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Samantha Carr

**Proposed Light Industrial Development,
Land at former Fleet Road Garden Centre,
Fleet Road, Holbeach, Spalding, PE12 7AX**

Drainage & Maintenance Strategy

15th August 2022

T. R. Stafford
Senior Partner

DRAINAGE STRATEGY

SUMMARY

Following instructions from Samantha Carr, SIE have undertaken an assessment of the data provided for the infrastructure design on the above site, and following receipt of the topographical site survey, Flood Risk Assessment [FRA], preliminary soils information and the preliminary planning layout Ref. 1459-4_SK_SP01 Rev.C, please find below our assessment of the infrastructure design that is proposed for this development.

THE SITE

This site of approximately 0.42ha, is a former garden centre and sits to the East of Holbeach and South of Fleet Road.

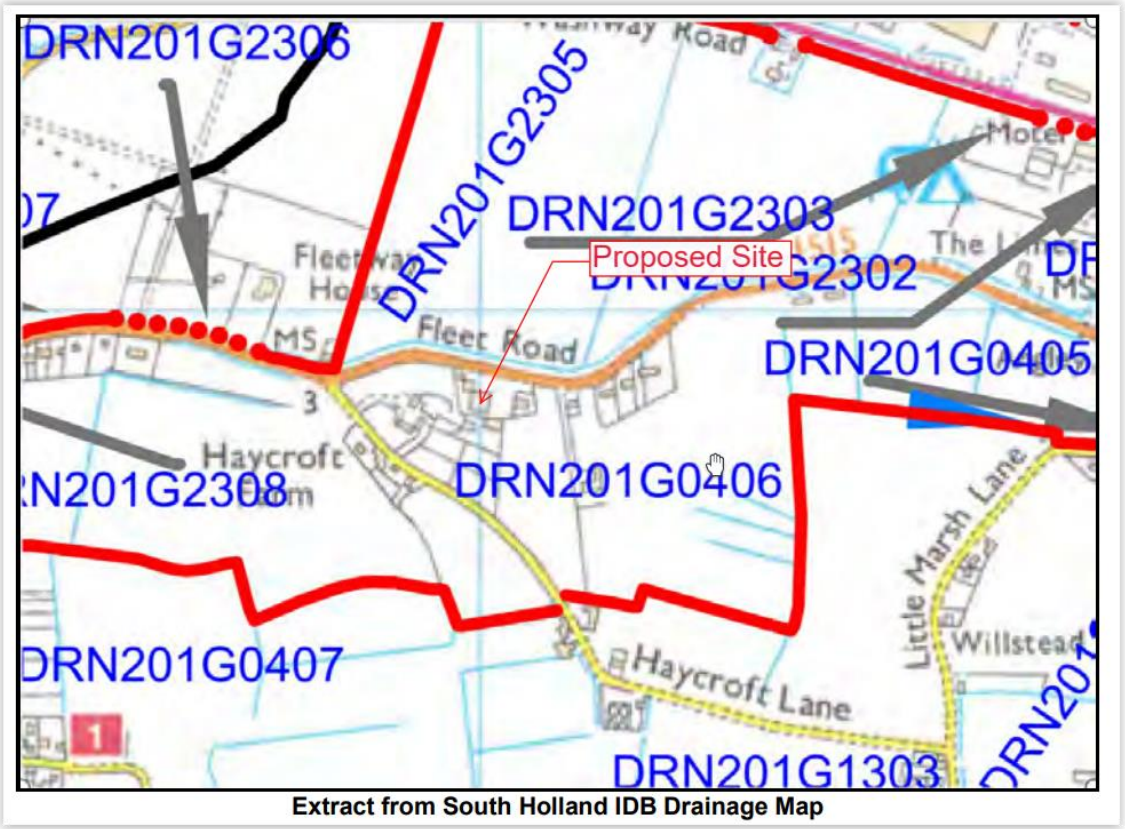
The existing site is predominantly impermeable, with buildings, glasshouses, blacktop and concrete covering over 95% of the site.



Copyright: Google Maps.

It is roughly rectangular in shape and is generally flat with levels between 3.0 – 3.4mOD.

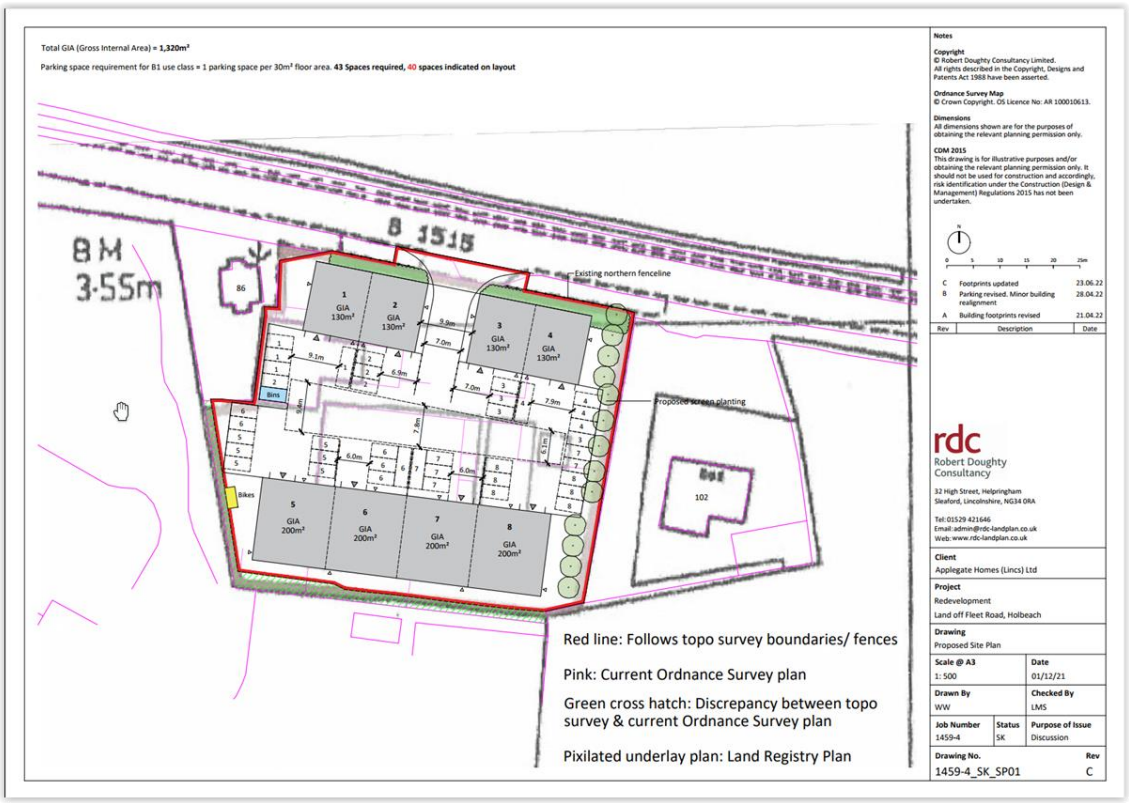
The nearest watercourse is a riparian open ditch to the north of Fleet Road. This drains to the nearby South Holland IDB drain DRN201G2305.



Extract from South Holland IDB Drainage Map

There is an existing surface water connection from the site to the riparian owned ditch.

The proposed design shows eight [8] units divided across three blocks with attendant access road and parking.



Copyright: Robert Doughty Consultancy

FOUL WATER DISPOSAL

There are no adoptable sewers in the vicinity.

It is therefore proposed to install a sewage treatment plant [STP] in the north-east corner of the site and discharge the effluent to the existing riparian drain using the existing piped outfall, which will also carry the limited surface water discharge from the site.

The maintenance of the STP will be the responsibility of a Management Company, who will be required to follow the manufacturers recommended maintenance procedures and timescales.

The rest of the foul drainage will be gravity pipework and chambers designed in accordance with the current version of Building Regulations Doc.H.

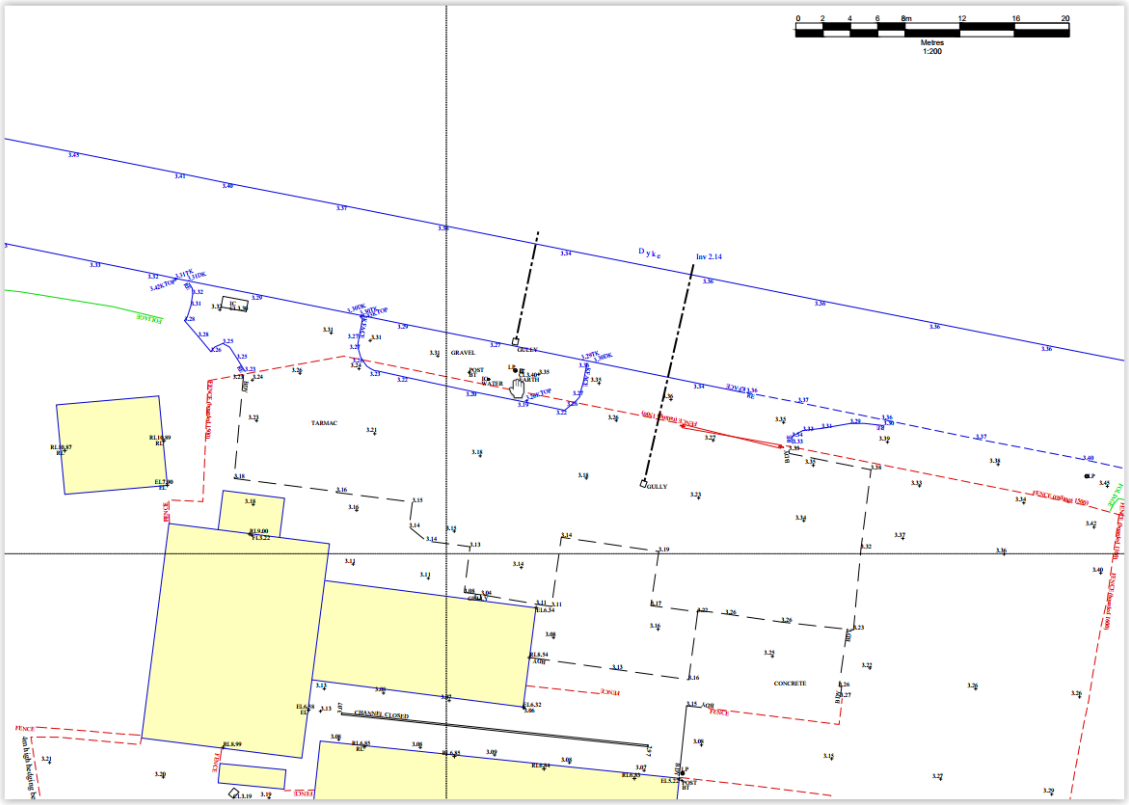
Continued

SURFACE WATER DISPOSAL

The soils report indicates that soakage potential is very poor, so percolation is not an option.

The nearest point for surface water disposal is an open ditch to the north of the site to which the existing site currently drains.

The FRA suggests there is an existing pipe in this location with an outfall invert of 2.14mOD.



This pipe is to be CCTV'ed to prove it is in good condition and at a level to suit the proposed design.

Should this pipe prove unsuitable for any reason and repairs can't be made, a new pipe will be installed in its place, either by pipe-jacking or thrust boring under the Highway, if possible, in order to avoid road closures. All with the approval of the Highway Authority.

As the existing outfall is only 810mm below the lowest ground level inside the existing site, the choice of the type of attenuation is limited because there is insufficient cover for anything but a permeable pavement.

Continued

The proposal is to have a tanked permeable blockwork access road with concrete hard standings designed in such a way as to have all the runoff treated by the permeable surface prior to being stored and eventually discharged to the watercourse.

Runoff from the roofs will be carried in sealed pipework and connected into the permeable sub-base to make use of the attenuation provided there.

This permeable road will start at the site boundary and form a T-shape within the development. The fact that the FRA recommends that the FFL's of the buildings be set at 3.35mOD aids this process allowing the surface profile to work without increasing the surface levels of the road too much.

The works to modify the adopted part of the entrance will all be completed with the agreement of the Highway Authority and will continue to drain to the existing road gully that sits just to the west of the proposed site entrance.

The design of the sub-base of the permeable access road, will provide sufficient capacity to attenuate the flows from all of the impermeable surfaces on the site during a 100yr + 40% climate change storm event, with the base set high enough to enable the outflow to reach the riparian drain. This will require the tanked permeable sub-base to extend out under some, if not all, of the concrete hardstanding.

Continued

MAINTENANCE STRATEGY

Maintenance Responsibility

1. Any new areas of highway created, and its attendant drainage, will be adopted by Lincolnshire County Highways and maintained by them.

2. All private permeable and impermeable areas and associated features and planting are to be maintained by a site Management Company.

3. Existing riparian watercourses will continue to be maintained by current and future owners in accordance with the notes on Receiving Ordinary Watercourse.

Recommended Private Area Maintenance Requirements

Access road & Drives

All permeable areas are to be swept quarterly to clear leaves and to ensure they are clean, tidy, and free from dust and debris.

At times of sweeping, inspections to take place to assess any damage to road, kerbs, lighting etc., and any maintenance carried out to ensure user safety is maintained.

Areas of permeable paving are to be maintained in accordance with CIRIA guidelines.

It should be noted that vacuum sweeping of any blockwork drives should not be carried out unless it is proposed to immediately replace the grit removed from between the blocks.

Any grit loss observed should immediately be replaced with material to the original specification.

General Drainage Areas

A system of regular inspections should be established. Initially these inspections should be carried out in October and March, however, this may be modified to suit observations over time.

Items to be observed and cleared are high levels of grit, leaves and other such detritus.

Continued

The main aim of these inspections will be to prevent siltation of the surface water system, which, if allowed to develop will reduce the effectiveness of the system and may, over time, reduce the attenuation volumes provided.

The following elements should be inspected and cleaned as part of this preventative routine:

Chambers, particularly catchpits

Headwalls and control chambers

Road gullies

Landscape
Please refer to the landscaping scheme and the Landscape Management plan for the site.

Generally, watercourses should be cut and maintained regularly so that grass remains reasonably short, chambers and headwalls to be always kept free of silt and debris. Maintenance of the ditch is NOT to be carried out if it is full or if the depth of standing water in the main channel exceeds 300mm.

Please refer to schedules below.

Additional Maintenance Requirements by the Management Company

It is also recommended that the Management Company regularly cleans and inspects any gullies, linear drainage channels and permeable paving, where located within the site curtilage as a preventative measure to minimise the ingress of detritus into the storm water system.

It is suggested that new or subsequent unit owners are informed of such responsibilities and the use and function of the surface water system in their welcome packs or within their conveyance documentation.

It is further recommended that the 'Bag it and Bin it' leaflet is handed to new owners to ensure unsuitable items are not flushed into the foul drainage system.

Operation and Maintenance Requirements for Permeable Pavements [CIRIA]

TABLE 20.15 Operation and maintenance requirements for pervious 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	As required
	Removal of weeds or management using glyphospate applied directly into the weeds by an applicator rather than spraying	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 50 mm of the level of the paving	As required
	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	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48 h after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

Operation and Maintenance Requirements for Receiving Ordinary Watercourse

Maintenance Schedule	**Required Action**	**Typical Frequency**
Regular Maintenance	Walkover inspection of receiving ordinary watercourse	6 monthly (or as required)
	Maintenance dredge the receiving ordinary watercourse from the Control headwall Weir to the confluence with the main channel to remove silt build up and restore design bed level	First maintenance dredge on completion of SuDS swales and then 5-yearly (or as required)

9027-107A DRAINAGE STRATEGY PLAN

FEEDBACK: This drawing is one of a series that have been prepared to define the civil element of the development. If this, or any, drawing in the series could be improved to better communicate the proposed design please do not hesitate to contact Stafford IE.



NOTES:
All dimensions must be checked on site and not scaled from this drawing.

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Surfaces Legend

- Adopted impermeable entrance
- Private impermeable entrance
- Permeable Surface
- Impermeable Roof
- Impermeable Surface

0 5 10 15
METRES @ 1:200

A	15-08-22	Client logo changed.
	Date	Revisions

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Job Title

Fleet Road Garden Centre
Fleet Road
Holbeach
Spalding
PE12 7AX

Drawing Title
Drainage Strategy

Date	Scale @ A1	Drawn
JULY 2022	1:200	LCM

Drg.No.	Rev.
9027 -107	A

BAG IT & BIN IT

DO NOT FLUSH IT, BAG IT AND BIN IT



Pet Faeces



Paint



Engine Oil



Bandages





Rags



Cotton Wool



Cooking Fat



Condoms



Kitchen Waste



Medicines



Nappies/incontinence products



Needles



Razor Blades