Trial holes and soakage tests will be completed in due course. The following design
philosophy takes this onboard.
Surface Water Drainage Strategy
Full consideration has been given to implementation of SUDs techniques within the
surface water drainage design strategy.
There are known to be no adopted surface water sewers or watercourse within the
immediate vicinity of the site.
Given the topography of the site and development scale, the following measures have
been considered appropriate to be introduced into the drainage design.

i) All roof areas to discharge via a crate–type soakaway. This has been designed to
withstand runoff generated from a 1:100 year storm event, plus an additional allowance of 30% to account for the potential effects of climate
change. Given the lack of test data, the soakaway size is determined by the
storage capacity required, in accordance with BSEN752:Part4.

ii) The driveways are to be construction of permeable block paving. This measure will also serve to improve water quality prior to final discharge to the
subsoils. Whilst being allowed to infiltrate so far as is possible, a perforated
pipe, acting as a fail–safe overflow, will connect to the SW drainage system.
iii) A silt trap is to be provided upstream of the soakaway to capture and residual silt and leaf debris and hence improve its longevity.
The design rainfall for this development for a 1:100 year (+30% climate change) 360min storm event.
Calculations to support the design of the soakaways are included as Appendix (i).
A proposed Management and Maintenance Plan is included as Appendix (ii).
Given the location of the proposed soakaway, adoption by a public authority or statutory undertaker will not be possible.
Rainwater discharging from the roofs will first be passed through an underground rainwater harvesting tank, first screened by a leaf filter, with integral pump set to enable draw–down for irrigation purposes. The tank will have 3000 litre capacity, with an overflow connected to two soakaways.

Surface Water Drainage Network & Soakaway
The main means of surface water disposal from the is by way of a privately maintained gravity sewer, discharging via a soakaway to be located in the rear and front garden.

Owner will ensure that the following measures are undertaken to ensure the longevity of the surface water drainage system;

Quarterly, or after periods of significant or prolonged rainfall.
i) The Freeholder is to inspect the performance of the soakaway by checking that the outlet from the upstream silt trap is free of obstruction and visible (ie not submerged). If the outlet pipe is submerged and the soakway fails to drain below ground–level within 7 days of a significant or prolonged rainfall event then remedial action may be required.

ii) As a last resort, excavate and remove soakaway crates. Thoroughly clean and reinstate soakaway by reconstructing as per attached detail, ensuring any damaged crates are replaced with new.

Annually
i) Select approx. 20% of the surface water inspection chambers (situated in accessible areas belonging to their property) and inspect for blockages / silt
build up. Remove silt and debris. Rotate on a 5 yearly cycle to cover all such chambers over this period.
Every 5–10 years (depending on outcome of aforementioned inspections) i) Commission a CCTV survey and report on condition of the surface water piped
drainage system upstream of the soakaway to check for structural integrity and hydraulic fluidity. Carry out promptly any remedial work as advised by
CCTV company.

Permeable Paving
The driveway is to be constructed in permeable block paving in order to; a) Reduce the surface water runoff volume from these areas into the drainage
system. b) Enhance the quality of the rainwater percolating through the surface before discharging into the ground below. The Owners will ensure that the following measures are undertaken to ensure the longevity of the permeable pavement;
Quarterly
i) Inspect the permeable pavement for signs of ponding and ensure there is no migration of soils from adjacent landscaped areas or other deleterious material that may prematurely clog up the jointing stone situated in the gaps between the blocks. Ideally this type of inspection should be undertaken immediately following a heavy rainfall event.

ii) Commission vacuum sweeping and brushing of the pervious pavement to ensure joints are kept free of silt. Minimum 1 sweeping per year, ideally after Autumn leaf fall.

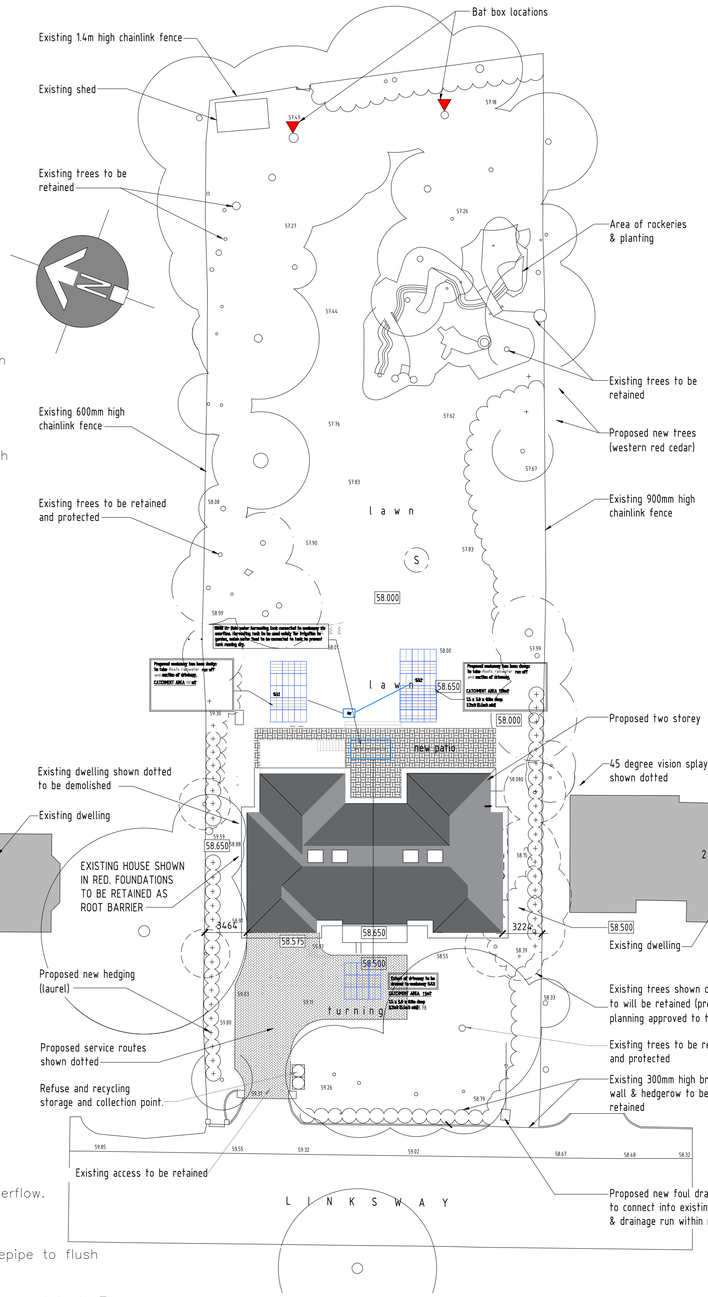
The company commissioned to carry out this work should ensure that their vacuum equipment is adjusted accordingly to avoid removal of jointing material. Any lost material should be replaced promptly to avoid the blocks from being dislodged.

Last Resort Remedial Action
i) Should a portion of the pervious pavement become substantially impervious due to excessive siltation, the following procedure should be followed;
a) Lift block paving and laying course
b) Break out underlying bitmac base layer and replace with similar
compacted depth of course aggregate subbase material to BS EN
13242:2002 Type 4/20, wrapped in geotextile as Terram 1000 or similar.
c) Renew laying course, replace blocks and renew jointing material
NB. Material removed from the voids or the layers below the surface may contain heavy metals and hydrocarbons and as such may need to be disposed of as 'controlled waste.
Rainwater Harvesting Tank
The Freeholder will each ensure that the following measures are undertaken to ensure the longevity of their small scale rainwater harvesting system;
Filter clean/check. (1–2 times per year.)
Self–cleaning filters provided with the system discards leaves and debris from the roof into the overflow. Filters need a simple check 1–2 times per year for any major debris blocking the filter.

Recommend checking before and after the Autumn.
Take manhole cover off tank. Reach down and remove filter lid. If a blockage is found use a hosepipe to flush debris into overflow.
Tank clean (once every 5–10 years)
Although filters remove all major debris, around 0.5 – 1cm of fine silt may build up in the underground tank. The calmed inlet prevents this silt being dispersed around the tank during a heavy rainfall.
Remove manhole cover from tank. Drain tank down (if possible, water plants so water is not wasted) use a pressure washer inside the tank to clean all surfaces inside. Use a dirty water pump to drain tank of remaining water. Repeat process if necessary.

Site Conditions

The site lies within Flood Zone 1 (an area at low risk of fluvial flooding).
The site lies outside any designated Groundwater Source Protection Zone.
There is a SW sewer located within Links Way according to Thames Water Asset location
search.
It is our understanding that properties within the Copsewood Estate discharge surface
water into soakaways and soft landscaping.



SITE LAYOUT PLAN - SCALE 1:250

Soakaway Calculations

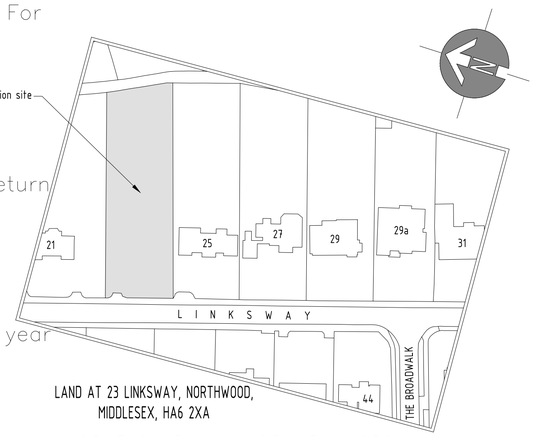
HR Wallingford Rainfall Depth Calculation For
23 LINKS WAY, NORTHWOOD.

1. Read from maps
M5–60 = 20mm
R = 0.42

2. Determine rainfall depth for 5 year return period for 360 minute Duration.
Z1 from Fig A.3A or A.3B = 1.65
M5–D=Z1(M5–60)
M5–360=1.65 x 20 = 33mm

3. Convert 5 year rainfall depth to 100 year rainfall depths
Z2 from Table A1 = 1.933
MT–D=Z2(M5–D)
M100–360=1.933 x 33mm = 63.79mm

4. Add allowance for climate change
MT–D + Climate Change=MT–D(1.3)
= 63.79 x 1.3 = 82.93mm rainfall depth



LAND AT 23 LINKSWAY, NORTHWOOD,
MIDDLESEX, HA6 2XA

LOCATION PLAN - SCALE 1:1250

SCALE BAR (m)
0 25 50 75 100 125

LEGEND

Proposed two storey building	
Existing structures to be demolished	
Proposed structural slab level	SL 58.500
Existing levels	58.78
Proposed Levels	58.800
Surface water soakaways	S
Rain Water Harvesting Tank	RWHT
Proposed service routes	

FOR TREE AND GROUND PROTECTION DETAILS PLEASE REFER TO GHA ARBORICULTURAL REPORT

SCALE BAR (m)
0 5 10 15 20 25

rev: date: description: 0.236 ha
scale: 1 : 250 A1 date: 12 / 12 / 2018
drawing no: 1233 / P12 / 1 drawn: AT
drawing:
PLANNING DISCHARGE OF CONDITION 10
LAYOUT PLAN
project: LAND AT 23 LINKSWAY, NORTHWOOD, MIDDLESEX, HA6 2XA
client:
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