



Drainage Technical Note



Land at The Chocolate Factory

For

WTEG Associates



Project Ref: 8143
Date: August 2026



Consulting Structural and Civil Engineers

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Approved by: Lee Wilson (Director)

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1.0 Introduction and General Comments

- 1.1 This technical note has been prepared to address Condition 16 and 17 of an outline planning approval dated 15th February 2019, Ref HGY/2021/0624 (S96 NMA to HGY/2017/3020). *'The partial demolition, change of use and extension of the existing Chocolate Factory buildings, together with the demolition of the remaining buildings and redevelopment of the site to provide four new build blocks ranging in height from three to 18 storeys. The mixed-use development includes 10,657 sq.m (GIA) of commercial floorspace (flexible Use Classes A1, A3, B1, D1 and D2), 230 Class C3 residential units, associated residential and commercial car parking, public realm works and access.'*
- 1.2 The details in the report relates specifically to Block E1 of the approval.
- 1.3 Conditions 16 and 17 of the approval reads as follows;

Condition 16 - Sustainable Drainage Details

Prior to commencement of Block A, B, D, E1, E2 and F (other than site investigations, demolition and site clearance) hereby approved, amended pro-forma (with resulting coefficient value (CV) value of 1) and microdrainage calculations (accounting for the CV change and using FEH methodology) for that block shall be submitted to and approved in writing by the Local Planning Authority. The sustainable drainage scheme shall be constructed in accordance with the approved details and thereafter retained.

Condition 17 - Drainage Management Maintenance Schedule

Prior to occupation of Block A, B, D, E1, E2 and F hereby approved, a Management Maintenance Schedule outlining who will be responsible for the maintenance of the pumps and tanks serving that block for the lifetime of the development shall be submitted to and approved in writing by the Local Planning Authority. The Management Maintenance Schedule shall be constructed in accordance with the approved details and thereafter retained.

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2.0 Surface Water Drainage and SuDS Methodology

- 2.1 A flood risk assessment and drainage strategy for the entire site was prepared by GTA Civils Consulting Ltd Ref 6079: Dated Nov 2016. The laid out the proposed strategy for the site that being the provision of Sustainable Drainage systems and the reduction of run off to green field rates. The drainage design has been developed to broadly follow the strategy approved at planning and outlined in the GTA drainage report.
- 2.2 The GTA report laid out maximum discharge rates based on green field run off calculations for each parcel of the development. The strategy assumed that blocks E1 and E2 would be combined in terms of drainage, however due to phasing of the development this has not been the case. As such Block E1 to which this report relates will have its own drainage network independent of Block E2.
- 2.3 Greenfield runoff calculations for this parcel have been carried out and can be found in **Appendix 3** of this report. Qbar and the 1 in 1 run of rates equate to 0.3l/s with the 1 in 100year run-off rate calculated at 1.1l/s. The Qbar and 1 year event rates are so considered too small to be practically possible to achieve on site without the risk of blockages and as such a flow rate of 1l/s has been taken for all storm events up to and including the 1 in 100 year Plus 40% climate change event.
- 2.2 Due to site restriction and soil conditions on the site the drainage approach will be as follows
- Surface water to discharge to the existing surface water sewer system on the site.
 - A green roof is to be provided to parts of the building where appropriate, provide biodiversity and improve water quality.
 - Tanked permeable paving will be used to drain external areas and provide both attenuation and treatment.
 - Discharge rates will be restricted to 1l/s (as close to greenfield rates as practically possible) and attenuation will be provided for all storm events up to and including the 1in 100year event plus 40% climate change allowances within an underground cellular storage tank and the permeable paving system.

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3.0. Maintenance and Management.

- 3.1 General maintenance inspections should be carried out on a yearly basis unless noted otherwise in this report.

During any routine inspection, the condition of manhole covers, gully gratings, channel drains etc. should be checked for damage, deformation and settlement. Settlement of paved surfaces may be an indication of a collapsed sewer / drain, check the position of the fault against known drainage runs i.e. between manholes.

- 3.2 Manholes - The most common problems are settlement of levelling brickwork and break up of mortar bedding / benching to the frame. Block paving is a particular problem around the manhole frame where there are often small 'cuts' of paving with insufficient bedding, resulting in the rapid displacement of the pieces. Remedial action is to re-bed the segments in mortar and dust with dry paving sand. Other problems may not be apparent unless the manhole cover is lifted to expose the chamber, benching and channels. With correctly constructed manholes there should be no need to visually inspect for at least five years. On inspection, the following should be checked:

- Infiltration, ground water entering the chamber through construction joints, seepage or squirting / gushing (proprietary sealants are available but excavation and partial reconstruction may be required).
- Damaged benching should not really occur unless by high pressure infiltration or poor construction. Check for deposition of detritus which may cause blockages of the sewer / drain. Can normally be jetted or hosed clear, larger items will need to be removed.

- 3.3 Deep chambers, over 1.5m in depth must not be entered unless two fully trained persons are present and only if gas monitoring equipment is available. Note, also that it may take two persons to lift the cover, using only the correct keys.

- 3.4 Pipelines are designed to be self-cleansing so should not require regular maintenance. Maintenance will therefore be restricted to resolving problems as they occur such as blockage or collapse.

- 3.5 Gully pots or chambers should be inspected and cleared out annually by suitable plant.

- 3.6 Channel drains, particularly gratings are susceptible to damage in heavily trafficked areas. The channels are designed to be self-cleansing but should be checked for signs of blockage and jetted as necessary.

- 3.7 Control chambers shall be inspected annually after leaf fall in autumn to ensure that water is free flowing and that the outlet is unobstructed, Any debris or silt to be removed.

- 3.8 Remedial actions are to be carried out following identification of the problem(s). The works must only be undertaken by a reputable civil engineering contractor, carrying appropriate public liability insurance.

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Adoptions

3.9 Upon completion of the development management and maintenance of the drainage and SuDS features on the site will fall to a private management company set up by the developer These include;

- 1 No flow control device
- 1 no cellular storage tank
- Permeable paved access areas
- Green roofs

3.10 Maintenance and management schedules for the SuDS features are included below;

Permeable paving maintenance shall be as per the Table 3-1 below

Table 3-1: Permeable Pavements: Operation & Maintenance Requirements		
Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Brushing & Vacuuming (Standard cosmetic sweep over whole surface)	Three times/year at end of winter, mid-summer, after autumn leaf fall, or as required based on site specific observations of clogging or manufacturers' recommendations.
Occasional Maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying	As required - once per year on less frequently used pavements
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level of the paving.	As required
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial inspection.	Monthly for 3 months after installation.
	Inspect for evidence of poor operation and/or weed growth. If required, take remedial action.	3-monthly, 48hrs after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually.
	Monitor inspection chambers	Annually.
Source: CIRIA C753, Table 20.15		



Green Roof maintenance shall be as per the Table 3-2 below

Table 3.2 Green Roof Maintenance Requirements		
Maintenance Schedule	Required Action	Frequency
Regular Inspections	Inspect all components including soil substrate, vegetation, drains, irrigation systems (if applicable), membranes and roof structure for proper operation, integrity of waterproofing and structural integrity	Annually and after severe storms
	Inspect soil substrate for evidence of erosion channels and identify any sediment sources	Annually and after severe storms
	Inspect drain inlets to ensure unrestricted run off from the drainage layer to the conveyance or roof drain system	Annually and after severe storms
	Inspect underside of roof for evidence of leakage	Annually and after severe storms
Regular Maintenance	Remove litter & debris to prevent clogging of inlet drains and interference with plant growth	6 monthly and annually or as required
	During establishment (i.e year one), replace dead plants as required	Monthly (but usually responsibility of manufacturer)
	Remove fallen leaves and debris from deciduous plant foliage	6 Monthly, or as required
	Post establishment, replace dead plants as required (where >5% of coverage)	Annually in autumn
	remove nuisance and invasive vegetation and weeds	6 Monthly, or as required
	Mow grass, prune shrubs and manage other planting (if appropriate) as required -Clippings should be removed and not allowed to accumulate	6 Monthly, or as required
Remedial Actions	If erosion channels are evident, these should be stabilised with extra soil substrate similar to the original material, and sources of erosions damage should be identified and controlled	As required
	if drain inlet has settled, cracked or moved, investigate and repair as appropriate	As required
Source: CIRIA C753, Table 12.5		



Cellular tank maintenance shall be as per the Table 3-3 below

Table 3-3: Cellular Storage Tanks: Operation & Maintenance Requirements		
Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, then six monthly
	Debris removal from catchment surface (Where may cause risk to performance)	Monthly
	Where rainfall infiltrates into blocks from above, check surface filter for blockage or silt, algae or other matter. Removal and replace surface infiltration medium as necessary	Monthly (and after large storms)
	Remove sediment from catch pit manholes	Annually, or as required.
Remedial Actions	Repair /rehabilitation of inlets, outlets, overflows and vents	As required
Monitoring	Inspect / Check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed.	Annually and after large storms
Source: CIRIA C753		



Appendix 1

Proposed Drainage Plan

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Appendix 2

FLOW Critical Storm Simulation Calculations

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Appendix 3

Greenfield Run-off Calculations

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