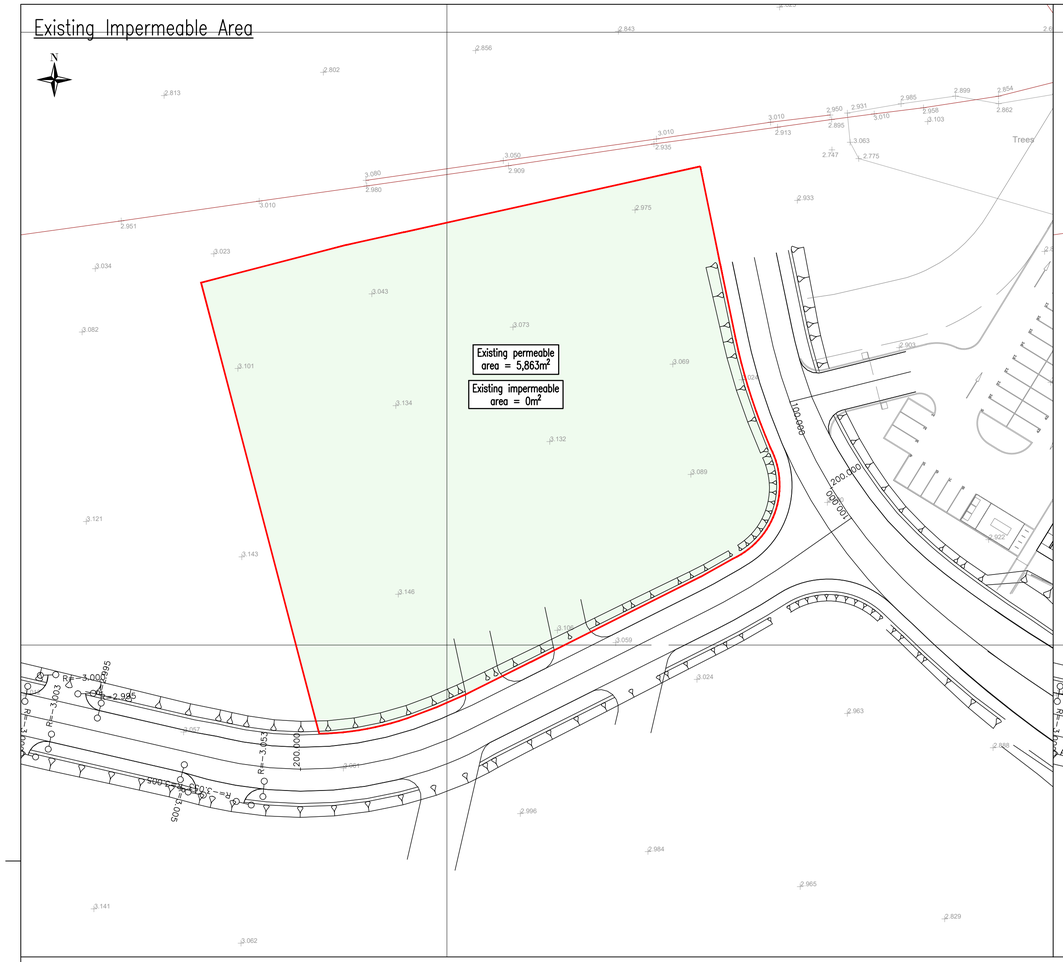
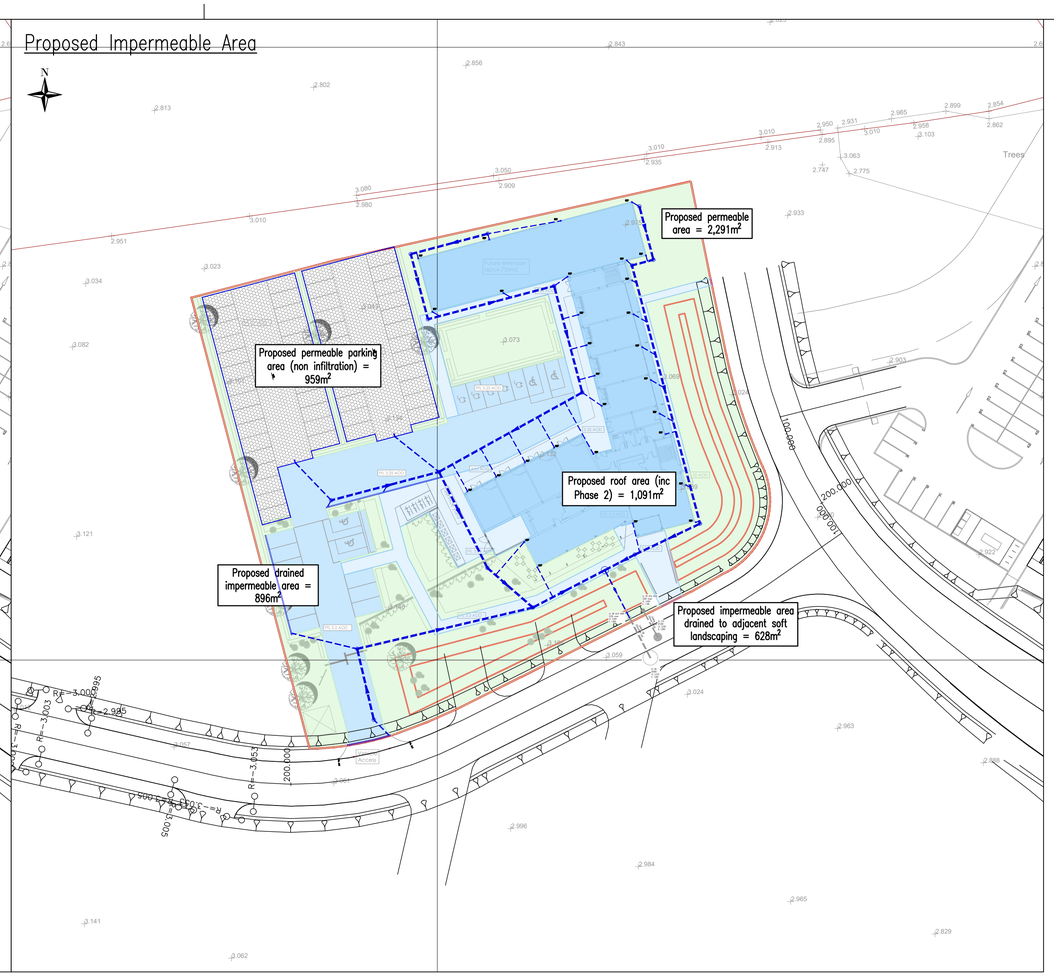
Existing Impermeable Area



Proposed Impermeable Area



NOTES

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Dimensions must not be scaled from this drawing. The Contractor is to check and verify all building and site dimensions before work is put in hand.

This drawing must be read and checked against any Architects or other specialists drawings.

The Contractor is to check and verify with all Statutory Authorities and the Employer the location and condition of any underground or overhead services or confirm that none exist prior to work commencing on site.

The Contractor shall comply with enactments regulations and working rules relating to safety health and welfare of workpeople.

SUDS Component Summary

CIRIA 697 – Ref Table 1.1		Suitable As An Infiltration Device?	Improves Water Quality?	Reduces Runoff Volume?
SUDS Component Type	Brief Description			
Filter Strips	Wide, gently sloping areas of grass to treat runoff from adjacent impermeable areas.	Yes	Yes (a)	Yes (b)
Swales	Broad, shallow channels covered by grass to convey and store runoff.	Yes	Yes (a)	Yes (b)
Infiltration Basins	Surface depressions to store runoff as part of an infiltration approach.	Yes	Yes	Yes (b)
Wet Ponds	Basins with a permanent pool of water.	No	Yes	No
Extended Detention Basin	Normally dry, designed as open attenuation storage.	No	Yes	No
Constructed Wetlands	Ponds with extension shallow areas.	Yes	Yes	Yes (b)
Filter Drains	Trenches filled with permeable material and perforated carrier drain. French Drain.	Yes	Yes	Yes (b)
Infiltration Devices	Buried storage volumes. Soakaways.	Yes	Yes	Yes
Pervious Surfaces	Constructed pavements designed to allow runoff to infiltrate to sub-base layers. Permeable Paving.	Yes	Yes	Yes (b)
Green Roofs	A vegetative medium installed on top of low pitched roofs.	No	Yes	Yes
Brown Roof	Site won material placed on top of low pitched roofs.	No	Yes	No
Rainwater Harvesting	Roof water collection system, designed to store rainwater for re-use as non-potable water. i.e. toilet flushing, irrigation.	No	No	Yes
Buried Attenuation Storage System	Sealed, buried tank designed to store runoff in conjunction with a flow control device.	No	No	No

Notes:
(a) With or without infiltration.
(b) With infiltration only

SUDS Component Suitability – Project Specific:

	SUDS Component Type	Suitability Determination & Reasoning
	Filter Strips	Unsuitable, insufficient space on proposed site.
(1)	Swales	There is currently a swale on-site as part of the adjacent highway drainage, we could investigate extending this to accommodate some/all of our attenuation requirements depending on available space.
	Infiltration Basins	Unsuitable, insufficient space on proposed site.
	Wet Ponds	Unsuitable, insufficient space on proposed site.
	Extended Detention Basin	Unsuitable, insufficient space on proposed site.
	Constructed Wetlands	Unsuitable, insufficient space on proposed site.
	Filter Drains	Unsuitable, insufficient space on proposed site.
	Infiltration Devices	The site is primarily underlain by sand, however the water table is very shallow, therefore infiltration unsuitable for this development.
	Pervious Surfaces (infiltration)	The site is primarily underlain by sand, however the water table is very shallow, therefore infiltration unsuitable for this development.
(2)	Pervious Surfaces (storage/filtration/attenuation)	Sufficient car parking area is proposed to provide attenuation within a tanked sub-base beneath permeable paving/surfacing.
	Green Roofs	Pitched roofs therefore unsuitable for this development.
	Brown Roof	Pitched roofs therefore unsuitable for this development.
(3)	Rainwater Harvesting	The large area of roof could potentially provide catchment, the feasibility and useability of this would be subject to confirmation by Client & supplier and thence detailed design.
(4)	Buried Attenuation Storage System	Required. As soakaways cannot be used as the primary method of surface water disposal (see infiltration devices above) and there is no existing watercourse within reasonable reach of the proposed development, the residual surface water flow will outfall to the existing SW manhole installed as part of the site wide drainage strategy. Flow reduction and storage will be achieved through the installation of a sealed buried cellular storage tank and hydrobrake, designed for purpose. The proposed location of the attenuation tank is to be beneath the external car park.

CATCHMENT AREAS
Total site area = 5,863m²
Detailed consideration of requirement for oil interceptor will not be required.

EXISTING AREAS
Soft = 5,863m²
Hardstanding/Roof = 0.0m²
Peak flow estimate using greenfield run-off rate of 5l/s/ha = 2.9 l/s

PROPOSED AREAS
Soft = 2,291m²
Permeable Car Parking = 959m²
Hardstanding area = 896m²
Impermeable area drained to adjacent soft landscaping = 628m²
Roof area = 1,091m²
Peak flow estimate using 50mm/hr (Qbar) = 34.3 l/s

The PBA Surface Water Drainage Strategy document states that South Holland IDB have agreed to 1.4l/s/ha discharge rate from each development site on the FEZ, therefore the limit of flow off this site using a hydrobrake would be 0.82 l/s.

A quick storage estimate using 0.296ha impermeable area along with 0.82l/s proposed discharge rate for a 1:100yr event + 40% c.c. allowance gives a requirement of between 207m³ and 278m³, a proportion of which will be provided by the permeable car parks' tanked sub-base volume.

The site will discharge surface water in accordance with the hierarchy set out in Paragraph: 080 Reference ID: 7-080-20150323 of Planning practice guidance, Flood risk and coastal change, in this case discharge will be made via existing on-site manhole into the existing site-wide drainage network subject to Anglian Water / planning agreement.

MAINTENANCE OF DRAINAGE / SuDS:

All onsite SuDS and drainage systems will require maintenance, as they will remain in private ownership they will be privately maintained.

It is a planning requirement that a maintenance regime be detailed and the Following table outlines a proposed maintenance regime for below ground drainage on site.

In addition it is advisable that all on-site drainage, both foul and surface should be inspected following the first rainfall event post completion and then inspected monthly for the remainder of the first quarter post completion.

Item	Visual Inspection	Cleanse / De-sludge	CCTV Survey	Comments
Foul Drainage System (pipework, chambers etc.)	5 years	10 years	10 years	Cleansing to be carried out as necessary
Surface Water Drainage System (pipework, chambers etc.)	5 years	10 years	10 years	Cleansing to be carried out as necessary
Surface Water Drainage Attenuation Tank	5 years	10 years	10 years	Cleansing to be carried out as necessary
Surface Water Swales/Ponds	Monthly	visual inspection, remove litter, (during growing season) cut grass to max 150mm length, remove nuisance plants,		
	Half yearly	inspect outlets and facility surface for silt accumulation, establish appropriate silt removal frequencies, inspect vegetation coverage,		
	If bare soil >10% surface area			reseed areas of poor vegetation growth, altering plant species as appropriate
Gullies/Channels	1 year	1 year	N/A	Cleansing to be carried out as necessary
Catchpits	1 year	1 year	N/A	Cleansing to be carried out as necessary
Proprietary Products	3-6 months	Refer to individual manufacturers recommendations.		

CONCLUSION:

Should SUDS mechanisms be implemented on this site, water volume will be reduced through component (1) and/or (3) and the Local Sewerage Undertaker's requirements will be met by component (3).

Date	Description	Drawn	Chkd	Rev
10.12.20	Updated to reflect revised Architects' layout and levels.	AD	JA	P2
02.12.20	Initial issue	AD	JA	P1

Drawing Status: Preliminary

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Project: Food Enterprise Zone Holbeach

Title: SUDS Assessment

Drg Scale	Drawn	Checked	CHG job No.
1:500 @ A1	AD	JA	G610

Drawing Number: FEZ-CHG-XX-XX-DR-C-0001

Revision: P2

Do not scale

A1

0 10 20 30 40 50 100 150 200 300