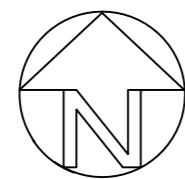


**General Notes**

- All dimensions are in metres unless otherwise stated.
- All levels are in metres.
- This drawing is to be read in conjunction with all relevant Engineers and Architect's drawings, Specifications, Reports and Engineering Details.



**Health, safety & the environment**

In accordance with the Construction (Design and Management) Regulations 2015, the designs and details on this drawing have been the subject of a Designers Risk Assessment, to identify risks in the construction, use, or demolition of the scheme.

It is not considered necessary for Designers to highlight obvious and/or common risks (such as deep excavations, manual handling and working around heavy plants) which Contractors should be familiar with, and be able to control by good management and site practice.

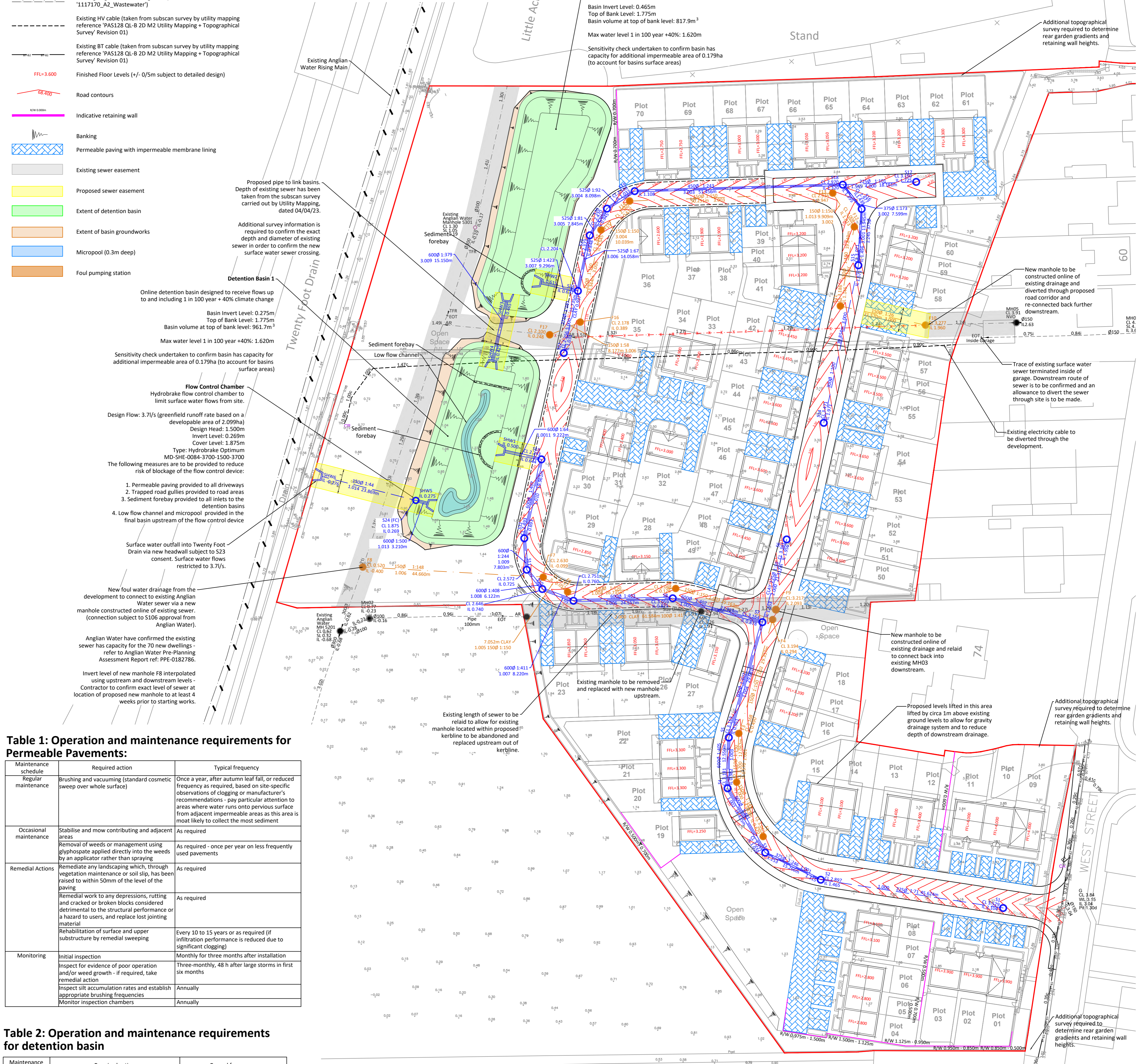
So far as is reasonably practicable, the risks inherent in the design have been eliminated. Where it has been considered that elimination of a risk (or part of a risk) is not reasonably practicable, it has been reduced.

**Drawing Key**

- Site Boundary (Taken from latest site layout referenced)
- Existing surface water drainage sewer (taken from subsurface survey by utility mapping reference 'PAS128 QL-B 2D M2 Utility Mapping + Topographical Survey' Revision 01)
- Existing foul water drainage sewer (taken from subsurface survey by utility mapping reference 'PAS128 QL-B 2D M2 Utility Mapping + Topographical Survey' Revision 01)
- Existing foul water drainage to be abandoned and grubbed out
- Adoptable section 104 surface water sewer with pipe diameter, gradient, material and manhole details
- Adoptable foul water sewer with pipe diameter, gradient, material and manhole details
- Adoptable Section 104 headwall
- Existing Anglian Water Rising Main (taken from AW Asset Records '1117170\_A2\_Wastewater')
- Existing HV cable (taken from subsurface survey by utility mapping reference 'PAS128 QL-B 2D M2 Utility Mapping + Topographical Survey' Revision 01)
- Existing BT cable (taken from subsurface survey by utility mapping reference 'PAS128 QL-B 2D M2 Utility Mapping + Topographical Survey' Revision 01)
- Finished Floor Levels (+/- 0.5m subject to detailed design)
- Road contours
- Indicative retaining wall
- Banking
- Permeable paving with impermeable membrane lining
- Existing sewer easement
- Proposed sewer easement
- Extent of detention basin
- Extent of basin groundworks
- Micropool (0.3m deep)
- Foul pumping station

This drawing has been based/developed using the following external drawings

Type	Company	Drawing date	Drawing title	Date received	Rev
Site Layout	JGA Architecture	18.01.2021	21022-001-P08-Feasibility Site Layout	05.07.2023	P08
Topographical survey	Utility Mapping	04.04.2023	UM23-1726-MIN-2D West Street, Chatteris, Rev01	12.05.2023	01
OS Data	Utility Mapping	04.04.2023	UM23-1726-MIN-2D West Street, Chatteris, Rev01	12.05.2023	01



**Table 1: Operation and maintenance requirements for Permeable Pavements:**

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations - pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment
Occasional maintenance	Stabilise and mow contributing and adjacent areas Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying	As required As required - once per year on less frequently used pavements
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level of the paving Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material Rehabilitation of surface and upper substructure by remedial sweeping	As required As required Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial inspection Inspect for evidence of poor operation and/or weed growth - if required, take remedial action Inspect silt accumulation rates and establish appropriate brushing frequencies Monitor inspection chambers	Monthly for three months after installation Three-monthly, 48 h after large storms in first six months Annually Annually

**Table 2: Operation and maintenance requirements for detention basin**

Maintenance schedule	Required action	Record frequency
Regular maintenance	Remove litter, debris and trash Cut grass - for landscaped areas and access routes Cut grass - meadow grass in and around basin Manage other vegetation and remove nuisance plants	Monthly Monthly (during growing season) or as required Half yearly: Spring (before nesting season) and Autumn Monthly at start, then as required plants
Occasional maintenance	Reseed areas of poor vegetation Prune and trim trees and remove cuttings Remove sediment from pre-treatment system when 50% full	As required As required As required
Remedial actions	Repair erosion or other damage by reseeded or returning Repair or rehabilitate inlets, outlets and overflows Relevel uneven surfaces and reinstate design levels	As required As required As required
Monitoring	Inspect inlets, outlets and overflows for blockages, and clear if required Inspect bankside, structures, pipework etc for evidence of physical damage Inspect inlets and pre-treatment systems for silt accumulation; establish appropriate silt removal frequencies Inspect infiltration surfaces for compaction and ponding	Monthly Monthly Half yearly Monthly

**SuDS Features Health and Safety Considerations**

- Detention basin**  
The following mitigation measures have been considered within the basin design to reduce the risks associated with dry detention basins:
- All residents living within the development are to be informed of the location and purpose of the detention basin.
  - Signs must be provided to warn pedestrians of detention basin, and further "nag" signs must be provided to alert pedestrians further.
  - Adequate lighting to be provided as part of the public highway with sufficient overspill lighting for the detention basin.
  - Banking on the basin limited to 1:3 to allow for safe maintenance access/egress and unaided movement in either direction.
  - Grills will be provided at headwalls to prevent entry to larger pipes.
  - The basin is situated close to the public right of way and dwellings to ensure a high degree of natural surveillance.
  - Vegetation shall be planted around the basin to discourage access but will not obstruct visibility of the water level.

**Detention Basin 2**  
Online detention basin designed to receive flows up to and including 1 in 100 year + 40% climate change  
Basin Invert Level: 0.465m  
Top of Bank Level: 1.775m  
Basin volume at top of bank level: 817.9m<sup>3</sup>  
Max water level 1 in 100 year +40%: 1.620m  
Sensitivity check undertaken to confirm basin has capacity for additional impermeable area of 0.179ha (to account for basins surface areas)

**Detention Basin 1**  
Online detention basin designed to receive flows up to and including 1 in 100 year + 40% climate change  
Basin Invert Level: 0.275m  
Top of Bank Level: 1.775m  
Basin volume at top of bank level: 961.7m<sup>3</sup>  
Max water level 1 in 100 year +40%: 1.620m  
Sensitivity check undertaken to confirm basin has capacity for additional impermeable area of 0.179ha (to account for basins surface areas)

**Flow Control Chamber**  
Hydrobrake flow control chamber to limit surface water flows from site.  
Design Flow: 3.7l/s (greenfield runoff rate based on a developable area of 2.099ha)  
Design Head: 1.500m  
Invert Level: 0.269m  
Cover Level: 1.875m  
Type: Hydrobrake Optimum MD-SHE-0084-3700-1500-3700  
The following measures are to be provided to reduce risk of blockage of the flow control device:  
1. Permeable paving provided to all driveways  
2. Trapped road gullies provided to road areas  
3. Sediment forebay provided to all inlets to the detention basins  
4. Low flow channel and micropool provided in the final basin upstream of the flow control device

Surface water outfall into Twenty Foot Drain via new headwall subject to S23 consent. Surface water flows restricted to 3.7l/s.

New foul water drainage from the development to connect to existing Anglian Water sewer via a new manhole constructed online of existing sewer. (connection subject to S106 approval from Anglian Water).

Anglian Water have confirmed the existing sewer has capacity for the 70 new dwellings - refer to Anglian Water Pre-Planning Assessment Report ref: PPE-0182786.

Invert level of new manhole F8 interpolated using upstream and downstream levels - Contractor to confirm exact level of sewer at location of proposed new manhole to at least 4 weeks prior to starting works.

Existing length of sewer to be re-laid to allow for existing manhole located within proposed kerbline to be abandoned and replaced upstream out of kerbline.

Rev E	Updated in response to LLFA comments and Anglian Water pre-planning report	By AD	Checked LC	18.12.2023
Rev D	'Do not scale' note removed as requested by LPA.	By GM	Checked LC	02.11.2023
Rev C	Minor amendment to notes.	By GM	Checked DJ	11.10.2023
Rev B	Plot's 3 & 11 FFL's amended as per James Garner comments received 18.07.2023.	By GM	Checked LC	18.07.2023
Rev A	Surface water design amended to suit revised urban creep.	By GM	Checked LC	17.07.2023

**Northampton**  
Grand Union Works, Whitton Locks, Daventry  
Northamptonshire, NN11 2NH  
T: 01604 781811  
Poole Milton Keynes Warwick  
E: mail@jppuk.net W: jppuk.net

Client: **Minster Property Group**

Project: **West Street Chatteris**

Title: **Preliminary Drainage Strategy**

Scale at A1	1:500	Drawn by	ARI	Checked by	LC	Date	July 2023
Status	<b>FOR PLANNING</b>	Project ref	26065	Drawing no.	103	Revision	E

