

PROJECT:	New barn Lane, North Bersted		Geosynthetics Ltd.
REFERENCE:	ADV_GCL_V2		Fleming Road, Harrowbrook Industrial Estate
DATE:	13-Oct-20		Hinckley, Leicestershire, LE10 3DU
CLIENT:	WSP (Rob Thomson)		Tel: 01455 617139 Fax: 01455 617140 Web: www.geosyn.co.uk

Document Ref: Report: GE18606/SA02/200415
1643-WSP-XXX-NBL-DR-C-0512 Rev C02

POND CALCULATION: Soil Surcharge over GCL			
CASE 1: WORST CASE Ground Water table WS06: 0.37m - 0.40m bgl			
Scenario: Cover soil thickness (m) =	0.835		
Pond height	1.765 m	Top level: 4.600m AOD	
Water table from base pond	1.365 m	Base pond: 2.835m AOD	
		GWL: 4.200m AOD	
<u>Surcharge pressure calculation</u>			
Unit weight water	10 kN/m ³		
H water table	1.365 m	(1.36m above pond base)	
Hydrostatic pressure	13.65 kN/m ²		
<u>Download pressure from soil surcharge</u>			
Unit weight soil	18 kN/m ³		
Thickness cover soil	0.835 m		
Download pressure cover soil	15.03 kN/m ²		
Net pressure GCL	1.38 kN/m ²		
Factor of Safety:	1.101 > 1.10	OK	

POND CALCULATION: Soil Surcharge over GCL			
CASE 2: Ground Water table WS06: >0.40- 0.70m bgl approx.			
Scenario: Cover soil thickness (m) =	0.68		
Pond height	1.765 m	Top level: 4.600m AOD	
Water table from base pond	1.105 m	Base pond: 2.835m AOD	
		GWL: 3.940m AOD	
<u>Surcharge pressure calculation</u>			
Unit weight water	10 kN/m ³		
H water table	1.105 m	(1.10m above pond base)	
Hydrostatic pressure	11.05 kN/m ²		
<u>Download pressure from soil surcharge</u>			
Unit weight soil	18 kN/m ³		
Thickness cover soil	0.68 m		
Download pressure cover soil	12.24 kN/m ²		
Net pressure GCL	1.19 kN/m ²		
Factor of Safety:	1.1077 > 1.10		

POND CALCULATION: Soil Surcharge over GCL			
CASE 3: Ground Water table WS06: >0.70 - 1.5m bgl approx.			
Scenario: Cover soil thickness (m) =	0.59		
Pond height	1.765 m	Top level: 4.600m AOD	
Water table from base pond	0.265 m	Base pond: 2.835m AOD	
		GWL: 3.100m AOD	
<u>Surcharge pressure calculation</u>			
Unit weight water	10 kN/m ³		
H water table	0.965 m	(0.96 above pond base or 0.6m above + 0.3m beneath)	
Hydrostatic pressure	9.65 kN/m ²		
<u>Download pressure from soil surcharge</u>			
Unit weight soil	18 kN/m ³		
Thickness cover soil	0.59 m	Minimum cover	
Download pressure cover soil	10.62 kN/m ²		
Net pressure GCL	0.97 kN/m ²		
Factor of Safety:	1.1005 > 1.10		

Location and response zone strata	Minimum depth to groundwater (m bgl)	Maximum depth to groundwater (m bgl)
WS01 River Terrace Deposits	0.23	1.50
WS02 Chalk	0.00	1.30
WS03 Chalk	0.33	1.52
WS04 River Terrace Deposits	0.03	1.56
WS05 River Terrace Deposits	0.10	1.65
WS06 Chalk	0.37	2.50

Table 2 Summary Of groundwater Monitoring (October 2019 to March 2020)

