTE REFERENCE	NOTE DESCRIPTION
N.01	TOP OF BANKING LEVEL HAS BEEN DETERMINED BY THE LOWEST POINT PLOTTED UP ON THE TOPOGRAPHICAL SURVEY PROVIDED WHICH DISCHARGES INTO THE POND. THIS HAS BEEN FOUND TO BE THE GULLY WHICH IS LOCATED IN THE SOUTH WEST CORNER JUST OFF SITE OF THE DEVELOPMENT.
N.02	SPORTS PITCHES TO BE DESIGNED BY SPECIALIST DUE TO SURFACING MATERIALS AND DRAINAGE REQUIREMENT. IT IS PROPOSED THAT A NEW OUTFALL INTO THE POND AT THIS LOCATION IS PROPOSED.
N.03	SPORTS PITCHES TO BE DESIGNED BY SPECIALIST DUE TO SURFACING MATERIALS AND DRAINAGE REQUIREMENT. IT IS PROPOSED THAT A NEW OUTFALL INTO THE POND AT THIS LOCATION IS PROPOSED.
N.04	SUSTAINABLE DRAINAGE SYSTEMS ON THE INDUSTRIAL DEVELOPMENT HAVE BEEN REVIEWED, ALTHOUGH DUE TO THE CONSTRAINTS, POND BANKING, RETAINING WALL, PROPOSED SEWAGES, EASEMENT, ROOF PROTECTION AREAS AND SUB STATION IT IS SUGGESTED THAT THEY ARE NOT UTILISED. ALTHOUGH THE DISCHARGE IS INTO AN OPEN WATER BODY AND A BYPASS SEPARATOR IS PROPOSED TO IMPROVE WATER QUALITY.
N.05	IT IS PROPOSED THAT FALLS AWAY FROM THE BUILDING ARE IMPLEMENTED TO ALLOW SUFFICIENT FLOOD EXCESSANCE FROM THE SITE. IT IS PROPOSED THAT THE FLOOD EXCESSANCE ROUTES FALL INTO CAR PARKING YARD AREAS AND THEN ARE DIRECTED TOWARDS THE EXISTING POND.
N.06	ALL SYSTEMS HAVE BEEN DESIGNED WITH A FIXED SURCHARGE LEVEL OF 80.448m AOD (1000 YEAR STORM EVENT + 70% CCI).
N.07	GRADE SEPARATOR WATER REQUIRED FOR POND GULLIES LOCATED WITHIN KITCHEN AREAS, MBE ENGINEERS TO CONFIRM REQUIREMENTS AND SPECIFICATION.
N.08	PWP MATERIALS SHOULD BE CLAY FOR PIPE WORK BELOW 450mm AOD AND OVER SHOULD BE CONCRETE. PIPE WORK BELOW 450mm AOD HAVE PLASTIC, DEPENDING ON GROUND INVESTIGATION TESTING. PWS

RISK REFERENCE	RISK DESCRIPTION	RISK CONSEQUENCE / MITIGATION
R.01	EXISTING DRAINAGE LOCATIONS: EASEMENT LOCATION ASSIGNED.	LOW EXISTING MANHOLES PRESENTED ON TOPOGRAPHICAL SURVEY. OTHER HAVE BEEN IDENTIFIED FROM PREVIOUS DRAINAGE STRATEGIES PROVIDED. INVERT LEVELS TAKEN FROM DRAINAGE STRATEGY.
R.02	DISCHARGE LOCATION.	CONFIRMATION OF DISCHARGE AND LOCATIONS TO BE OBTAINED THROUGH PLANNING BEFORE DETAILED DESIGN COMMENCE.
R.03	SERVICES ON THE SITE.	FINAL DESIGNS OF DRAINAGE AND SERVICES SHOULD BE COORDINATED TO ENSURE NO CLASHES.
R.04	EXISTING DRAINAGE FROM THE SITE TO THE RIVER.	CCTV SURVEY SHOULD BE UNDERTAKEN TO ENSURE NO REPAIRS ARE REQUIRED TO THE OFFSITE SYSTEM. IT SHOULD ALSO BE ENSURED THAT THE LOW CONTROL LEVELS AT THE POND OUTFALL HAS BEEN MAINTAINED.
R.05	TREE ROOT PROTECTION AREA.	ARBORECUITURIST TO CONFIRM ACTUAL TREE ROOT PROTECTION AREAS. THERE SHOULD BE NO LEVEL ALTERATIONS WITHIN THESE AREAS. SPECIALIST SHOULD BE CONSULTED IF ALTERATIONS ARE REQUIRED TO THESE AREAS.
R.06	SPONGING DRAINAGE	DESIGN TO BE OBTAINED BY SPECIALIST. DETAILS OF OUTFALL LOCATION AND FLOW SHOULD BE CONFIRMED BACK TO ENGINEERS. WANTED CONVEY TO BE UTILISED WITHIN DRAINAGE SYSTEM.
R.07	PROPOSED DRAINAGE CROSSING EXISTING DRAINAGE	EXISTING SEWER LEVELS TO BE CONFIRMED TO ENSURE NO CLASHES. IF PROPOSED DRAINAGE CROSSING BENEATH TEMPORARY WORKS MAYBE REQUIRED TO THE EXISTING DRAINS.
R.08	PPCS	A REDUCER COVER SHOULD BE INSTALLED FOR ANY PPCS DEEPER THAN 1m. ANY PPCS LOCATED WITHIN PATFACED AREAS SHOULD ALSO BE SURROUNDED IN CONCRETE AND CONCRETE COLLAR INSTALLED.
R.09	ALTERATIONS / CONNECTIONS INTO EXISTING SEWERS.	IF ANY ALTERATIONS ARE REQUIRED TO THE EXISTING PUBLIC SEWERS ON THE SITE A SECTION 105 SHOULD BE PROGRESSED. ANY CONNECTIONS INTO THE PUBLIC SEWERS REQUIRE A SECTION 106.

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CAMPBELL DRIVER PARTNERSHIP

PROPOSED COMMERCIAL DEVELOPMENT CROWN GAS AND POWER BURY

PROPOSED DRAINAGE

Scale: 1:500
Designed: JLE
Checked: LS
Date: APR 25

PRELIMINARY

Job Number: 24312 PWA: 00 XX: DR: C: 1002: P04