DAEDALUS ENVIRONMENTAL

Nash Manor

Water Neutrality Statement

August 2024

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1 Introduction

1.1 This Statement

1.1.1 This Water Neutrality Statement accompanies an application to Horsham Council in respect of Permitted Development Rights for a new swimming pool to be constructed at Nash Manor, Nutbourne Lane, Nutbourne.

1.1.2 Developments granted under Parts 1 and 2 of the General Permitted Development Order (GDPO) have been screened out from having a significant impact on the issue of Water Neutrality (and therefore do not need to comply with Sections 75-78 of the Habitat Regulations). We have provided details of the Water Neutrality Position Statement in Appendix A. However, the site owner recognises that the initial filling of a swimming pool - whilst a rare occurrence – would typically have a greater impact on the water network than other developments granted under the GDPO.

1.1.3 In that respect, this Statement outlines how the site owner will not only mitigate, but completely eliminate, any impact on the public water network.

1.2 The Site Location



Figure 1: Site location

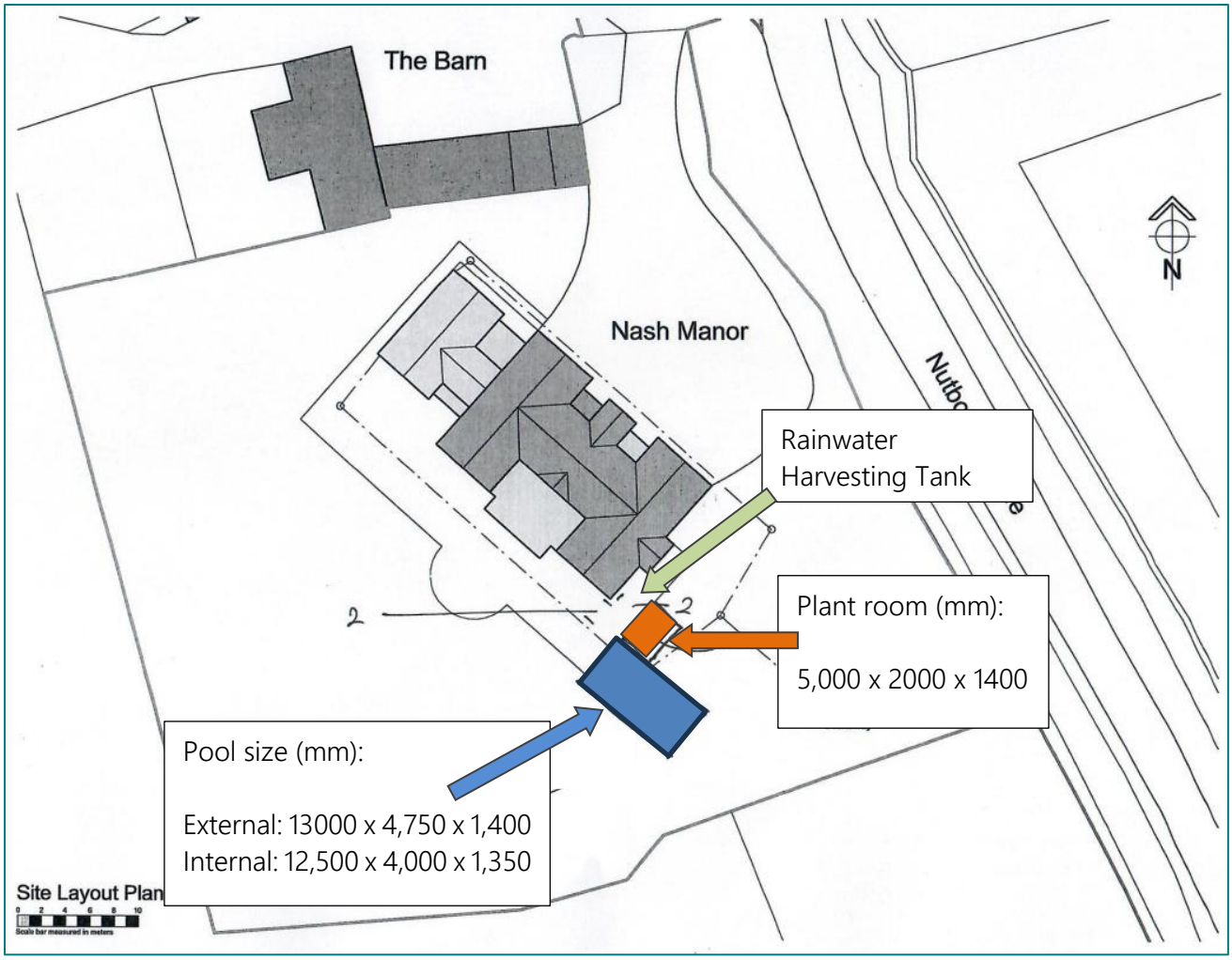


Figure 2: Site Layout Plan

1.3 Water Requirements and Initial Fill

1.3.1 The pool will have an initial filled volume of 67,500l. The water required for the initial fill will be from a tankered supply, brought in from outside the water neutrality area. This will mean there will be no impact on the existing water network.

1.3.2 The site owner has already identified two potential suppliers, has obtained two quotations, and these can be supplied on request. The first is based in Earls Colne (Essex) and the second in Basingstoke (Hampshire).

1.3.3 Over time, water will be lost to a combination of evaporation, cleaning/filtering, and simply via the use of the pool (as people get in and out). The estimates of this loss on an annual basis are therefore calculated using date provided by the Swimming Pool and Allied Trades Association, which can be found here: Water Losses - SPATA. These estimates indicate that for an uncovered outdoor pool, the water losses will be in the region of up to 30mm per week. In a pool of this size, that equates to 1.5m^3, or 78,000l per annum.

2 Mitigating Losses

2.1 Pool Cover

2.1.1 Given the potential losses, the site owner will also install and automated pool cover. The Coverstar Automated Pool Cover (details of which are provided as an appendix to this document (see Appendix B).

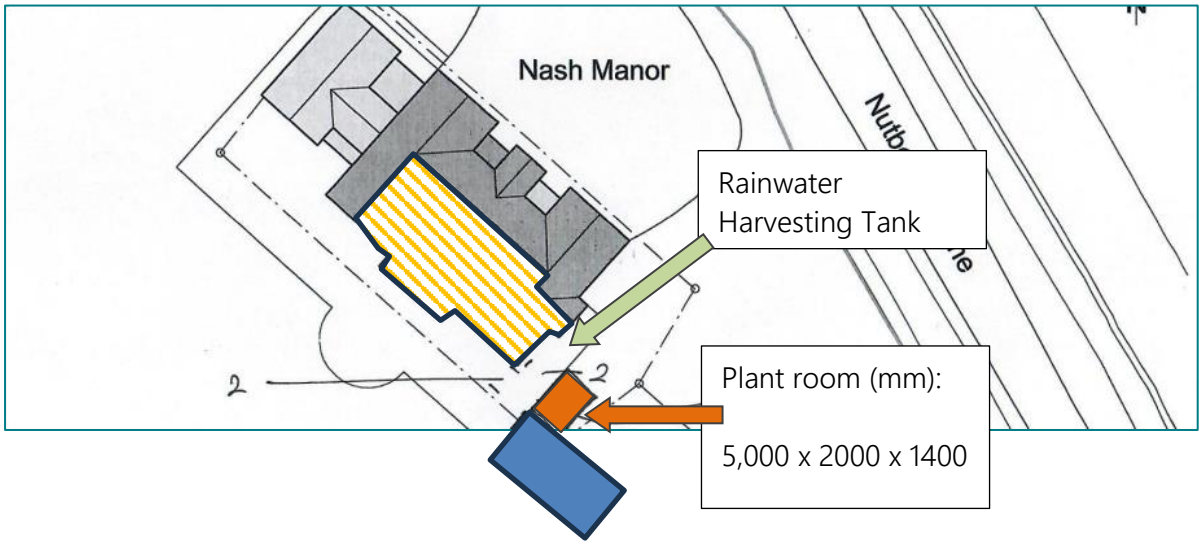
2.1.2 The reduction in water losses as a result of using the pool cover are estimated by the manufacturer to be up to 90%, and there are commensurate savings in heating costs of up to 70%. On this basis, we can reasonably expect the annual refill requirements to be reduced from 78,000l to around 8,000l per year.

2.2 Rainwater Harvesting

2.2.1 Natural rainwater fill will occur over the course of a year. In this region, the annual average rainfall is 858mm (see Appendix B for the Met Office rainfall data), which over an area of 50m^2 equates to around 42,900l. This is far in excess of the c.8,000l per annum losses calculated above. Not all of this rainfall will end up in the pool of course, given the introduction of a pool cover. Furthermore, the timing of the rainfall will not entirely align with the periods of peak loss in the summer. Using data from Weather Trends, around 36% of the rainfall in Sussex arrives in the period April to September.

2.2.2 On a very simplistic but conservative basis, therefore, we could expect around 15,400l of rainfall to hit the pool in the summer months. This still exceeds the annual refill requirement. However, we also expect there will be periods of drought (especially with growing climate change impacts) and therefore, in order to complement any natural rainwater fill, and supply this additional top up during times of need, a small rainwater harvesting tank will also be installed to gather water from the roof of the pool plant building.

2.2.3 The applicant is therefore going to install a new rainwater harvesting tank that feeds from the entire southern elevation of the main house, shown hatched below. The rainwater harvesting volume available and required is calculated on the following page.



Indicative Rainwater Harvesting Calculations		
Rainfall in this location	792	mm/a
Collectable rainfall volume	0.858	m^3/m^2
Collection Area (17x7.3m, rounded down)	120	m^2
Max collectable rainfall volume	102.96	m^3/a
Hydraulic filter efficiency	0.9	
Yield co-efficient	0.8	
Actual annual collection volume	**74.13**	**m^3/a**
Actual annual collection volume	**74,131**	**l/a**
Demand (annual - losses)	**8,000**	
TOTAL	8,000	l/a
Tank size estimate (35 days' drought allowance)	767	l
Tank size estimate (35 days' drought allowance)	0.767	m^3

Table 1: Rainwater harvesting sizing

2.1.1 On this basis, a tank of 1.5m^3 would be double the minimum size to support the topping up needs of the pool, whilst also taking account of potential drought periods. In order to manage the pool water quality, this will be installed alongside a 2.6m^3 backwash tank into which the stored rainwater will flow, mixing with back wash water, prior to aeration and filtration. This enables the pool to be topped up automatically by the rainwater as required.

2.1.2 One key point to note is that this water can also be made available for window and car washing, and for watering the garden, meaning that overall the property will be using less water than prior to when the pool is installed.

2.1.3 The specification of the 1.5m^3 tank to be installed is in Appendix D.

3 Conclusion

3.1.1 This Water Neutrality Strategy has been produced to support the installation of a new outdoor swimming pool at Nash Manor. Whilst the requirements of Water Neutrality do not, strictly speaking, apply to this proposal as a Permitted Development, the site owner is keen to ensure that the installation of the pool does not – in practice – exacerbate any issues of water availability and abstraction locally.

3.1.2 To that end:

- All the water required for the initial filling of the pool will be tankered in from outside the water neutrality zone
- The ongoing requirements of water replacement lost through general use and evaporation, will be met using rainwater collected either directly in the pool, or stored in a small harvesting tank located adjacent to the pool's plant building

3.1.3 There will therefore be zero impact on the public water network as a result of these proposals.

4 Appendix A – Water Neutrality Position Statement

Natural England's Position Statement for Applications within the Sussex North Water Supply Zone (September 2021 Interim Approach)

2.2.4 Natural England's Position Statement has been produced following concerns over the adverse effects of existing groundwater abstraction on the integrity of Arun Valley, specifically Arun Valley Special Conservation Area, Arun Valley Special Protection Area and Arun Valley Ramsar site, and the potential impacts of further development on these areas.

2.2.5 To ensure that new developments do not exacerbate this situation, Natural England has advised that all new development proposals within the Sussex North Water Supply Zone (see Appendix A) must demonstrate water neutrality. Natural England define water neutrality as follows:

For every new development, total water use in the region after the development must be equal to or less than the total water use in the region before the new development.

2.2.6 The local authorities in the area are working with Natural England to secure water neutrality through a water neutrality strategy. In the interim, Natural England have advised the following approach:

Minimising water use of new builds.

- Complete a water budget (based on occupancy)
- All new builds to demonstrate that they can achieve strict water targets (e.g., 85L/pp/day*)

This can be achieved by measures such as:

- Grey water recycling (advantage of being reliable in hot dry weather);
- Rainwater harvesting;
- Water efficient fixings (such as shower aerators) to demonstrably reduce demand-this would need to be suitably certain.

In addition, water offsetting is required

- One way to achieve this is retrofitting of council owned properties/commercial buildings-located within Sussex North. Examples include:
- Grey water recycling- (for example there are clear opportunities for commercial properties).
- Rainwater harvesting of commercial settings;
- Installation of water reduction fittings in Council-owned buildings.

These measures need to be implemented until such time as a more sustainable water supply has been secured.

It will also need to be ensured that measures are not already proposed (for example in Southern Water's Management Plan) to avoid double-counting.

Any mitigation must be suitably certain in order to comply with the Habitats Regulations and Caselaw.

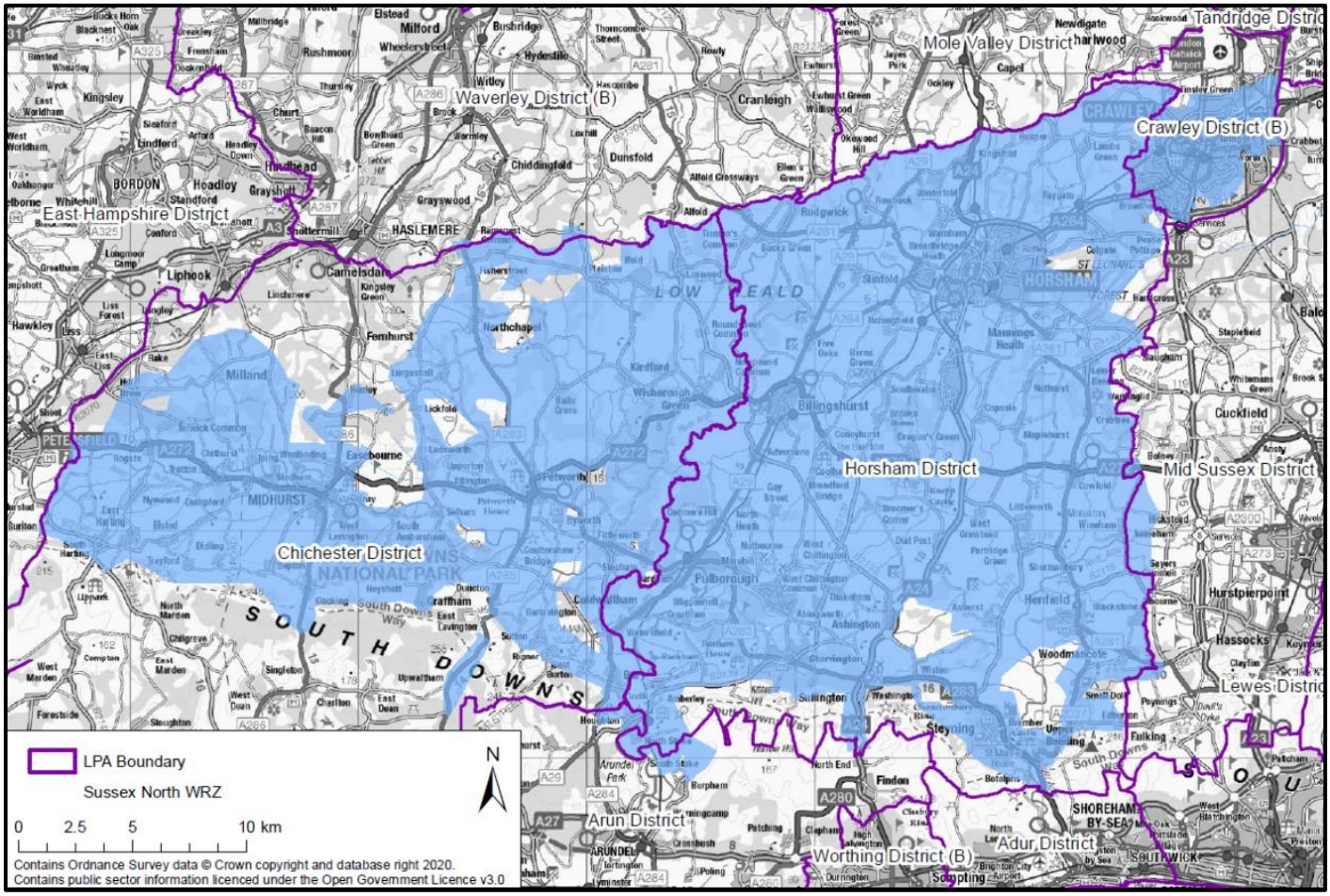


Figure 3: Map of the affected area

5 Appendix B – Met Office Rainfall Data

North Heath

Location: 50.99321, -0.47659 **Altitude:** 21 m above mean sea level **Station type:** Observing Site

Average tables | Average graphs | Location comparison | Average maps

Climate period: 1991-2020

Station: North Heath

Month	Maximum temperature (°C)	Minimum temperature (°C)	Days of air frost (days)	Sunshine (hours)	Rainfall (mm)	Days of rainfall ≥1 mm (days)	Monthly mean wind speed at 10 m (knots)
January	8.55	2.52	–	55.25	92.33	–	–
February	9.02	2.24	–	83.04	63.49	–	–
March	11.74	3.44	–	117.86	52.58	–	–
April	14.83	4.64	–	170.19	52.57	–	–
May	17.61	6.99	–	205.07	46.86	–	–
June	20.65	9.68	–	199.60	55.92	–	–
July	23.31	11.77	–	215.93	63.28	–	–
August	22.99	11.58	–	196.60	63.61	–	–
September	19.93	9.46	–	148.17	63.38	–	–
October	15.89	7.06	–	109.26	103.33	–	–
November	11.89	4.40	–	66.22	103.13	–	–
December	9.20	2.62	–	54.06	98.22	–	–
Annual	15.50	6.39	–	1621.25	858.70	–	–

7 Appendix C – Coverstar Brochure

Provided separately.

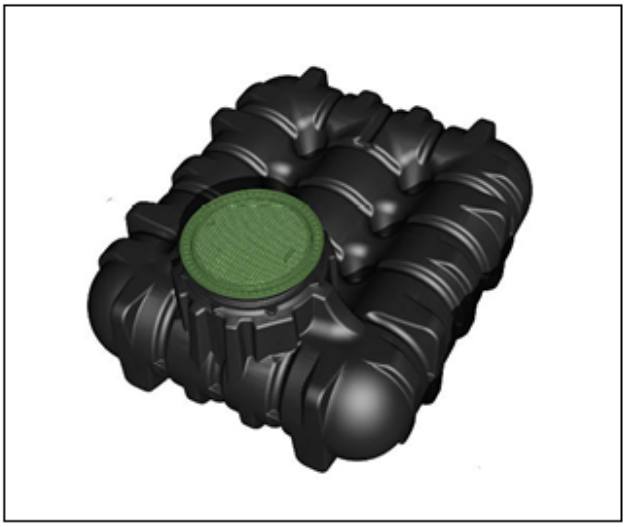
mail@graf.info
www.graf.info

GRAF

Installation and maintenance instructions for PLATIN Rainwater Underground Tank

PLATIN

1500 L	Order No. 390000
3000 L	Order No. 390001
5000 L	Order No. 390002
7500 L	Order No. 390005



The points described in these instructions must be observed under all circumstances. All warranty rights are invalidated in the event of non-observance. Separate installation instructions are enclosed in the transportation packaging for all additional articles purchased from GRAF.

Missing instructions must be requested from us immediately.

The tank must be checked for any damage prior to insertion into the trench under all circumstances.

Missing instructions can be downloaded on www.graf.info or can be requested from GRAF.

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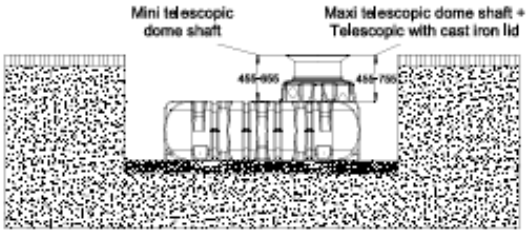
8 Appendix D – Rainwater Harvesting Tank Specification

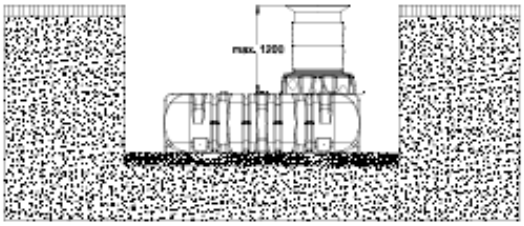
2. Installation conditions

Coverage heights with telescopic dome shaft in green areas.



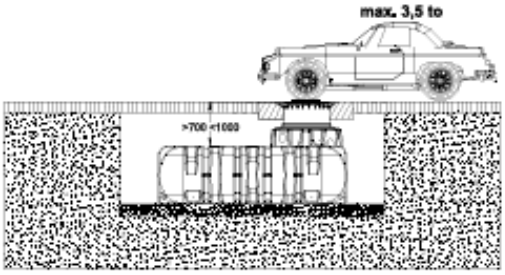
Maximum coverage heights with extension and telescopic dome shaft.

(in green areas only – not under passable areas)



Cover heights with cast iron telescopic dome shaft (class B) in area driven over by vehicles up to 3.5 tonnes.

(without groundwater and stratum water)

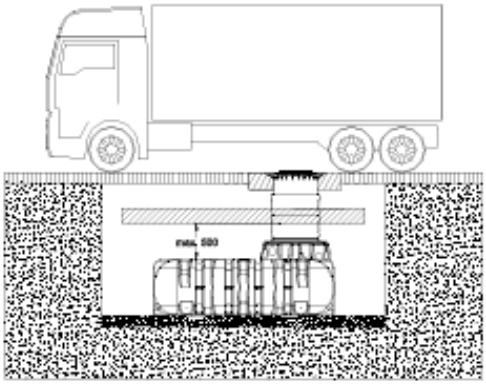


Cover heights with cast or HGV-bearing telescopic dome shaft

(with cover class B or D – provided by customer), in area driven over by HGVs.

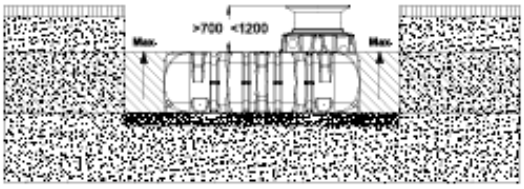
(without groundwater and stratum water)

Please note: HGV can only be driven over if a self-supporting, (Steel)-reinforced concrete plate is installed



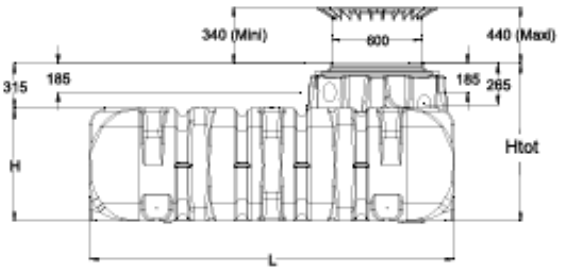
Coverage heights on installation in groundwater – the hatched area specifies the permissible immersion depth for the tank.

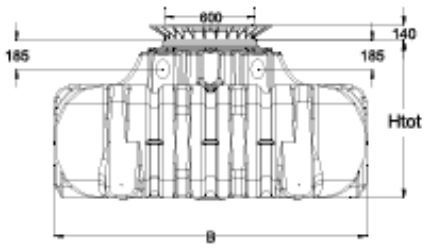
(not under passable areas)



3. Technical data

3.1 Technical Data Platin
(1500 L, 3000 L, 5000 L, 7500 L)





3.2 Overview tanks Platin

Tank	1500 L	3000 L	5000 L	7500 L
Art. No.	390000	390001	390002	390005
Weight	82 kg	180 kg	250 kg	380 kg
L	2100 mm	2450 mm	2890 mm	3600 mm
W	1250 mm	2100 mm	2300 mm	2250 mm
H	700 mm	735 mm	1000 mm	1250 mm
Htot*	1015 mm	1050 mm	1315 mm	1565 mm

* Htot = total height