SURFACE WATER PRINCIPLES

P03

NPPG HIERARCHY OF SURFACE WATER DRAINAGE

THE NATIONAL PLANNING PRACTICE GUIDANCE SETS OUT THE HIERARCHY OF DRAINAGE TO PROMOTE 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

AN EXISTING SOAKAWAY ON SITE CAN BE SEEN TO BE INEFFECTIVE DESPITE MAINTENANCE, THIS IS RESULTING IN WATER EMERGING AT THE SURFACE AND HAS FORMED ITS OWN CHANNEL THROUGH THE EXISTING CAR PARKING AREA TOWARDS THE RAILWAY. SOILSCAPES HAVE PRESENTED THAT THE SOIL IN THE AREA OF THE PROPOSED DEVELOPMENT CAN BE FOUND AS LOAMY AND CLAYEY. FURTHER DESKTOP STUDY WAS UNDERTAKEN ON BGS BOREHOLES HAVE BEEN FOUND IN GISBURN. WHICH PRESENTED SOFT TO FIRM BROWN SANDY SILTY CLAY. AS THESE ARE BOTH CONSISTENT, THIS WOULD EXPLAIN THE EXISTING SOAKAWAY AS FAILED.

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 THE UK RIVER MAPS HAS IDENTIFIED THAT THERE ARE NO NEARBY WATERCOURSES

SURFACE WATER SEWER

EXISTING SURFACE WATER FLOWS ARE CURRENTLY DIRECTED TOWARDS THE RAILWAY DUE TO THE FAILED EXISTING SOAKAWAY. IT IS UNDERSTOOD THAT FLOWS ARE NOT ALLOWED TO BE DISCHARGED IN THE DIRECTION OF THE RAILWAY ASSET AND THEREFORE IS PROPOSED THAT ALL SURFACE WATER RUNOFF IS COLLECTED BY RAIN WATER PIPES AND CHANNEL DRAINS/GULLEYS AND FLOWS ARE DIRECTED TOWARDS THE ATTENUATION TO LEAVE SITE AT A RESTRICTED RATE.

COMBINED SEWER

A REVIEW OF THE UNITED UTILITIES SEWER RECORDS SHOW A COMBINED SEWER OUTSIDE THE SITE WHICH WOULD BE PRACTICABLE TO CONNECT TO. HOWEVER GIVEN THE ABOVE INFORMATION REGARDING SURFACE WATER SEWERS, IT WOULD BE MUCH MORE VIABLE TO MAKE A CONNECTION TO AN EXISTING SURFACE WATER SEWER PROVIDING THE NPPG HIERARCHY OF SURFACE WATER DRAINAGE.

SURFACE WATER DESIGN

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RUN-OFF RATES

A REVIEW OF THE EXISTING SITE TOPOGRAPHICAL SURVEY HAS IDENTIFIED THE PRESENCE OF A POSITIVELY DRAINED EXISTING BUILDING. HOWEVER, IN LINE WITH CURRENT GUIDANCE PROVIDED BY THE LLFA. IF THE EXISTING DRAINAGE SYSTEM IS NOT USED IN ITS ENTIRETY FOR THE PROPOSED DEVELOPMENT THE DISCHARGE RATE MUST REVERT TO GREENFIELD. CALCULATIONS HAVE BEEN UNDERTAKEN FOR THE EXISTING SITE AND THE DISCHARGE RATE HAS BEEN DETERMINED TO BE 2.77l/s. WITH UNITED UTILITIES CURRENT GUIDANCE THE MINIMUM DISCHARGE RATE CONNECTING INTO A PUBLIC SEWER SHOULD BE 5l/s. THEREFORE THE PROPOSED DISCHARGE RATE FOR THE DEVELOPMENT SHOULD BE RESTRICTED TO 5l/s.

* REFER TO PWA CALCULATION 22045-00-XX-CA-C-1000 FOR GREEN FIELD ANALYSIS
** REFER TO PWA DRAWING 22045-00-XX-DR-C-1000 FOR EXISTING IMPERMEABLE AREA PAN.

PROPOSED DRAINAGE SYSTEM

TO RESTRICT PROPOSED FLOWS TO A RATE OF 5l/s, THE PROPOSED DRAINAGE SYSTEM SHOULD SEEK TO IMPLEMENT SOURCE CONTROL SUDS METHODS WHERE POSSIBLE AND AN ATTENUATION SYSTEM TO STORE THE RESTRICTED FLOWS. OUR PROPOSED SYSTEM COMPRISES OF AN ATTENUATION STORAGE PIPE LOCATED AT THE NORTHERN SIDE OF THE PROPOSED UNIT. THE SURFACE WATER WILL BE PUMPED TOWARDS THE SITE ENTRANCE BY A RISING MAIN AT 5l/s BEFORE REACHING A SURFACE WATER MANHOLE WHICH ALLOWS THE SYSTEM TO FLOW BY GRAVITY INTO THE EXISTING SURFACE WATER SEWER, DUE TO THE RISING MAIN PUMPING SURFACE WATER FLOWS TO 5l/s, THIS NEGATES THE NEED FOR A FLOW CONTROL MANHOLE BEFORE THE CONNECTION TO THE EXISTING SEWER.

BASED ON THE PROPOSED IMPERMEABLE AREAS, THE REQUIRED ATTENUATION FOR A 1 IN 100-YEAR STORM EVENT + 30% CLIMATE CHANGE IS CALCULATED AT 92m³. **

* REFER TO PWA DRAWING 22045-00-XX-DR-C-1002 FOR PROPOSED IMPERMEABLE AREA.
** REFER TO PWA CALCULATIONS 22045-00-XX-CA-C-1001 FOR ATTENUATION VOLUME ESTIMATE

PRELIMINARY ATTENUATION DESIGNS ARE BELOW:

MAN HOLES:

3.0m dia = 7.069m²/m DEPTH.

2 no. 3.0m dia AT 2m DEPTH = 28.27m³

PIPE WORK:

1.2m dia PIPEWORK = 1.131m²/m DEPTH

1.131m²/m x 49m = 55.419m³

28.27m³ (MANHOLES) + 55.419m³ (PIPEWORK) = 83.689m³ OF ATTENUATION

FOUL WATER DESIGN

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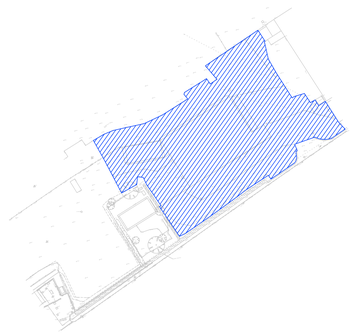
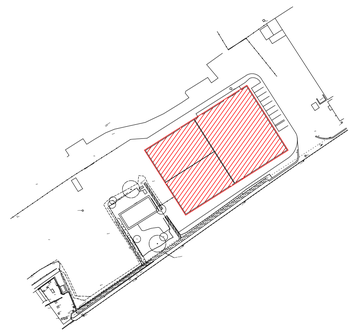
FOUL WATER STRATEGY

A REVIEW OF UNITED UTILITIES SEWER RECORDS IN THE SURROUNDED AREA SHOW THAT THERE ARE COMBINED SEWERS WITHIN THE LOCAL VICINITY OF SITE. ON SITE FOUL DRAINAGE IS ASSUMED TO DISCHARGE TO THE COMBINED PUBLIC SEWER IN THE MAIN ROAD ADJACENT TO THE DEVELOPMENT. THEREFORE IT IS PROPOSED THAT THE FOUL WATER FROM THE PROPOSED DEVELOPMENT IS DISCHARGED INTO THE EXISTING FOUL WATER MANHOLE WITHIN SITE. A SECTION 106 SHOULD BE COMPLETED FOR THE INDIRECT CONNECTION.

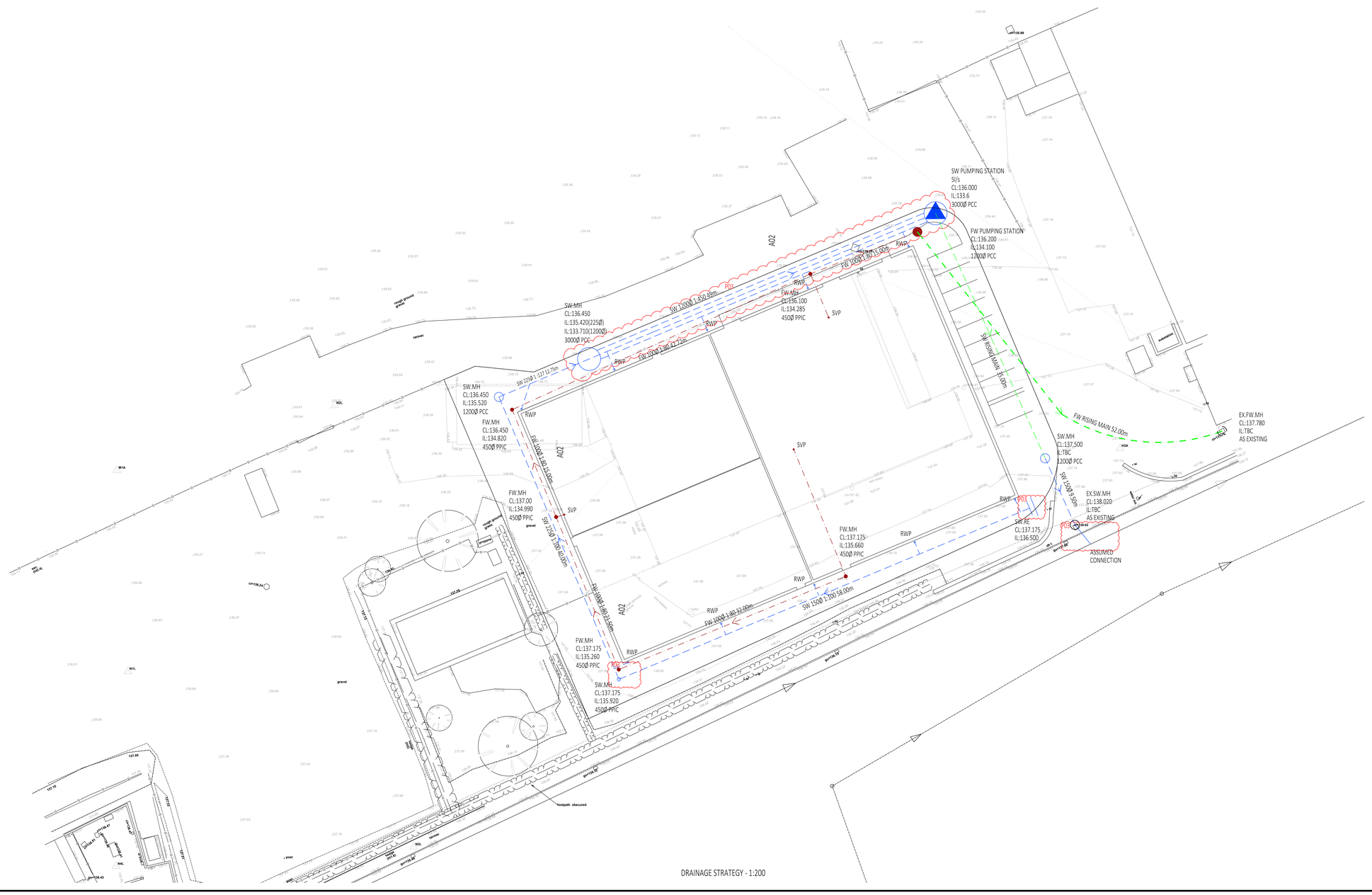
ALL PROPOSED DRAINAGE IS SUBJECT TO DETAILED DESIGN AND AGREED CONNECTION LOCATIONS AND RATES



EXISTING IMPERMEABLE AREA - 1:1000



PROPOSED IMPERMEABLE AREA - 1:1000



DRAINAGE STRATEGY - 1:200

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AREA	IMPERMEABLE CATCHMENT AREA, m^2 (ha)
EXISTING IMPERMEABLE	4810m^2 (0.481ha)

*TOTALS FOR HECTARES (ha) AND METERS SQUARED (m^2) DIFFER SLIGHTLY DUE TO ROUNDING AND ACCUMULATION OF INDIVIDUAL AREAS.

P03

GREENFIELD RUNOFF RATES.

STORM EVENT	DISCHARGE RATE
EXISTING PEAK	2.77 l/s
PROPOSED PEAK	5.00 l/s

UU GUIDANCE STATES A MINIMUM OF 5 l/s DISCHARGE TO A PUBLIC SEWER.

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AREA	IMPERMEABLE CATCHMENT AREA, m^2 (ha)
PROPOSED IMPERMEABLE	1988m^2 (0.199ha)

*TOTALS FOR HECTARES (ha) AND METERS SQUARED (m^2) DIFFER SLIGHTLY DUE TO ROUNDING AND ACCUMULATION OF INDIVIDUAL AREAS.

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STORAGE REQUIREMENTS

STORM EVENT	STORAGE VOLUME
1 IN 100 YEAR	56m^3
1 IN 100 YEAR + CC	92m^3

KEY

- EXISTING SURFACE WATER MANHOLE
- EXISTING FOUL WATER MANHOLE
- PROPOSED SURFACE WATER SEWER
- PROPOSED SURFACE WATER MANHOLE
- PROPOSED SURFACE WATER INSPECTION CHAMBER
- PROPOSED SURFACE WATER PUMPING STATION (P03)
- PROPOSED FOUL WATER SEWER
- PROPOSED FOUL WATER MANHOLE (P03)
- PROPOSED FOUL WATER INSPECTION CHAMBER
- PROPOSED SURFACE WATER RISING MAIN
- PROPOSED FOUL WATER RISING MAIN (P03)
- EXISTING SURFACE WATER SEWER
- EXISTING FOUL SEWER

Rev	Date	Remarks	Drn	Chk
P03	21/07/22	SURVEY INFORMATION ADDED TO SURFACE WATER DRAINAGE STATION	IB	PMc
P02	20/06/22	FOU PIPE NOTES ON WEST SIDE OF BUILDING UPDATED	IB	PMc
P01	20/06/22	FIRST ISSUE	IB	PMc

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Client: GISBURN AUCTION MART

Project: PROPOSED INDUSTRIAL DEVELOPMENT AT GISBURN AUCTION MART LTD GISBURN

Title: PROPOSED DRAINAGE STRATAGY

Size	Scale	Designed	Checked	Date
A1	AS SHOWN	IB	PMc	JUN 22

Drawing Status: PRELIMINARY

Job Number	Originator	Zone	Level	Type	Role	Drawing No	Rev
22045	PWA	00	XX	DR	C	1001	P03