

1. The site is located within Flood Risk Zone 1 (Low Risk), and is therefore not at risk of flooding from fluvial sources up to the 1:1000 year return period.
2. The proposed development site is less than 1ha in area and therefore in accordance with the NPPF no formal FRA is required.
3. The existing aboveground surface water drainage arrangements, including settlement ponds and cut-off ditches, were installed to serve the sites previous use as a contractors compound, which facilitate the construction of the wider business park. These features are now redundant and will be removed as the site is developed.
4. In addition to the above there are a number of infiltration blankets that have been installed at depth beneath the site. These features receive runoff from the wider business park.
5. Where possible the existing infiltration blankets will be retained beneath the proposed car park area.
6. The easternmost infiltration blanket conflicts with the position of the proposed building, and therefore this blanket will be removed, and the lost volume will be compensated for elsewhere within the development on a like-for-like basis.
7. The surface water strategy for the proposed development follows the drainage hierarchy, with all runoff being discharged via infiltration and having capacity to accommodate the 100 year return period, with 40% allowance for climate change.
8. Existing infiltration results undertaken to support previous developments and to inform existing on-site infiltration blankets has been referenced to establish design infiltration rates for this scheme.
9. The external parking areas will drain via permeable paving, offering water quality treatment and attenuation storage, whilst the buildings will drain to a geocellular soakaway, with secondary controlled discharge and high-level overflow to a new infiltration blanket.
10. All soakaway features should seek to half-drain within 24 hours, in up to the 100 year storm with 40% climate change. The preliminary model for the geocellular soakaway suggests it will only half-drain in 24 hours in up to the 30 year storm with 40% climate change. DCC have confirmed this can be accepted, providing there are sufficient measures in place to mitigate risks from exceedance flow.
11. As agreed with DCC for the previous consent (DCC ref. 16/1215/OUT), this latest application offers sufficient storage volume within the proposed Infiltration Blanket to accommodate two 100 year return period storms, with 40% climate change. Further exceedance flows which overwhelm the drainage features would be directed towards the southern extents of the site, where flows would be intercepted by an existing cut-off ditch.
12. Foul flows from the development will gravitate to the existing pumping station located immediately north of the site. The 24hr emergency storage provision will be assessed and up-sized if necessary. The pumping station pumps flows to South West Water's existing foul sewer network beneath Grenadier Way.
13. All drainage will be private and must be maintained throughout its lifetime by the respective building owner, operator or appointed management company, in accordance with CIRIA C753 Chapter 32.

"In accordance with CIRIA C753 Para. 13.4.1, DCC's Flood Risk Management team have confirmed that designing the storage to half empty in 24 hours up to the 1:30 year event can be agreed, providing there are sufficient measures in place to mitigate risks from exceedance flow. As agreed with DCC for the previous consent (DCC ref. 16/1215/OUT), this latest application provides additional storage within the downstream soakaway (ref. Infiltration Blanket) to accommodate two consecutive 100 year return period storms, with 40% climate change.

<u>Infiltration Blanket</u>	
Catchment	Receives peak 0.3 l/s from u/s geocellular soakaway
Dimensions	21m x 8m x 0.8m deep
Porosity	35%
Infiltration Rate	0.00878m/hr
Peak infiltration	0.1 l/s
Max 100yr+40%CC vol.	22.4m ³
Max 100yr+40%CC depth	0.380m
100yr half drain time	1379 minutes

Drained catchment	0.360 ha, 5.2 ha/b (drained surface: permeable surface)
Dimensions	33m x 10m x 0.6m deep
Porosity	30%
Infiltration Rate	0.00878m/hr
Peak Infiltration	0.3 l/s
Max 100yr+40%CC vol	34.0m ³
Max 100yr+40%CC of depth	0.468m
100yr half drain time	1066 minutes

Permeable parking bays will drain the car park area via infiltration, with approximate ratio 3:2 (drained surface:permeable surface).

Geocellular soakaway with secondary controlled discharge and high-level overflow to infiltration blanket (min. 5m offset from buildings).

Infiltration blanket to receive controlled discharge and excedance overflows from geocellular soakaway. The blanket has capacity to accommodate two 100 year return period storms with 40% allowance for climate change.

KEY

EXISTING DRAINAGE

Figure 1 illustrates the cross-section of a street and its various components. The components are arranged vertically from top to bottom: Gravity Foul Sewer, Foul Rising Main, Infiltration Blanket, Drainage Ditch, Private Surface Drain, Permeable paving, Cellular Storage, Infiltration Blanket, Relocated Infiltration Blanket, and Gravity Foul Sewer & Manhole. A blue arrow points from the Cellular Storage area towards the relocated infiltration blanket.

Permeable paving

Cellular Storage

Infiltration Blanket

Relocated Infiltration Blanket

Gravity Foul Sewer & Manhole

Permeable paving		Typical Catchment to Permeable Paving
Cellular Storage		Exceedance flow route



C	20.12.2019	UPDATED TO SUIT 2020 APPLICATION	TMR	CY	RW
B	29.11.2016	SUDS UPDATED TO SUIT LATEST G1 RESULTS	JR	CY	RW
A	20.09.2016	INITIAL ISSUE	GJ	CY	RW
REV	DATE	DESCRIPTION	BY	CHK	APD

CLIENT: _____

GRENADIER ESTATES

DRAWING STATUS: _____

PLANNING APPLICATION

PROJECT: EXETER BUSINESS PARK			
TITLE: PRELIMINARY DRAINAGE STRATEGY			
PROJECT No: 0533	DRAWING No: PDL-001	REV: C	
SCALE @ A1: 0 1:500 25 meters			

DESIGN BY:



The logo features a large orange circle on the left. Inside the circle, the lowercase letters 'awp' are written in white. To the right of the circle, the words 'awcockward' and 'partnership' are stacked vertically in a green, lowercase, sans-serif font.

Awcock Ward Partnership, Kendington Court, Woodwater Park, Pynes Hill, Exeter, EX2 5TY
Tel: 01392 449007 Web: www.awcockward.com