



BRIGHT PLAN CIVILS

Project No: D1956
Project Name: Bilsham Road, Yapton
Sheet No: 1 (Basin 1)

BASIN LINER HYDROSTATIC UPLIFT ANALYSIS FOR SOFT CONSTRUCTION (@BED LEVEL)

Level Data:

Ground Level = 5.901 m
Depth to Groundwater = 1.03 m
Invert of Basin = 4.201 m
Level of Liner = 3.251 m

Thickness of surfacing layers above Liner:

Topsoil = 150 mm
Clay = 700 mm
Sand = 100 mm
TOTAL = 950 mm

Depth between
groundwater & Liner = 1.62 m

Hydrostatic Uplift = 16.15 kN/m²

Factor of Safety = 1.05

Min' downward force required = 16.96 kN/m²

DMRB, CD 350 (Highway Structures, for Dead loads = 1.32)

Densities:

Top Soil = 15.7 kN/m³
Clay = 22 kN/m³
Sand = 14 kN/m³

Weight of Topsoil = 2.36 kN/m²
Weight of Clay = 15.40 kN/m²
Weight of Sand = 1.40 kN/m²

Downward force of layers over liner (inc FOS of 0.9) = 17.24 kN/m²

Make-up over Liner OK

Anchor Trench:

Dimension =
Pond area = 0 m²
(Base exl sides)

Width	Height	Total Length
0	0	0

Weight of Clay = 0.00 kN

Total min downward force required over pond area = 0 kN

Total downwards force over pond area from layers over liner 0 kN

Total downward force from anchor trenches 0.00 kN

Total resisting force = 0.00 kN

Design Sufficient



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Project No: D1956
Project Name: Bilsham Road, Yapton
Sheet No: 1 (Basin 2)

BASIN LINER HYDROSTATIC UPLIFT ANALYSIS FOR SOFT CONSTRUCTION (@BED LEVEL)

Level Data:

Thickness of surfacing layers above Liner:

Ground Level = 6.015 m
Depth to Groundwater = 1.01 m
Invert of Basin = 4.795 m
Level of Liner = 4.345 m

Topsoil = 150 mm
Clay = 200 mm
Sand = 100 mm
TOTAL = 450 mm

Depth between
groundwater & Liner = 0.66 m

Hydrostatic Uplift = 6.58 kN/m²

Factor of Safety = 1.05

Min' downward force required = 6.91 kN/m²

DMRB, CD 350 (Highway Structures, for Dead loads = 1.32)

Densities:

Top Soil = 15.7 kN/m³
Clay = 22 kN/m³
Sand = 14 kN/m³

Weight of Topsoil = 2.36 kN/m²
Weight of Clay = 4.40 kN/m²
Weight of Sand = 1.40 kN/m²

Downward force of layers over liner (inc FOS of 0.9) = 7.34 kN/m²

Make-up over Liner OK

Anchor Trench:

	Width	Height	Total Length	
Dimension =	0	0	0	Weight of Clay = 0.00 kN
Pond area = 0 m ²				
(Base exl sides)	Total min downward force required over pond area = 0 kN			

Total downwards force over pond area from layers over liner 0 kN

Total downward force from anchor trenches 0.00 kN

Total resisting force = 0.00 kN

Design Sufficient



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Project No: D1956
Project Name: Bilsham Road, Yapton
Sheet No: 1 (Basin 3)

BASIN LINER HYDROSTATIC UPLIFT ANALYSIS FOR SOFT CONSTRUCTION (@BED LEVEL)

Level Data:

Ground Level = 5.644 m
Depth to Groundwater = 1.01 m
Invert of Basin = 4.164 m
Level of Liner = 3.464 m

Thickness of surfacing layers above Liner:

Topsoil = 150 mm
Clay = 450 mm
Sand = 100 mm
TOTAL = 700 mm

Depth between
groundwater & Liner = 1.17 m

Hydrostatic Uplift = 11.66 kN/m²

Factor of Safety = 1.05

Min' downward force required = 12.25 kN/m²

DMRB, CD 350 (Highway Structures, for Dead loads = 1.32)

Densities:

Top Soil = 15.7 kN/m³
Clay = 22 kN/m³
Sand = 14 kN/m³

Weight of Topsoil = 2.36 kN/m²
Weight of Clay = 9.90 kN/m²
Weight of Sand = 1.40 kN/m²

Downward force of layers over liner (inc FOS of 0.9) = 12.29 kN/m²

Make-up over Liner OK

Anchor Trench:

Dimension =
Pond area = 0 m²
(Base exl sides)

Width	Height	Total Length
0	0	0

Weight of Clay = 0.00 kN

Total min downward force required over pond area = 0 kN

Total downwards force over pond area from layers over liner 0 kN

Total downward force from anchor trenches 0.00 kN

Total resisting force = 0.00 kN

Design Sufficient



BRIGHT PLAN CIVILS

Project No: D1956
Project Name: Bilsham Road, Yapton
Sheet No: 1 (Basin 4)

BASIN LINER HYDROSTATIC UPLIFT ANALYSIS FOR SOFT CONSTRUCTION (@BED LEVEL)

Level Data:

Ground Level = 5.07 m
Depth to Groundwater = 1.22 m
Invert of Basin = 3.249 m
Level of Liner = 2.399 m

Thickness of surfacing layers above Liner:

Topsoil = 150 mm
Clay = 600 mm
Sand = 100 mm
TOTAL = 850 mm

Depth between
groundwater & Liner = 1.45 m

Hydrostatic Uplift = 14.47 kN/m²

Factor of Safety = 1.05

Min' downward force required = 15.19 kN/m²

DMRB, CD 350 (Highway Structures, for Dead loads = 1.32)

Densities:

Top Soil = 15.7 kN/m³
Clay = 22 kN/m³
Sand = 14 kN/m³

Weight of Topsoil = 2.36 kN/m²
Weight of Clay = 13.20 kN/m²
Weight of Sand = 1.40 kN/m²

Downward force of layers over liner (inc FOS of 0.9) = 15.26 kN/m²

Make-up over Liner OK

Anchor Trench:

Dimension =
Pond area = 0 m²
(Base exl sides)

Width	Height	Total Length
0	0	0

Weight of Clay = 0.00 kN

Total min downward force required over pond area = 0 kN

Total downwards force over pond area from layers over liner 0 kN

Total downward force from anchor trenches 0.00 kN

Total resisting force = 0.00 kN

Design Sufficient



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Project No: D1956
Project Name: Bilsham Road, Yapton
Sheet No: 1 (Basin 5)

BASIN LINER HYDROSTATIC UPLIFT ANALYSIS FOR SOFT CONSTRUCTION (@BED LEVEL)

Level Data:

Thickness of surfacing layers above Liner:

Ground Level = 4.948 m
Depth to Groundwater = 1.22 m
Invert of Basin = 3.1 m
Level of Liner = 2.225 m

Topsoil = 150 mm
Clay = 625 mm
Sand = 100 mm
TOTAL = 875 mm

Depth between
groundwater & Liner = 1.50 m

Hydrostatic Uplift = 14.98 kN/m²

Factor of Safety = 1.05

Min' downward force required = 15.73 kN/m²

DMRB, CD 350 (Highway Structures, for Dead loads = 1.32)

Densities:

Top Soil = 15.7 kN/m³
Clay = 22 kN/m³
Sand = 14 kN/m³

Weight of Topsoil = 2.36 kN/m²
Weight of Clay = 13.75 kN/m²
Weight of Sand = 1.40 kN/m²

Downward force of layers over liner (inc FOS of 0.9) = 15.75 kN/m²

Make-up over Liner OK

Anchor Trench:

	Width	Height	Total Length	
Dimension =	0	0	0	Weight of Clay = 0.00 kN
Pond area = 0 m ²				
(Base exl sides)	Total min downward force required over pond area = 0 kN			

Total downwards force over pond area from layers over liner 0 kN

Total downward force from anchor trenches 0.00 kN

Total resisting force = 0.00 kN

Design Sufficient



BRIGHT PLAN CIVILS

Project No: D1956
Project Name: Bilsham Road, Yapton
Sheet No: 1 (rev 1.2)

GEOCELLULAR STORAGE TANK HYDROSTATIC UPLIFT ANALYSIS FOR SOFT GROUND

Level Data:

Ground Level = 5.65 m
Depth to Groundwater = 1.1 m
Invert of Tank = 3.301 m
Top Level of Tank = 4.901 m

Depth of Penetration
in groundwater = 1.25 m

Hydrostatic Uplift = 12.49 kN/m²

Factor of Safety = 1.05

Min' downward force required = 13.11 kN/m²

Height of Tank = 1600 mm
TOTAL = 1600 mm

Thickness of surfacing above Tank:

Soil = 150 mm
Clay = 600 mm
TOTAL = 750 mm

Densities:

Top Soil = 15.7 kN/m³
Clay = 22 kN/m³

Weight of Topsoil = 2.36 kN/m²
Weight of Clay = 13.20 kN/m²

Downward force of layers over liner (inc FOS of 0.9) = 14.00 kN/m²

Make-up over TANK OK