Tooting Common Flood and Water Management Proposals - July 2021
Triangle Play Area, Bedford Hill, Woodfield Woodland.

Introduction

1.0 The purpose of this report is to set out the key factors and issues for consideration in the management of water and in particular flood situation in the northern section of Tooting Common. This is in a context of increasingly changeable and extreme weather patterns. Tooting Common and open space in general have also seen increased use and footfall over recent years and in particular during periods of lockdown. Land use change and development in the surrounding urban environment also puts pressure on often old infrastructure which was not designed to handle the volumes and usage requirements of current conditions and inputs. One of the end results has been an increase in the amount of the common land being affected by flood water and an increase in the amount of time these spaces remain unusable.

1.1 The increase in frequency and duration of these events not only cause disruption to access and connectivity but may well cause damage to path networks, rail, infrastructure and private property as well as causing damage to habitat, leading to loss of species or changes in habitat type. Flooding can also lead to pollution and contamination of the common through road run off from local roads or the mixing of sewage with surface water. To a certain extent, periods of flooding are a natural and seasonal aspect of the Common which is part of the local catchment which forms part of the wider Thames flood plain. The geology of this part of the Common largely consists of London clay and therefore actively retains water and slows its dissipation to ground water.

1.2 This report will identify appropriate opportunities to work with the natural and built environments and key local stakeholders to optimize the potential of Tooting Common to adapt to flood events. Importantly, a balance must be struck to not only look at initiatives that can help reduce flooding impact but also take into consideration the many different habitats, community facilities and surrounding infrastructure, as well as the connectivity of Tooting Common to the surrounding locality. The application of these proposals will reduce the impact of flooding and ensuring that accessibility and connectivity remain uninterrupted for as long as possible throughout the year.

1.3 The Commons can play a role in managing flood events through some of the open spaces being used as flood alleviation/storage therefore reducing the impact of flooding on private property and surrounding built infrastructure. However, it is important that flood alleviation is managed wherever possible and takes into account the use of the site by local residents and visitors to avoid negative impacts and loss of provision of facilities or habitats.

1.4 It is also important to note that there will be certain extreme weather conditions and periods of year when flooding will occur regardless of the management strategies that are implemented. The purpose of the report is to advise on how both hard and soft infrastructure improvements or changes to maintenance regimes can *reduce* the impact of these events on the common. If flooding does occur, intervention strategies should allow spaces to recover as quickly as possible from a flood situation. Key outcomes being to create a more resilient physical environment as well as increasing the understanding and local knowledge for maintenance teams to either carry out preventive works or have good policies and procedures in place to respond to flood events.

1.5 In this document we will identify the areas in the common that are regularly affected by flooding. Here we will set out the context, solutions, priorities and responsibilities and the potential for maintenance and capital investment solutions.

1.6 This report should also be read in conjunction with the Tooting Common Management Plan which covers hydrological analysis and recommendations for dealing with flooding as well great detail on the wider and complete context of the environmental management proposal for the common.

Key Flood Areas.

Triangle Play Area.

Triangle Play Area: Site Infrastructure

2.0 This section of the common is prone to regular flood events and causes disruption to access and connectivity through the Culverden footpath. The Triangle play area is located in the north-western section of North Tooting Bec Common. It is made up of footpaths, rail tracks and rail bridge. A play area consisting of wooden play items, sand pit and banked mounds is adjacent to an artificial football pitch. This is located on the Tooting Triangle field.

2.1 Flooding in this area also affects the play area and during significant flooding events the buildings (currently known as Tooting Boxing Club) adjacent to the play area have been flooded. There is a low point below and to the north of the rail bridge which collects water from all surrounding fields. Footpaths and downcomers from the rail bridge speed up the influx of water into the area. The existing drains seem insufficient to cater for the volume of water during extreme weather, and often get blocked as a result of silt and derbies entering the drainage system with the water movements over time. The levels and surrounding spaces are referred to in the management plan as 'creating a bowl'. The culvert to the south of the rail bridge is insufficient to take surface water and is completely blocked, meaning water flows under the bridge and collects in the low point to the north of the bridge.

Triangle Play Area: Ownership Responsibility

2.2 The overall responsibility of Tooting Bec Common is Wandsworth Borough Council as well as under the further responsibility of the planning secretariat. Culverden footpath is under the responsibility of The Highways team under the adopted footpath number 10. The play area, pitch and the footpath that leads to Triangle field is under the maintenance responsibility of Enable LC. The boxing club building is a Wandsworth Borough asset, under the responsibility of Property Services. Network Rail are responsible for the rail tracks, rail bridge, space under the bridge and sections of land in the common immediately adjacent to the tracks. The drainage network is the responsibility of Highways and Thames Water. There is also third-party interest in investment and development of the existing boxing facilities through redevelopment.

Triangle Play Area: Priority Solutions

2.3 Maintenance Solutions

a) Priority 1: Ensure that the mentioned drains are cleared and flowing as intended. This would require the drains to be unblocked through jetting. Further CCTV inspection is also advisable to ascertain if the pipes are broken or being affected by tree route ingress. We recommend

an increased maintenance regime from the Highways Department to inspect and unblock (where necessary) the drains along Culverden footpath, in particular in the approach to autumn and periods of high expected rainfall. Access must be in place in order for Highways teams to carry out maintenance work at the locations. Ultimately, we recommend Highways review the capacity of the drainage network and how suitable the gradient is to remove water from this location as the network may no longer be fit for purpose for the increase in rainfall and extreme weather events. Investment into specialist equipment (vehicle) or subcontractors should be made to ensure maintenance work can be carried out at the location with the restrictive nature of the footpaths and access points. The rail bridge currently causes a major obstacle for vehicle access. Possible use of smaller gully sucking vehicles could be considered.

b) Priority 2: Enable LC to provide regular cleansing and removal of debris, vegetation and silt from the footpath that leads from Triangle Field through the incumbent grounds maintenance contractors. This will reduce the amount of silt and debris entering and blocking the drainage network. A separate maintenance regime/schedule should be developed to Inspect and clear existing ditches on the southern approach to the rail bridge as well as any new or redefined ditches or ponds added through capital investment.

c) Priority 3: Network Rail to regularly clear and remove overgrowth and debris blocking their drainage infrastructure under the bridge and under the tracks.

d) Priority 4: Third Party – Thames Water to take responsibility for their infrastructure and to ensure they have no barriers for maintenance teams to access their network. Also, they must ensure their work, once complete, does not damage the common through methods and materials used to make good.

2.4 Capital Investment Solutions

a) Priority 1: carry out a refit/redesign of the single gully located on Culverden footpath on the southern approach to the rail bridge. Appropriate silt traps and debris guard will be required to reduce the amount of material entering the network. We suggest that Highways install an overflow mechanism/route to channel water and reduce the erosion of the footpath using French drains and grills. This would require specialist input from a hydrologist or engineers to determine the best designs and solution for the culvert.

b) Priority 2: raise Culverden footpath and reprofile levels to break the bowl effect created by the current ground levels and topography.
Priority 1 and 2 are also covered in the management plan – see Appendix 1.

c) Priority 3. Increase drainage network capacity and potentially increase the number of drains serving the area. As part of any capital investment or project to renovate the footpath, buildings or facilities, the drainage network serving the area should be increased to handle increased volume. The number of drains should be increased, and French drains installed across paths to capture surface runoff. This may require initially surveying (likely by Thames water) data to define specific requirements.

d) Priority 4. Identify appropriate locations to install new ditch lines and attenuation ponds on the sides of the triangle field paths and the southern approach to the rail bridge; this would capture surface water. Further leaky dam approaches could be used in the ditch lines to slow the flow towards drains allowing them to take water off site without getting overwhelmed too quickly. A hydrologist would have to be commissioned to ascertain appropriate locations and sizes of the proposed drain ponds and other works along and beside the path leading from the Triangle Field. This would provide opportunities to improve green infrastructure

and natural water management strategies such as the installation of reed beds, leaky dam systems and SUDs. Careful consideration towards exiting habitats and Biodiversity would be required in considering locations, size and potential new planting for any new natural water management strategies.

e) Priority 5: investigating the potential of using the space around and under the artificial pitch to install either attenuation tanks or surrounding attenuation ponds. This would require approval by the planning secretariate.
f) Priority 6: Addressing the play area with engineered solutions such as level changes and reprofiling of the play space would reduce the speed at which water enters the drainage network. This will prevent water from pooling and flooding the play area.

Bedford Hill Road.

Bedford Hill Road: Site Infrastructure

3.0 Bedford Hill Road is an A road that defines the boundary between the north and south of Tooting Bec Common. To the north, it has a line of large mature plane trees, immediately adjacent to the pavement and a ditch which may be historical. A field formally used for Gaelic football is further north of the tree line and to the east of the field, the tree line gives way to scrub land and the bottom end of Woodfield Woodland. This area has been prone to regular flooding, in particular the winter of 2020-2021 with large sections of standing water in the field and the very real possibility of the road becoming flooded.

3.1 The road has a damning effect on water trying to move through to Tooting Common south and ultimately to lower points in the local catchment area and main lake. North of the road the field drains down towards the road from the tracks and Woodfield Woodland.

Bedford Hill Road: Ownership Responsibility

3.2 As above the majority of the Common is under the responsibility of WBC and planning secretariate, Bedford Road and the pavement is under the responsibility of WBC Highways team. Similarly, the Culverden footpath to the west falls under the responsibility of the Highways team. To the east, the road is transacted by the network rail tracks which curve towards the triangle play area to the north. The drainage network is a shared responsibility between Highways and Thames water.

Bedford Hill Road: Priority Solutions

3.3 Maintenance Solutions

a) Priority 1. Is to increase the maintenance regime for the road drains located along Bedford Hill Road. This will ensure that blocked drains are identified and cleared allowing the drainage network to take water away from site. As with the Triangle play area, the drain network at this location should be inspected using CCTV and any repairs made to damaged pipes as required.
b) Priority 2. Increase street cleansing and clearing of pavements and road, to remove leaves and silt thus reducing the potential of the drain system getting blocked particularly during autumn/winter.
c) Priority 3. Enable LC to inspect and clear excess debris and build-up of green waste in the ditch and field by the pavement, in particular after storm events.

d) Priority 4. Highways to have gully sucking vehicles or subcontractors on standby ahead of storm events so resource can quickly be called upon to unblock drains during rain events.

3.4 Capital Investment Solutions

a) Priority 1. Increase capacity and size of drainage network serving along Bedford Hill Road. Highways to look to add more drains and increase size of pipes taking water away from site.
b) Priority 2. Changes to layout and material make up of pavement along northern side of Bedford Hill Road. Highways investigation by a specialist hydrologist or engineer would be required to look at what potential alteration to the pavement height, layout, marital and drainage connections could be made. Alterations such as the additions of silt traps would be required to implement management plan strategies for flood management in this part of the common. Here silt traps (or other means of preventing silt entering the drainage network) are required before land drains are connected to the drainage network as neither Thames Water nor the Highways Dept would wish to see potentially disruptive volumes of silt entering the drainage system.
c) Priority 3. Reprofile and increase size of ditch running along Bedford Hill Road Pavement. This would act to hold some of the floodwater reducing surface water flooding along the road and slowing the input into the drains. Due to the proximity of the plane trees this would have to be done so as not to cause damage to root systems. Leaky dam systems could be introduced to further slow the flow of water. Similarly, the introduction reed beds and marginal planting into the ditch, where appropriate, would slow flow and act as a silt trap.
d) Priority 4. Creating attenuation ponds and scrapes (Scrapes are shallow depressions with gently sloping edges, which seasonally hold water) where appropriate in the field above the ditch and tree line. These would hold surface water and allow sections of the field to flood in a more controlled manner. Both ecological and hydrological expertise would be required to ensure the existing habitat and species are preserved and the size of attenuation ponds and scrapes are sufficient to deal with the volumes of water coming off the field.
e) Priority 5. Identify appropriate locations to increase tree planting. Investigate the use of cricket willow which could have an added outcome of being harvested. This likely to be towards the Woodfield woodland section of Bedford Hill.

Woodfield Woodland: Context

Woodfield Woodland: Site Infrastructure

4.0 The area consists mainly of deciduous woodland and scrub located just to the northeast of Bedford Hill Road. The road forms the southern boundary and the tracks similarly creating a physical barrier running north toward the Triangle play area.

Woodfield Woodland: Ownership Responsibility

4.1 The section of the common is owned by WBC and managed by Enable LC. The woodland has a boundary with highways to the south and network rail to the east. The trees and woodland would specifically be the responsibility of the tree team.

Woodfield Woodland: Priority Solutions

4.2 Maintenance Solutions

a) Priority 1. Inspect health of trees and take appropriate action to keep trees in good health. Maintaining the tree numbers will help increase tree canopy cover slowing rainfall, roots will both slow surface water runoff and a soak water mainly during the growing season.

b) Priority 2. Ensure excess build-up of fallen leaf matter and twigs are removed from pavements and drains.

4.3 Capital Investment Solutions

a) Priority 1. Dig attenuation pools and ditches (ditches are deeper depressions with gently sloping edges, which seasonally hold water) where appropriate in and around the woodland, in particular towards Bedford Hill Road. Using a leaky dam approach this will slow water towards the road, reducing flood risk on Bedford Hill Road. A Hydrologist and ecologist would be needed alongside expertise from the tree section to ensure existing habitat and species are conserved. The tree section would need to be involved with location of pond to ensure the health of trees are conserved and not damaged.
b) Priority 2. Planting additional wet-woodland species as well as replacing dead or failing trees with species that will tolerate wet conditions.

General Recommendations

Maintenance

5.0 Increase inspection and maintenance regimens of existing drainage infrastructure. This will maintain a free-flowing network which will allow water to move away off site. Increased inspection levels will mean defects or maintenance requirements with drains and pipe networks are identified and can be acted upon. Ideally this would be carried out over the summer months before autumn and winter, and would involve all interested stakeholders.

5.1 Increased inspection and maintenance of existing ditch lines found by Culverden footpath (southern approach to rail bridge) and Bedford Hill Road. Removal of debris and blockages will increase the capacity of the ditches to hold flood water leading to less of the common being affected by surface water pooling.

5.2 Thames Water to increase inspection and maintenance of network running through the common. This should reduce the input of water from slow leaks and reduce the likelihood of burst pipes causing large flooding events.

5.3 Network Rail to inspect and clear vegetation and debris on sections of their infrastructure that could lead to blockages in the surrounding drainage network. All stakeholders to review their current regimes and recommend an annual programme of regular clearance and planned maintenance in line with the MMP action to “ensure all structures are maintained to a high standard” and “Develop a 20 year plan for maintaining the commons buildings and infrastructure.”. In addition, cross organisational and departmental flood-group to be identified or formed to meet regularly to review the effectiveness of maintenance regimes and tackling flooding.

5.4 Any new infrastructure added through capital investment should be added to maintenance regimes.

5.5 Review current flood response policy and ensure all relevant bodies have a clear understanding of how act and allocate resource to react quickly in flood situations.

5.6 Ensure all stakeholders attend and input to local catchment groups so a joined up approach to water management is maintained or increased.

Capital Investment

6.0 Redesign existing ditches so they have increased capacity. Use of leaky dam concepts or increased planting should be considered to slow the flow towards the low point and the drainage networks. this particularly important on the southern approach to the rail bridge.

6.1 Commission a hydrologist to identify location and size of new ditch lines, ponds and scrapes. Focus of these interventions being the southern approach to the rail bridge alongside the Culverden footpath and similarly on paths leading from the triangle field by the artificial pitch.

6.2 Increase capacity of drainage network so that it can cope with more water and increased frequency of rain events. This should reduce the need for call out to deal with flood events in the area.

6.3 Identify appropriate locations to plant or replace trees to maintain or increase canopy cover and reduce flow at ground level.

6.4 Include SUDs, silt traps and debris guards as part of any changes to the built environment, and work with stakeholders (principally Council Highways department) to look for potential suitable flood alleviation projects.

Community Engagement

7.0 Review where existing volunteering and community projects can be included into flood management through practical delivery of some aspects of green infrastructure improvements or remotely through analysing existing data and online research into weather patterns as well as new innovations in flood management. this would follow a citizen science approach, like the ZSL backed Outfall Safari (https://www.zsl.org/conservation/regions/uk-europe/londons-rivers).

Report findings and recommendations.

8.0 Tooting Commons is the largest greenspace in the borough of Wandsworth and has a history of localised flooding due to the geology and topography of the site. In recent years the level of flooding has increased in line with changing climatic conditions and increased rainfall which has become more frequent due to the outcomes of climate change.

8.1 Grounds maintenance programmes have remained largely unchanged in this period.

8.2 While use of the Commons has increased, particularly during the 2020 pandemic period, increased use itself will have had a limited impact on the increased level of flooding in 'known flooding areas'.

8.3 It is clear that infrastructure, currently existing on site, has a vital role to play in ensuring the capacity of the Commons to deal with heavy flood events, is as great as possible. Ensuring all infrastructure is fit for purpose it fundamental and the assessment of this is the priority action.

8.4 A variety of stakeholders, namely; Wandsworth Council Highways department, greenspace management contractor Enable Leisure and Culture, grounds maintenance contractor Continental Landscapes, Network Rail and Thames Water all have a role to play in ensuring the longer term resilience to flooding of the Commons.

8.5 Understanding the maintenance responsibility in regards to 'owned assets' (eg Pathways, drains etc) from all parties will be the first step to maximising the performance of the existing infrastructure.

8.6 Robust and regular maintenance programmes of these 'assets' will further support this.

8.7 The creation of new planted areas, utilising suitable tree and shrub species will offer further resilience to the Commons and may also serve to support wider sustainability and biodiversity objectives outlined in the Wandsworth environment Sustainability Strategy (WESS).

8.8 Developing partnership working with the key identified stakeholders will allow clear sight of how to progress key elements contained within the 2015 Tooting Common Maintenance and Management Plan.

8.9 Providing capital improvements to address some of the key issues (possibly engineered solutions such as reprofiling paths, creating landscape 'scrapes' etc) will be challenging financially, and should be considered carefully so as not impact the variety of existing usage or biodiversity habitats found on site.

8.10 To further understand the wider impacts of any proposed capital project works to local properties, paths and roads would require the assessment, in detail, by appropriate hydrologists and be carried out in conjunction with relevant Council departments, such as Highways.

Appendix

Appendix 1 – Reference to Tooting Common Management Plan

Extracts from TC MMP

a) Chapter 7 Hydrology - Capital solutions for the Triangle Play area;

i. *The first of these is the occasional flooding around the Childrens' Centre at the northern end of the Common. In order to 'break' the bowl in which the playground and building sit, it is recommended that the cycle/footpath passing the facility on its western side be reprofiled up to and partially through the railway bridge. Ground levels at the playground are at or just below 27.0mOD: the path rises slightly to about 27.3mOD before falling northwards to a level of about 26.2mOD at the northern side of the bridge.*

ii. *In tandem with this it is suggested that some of the drainage gullies serving the cycle/footpath hereabouts have their covers/gratings reset as they are not all considered to be effective compared with the surrounding ground levels.*

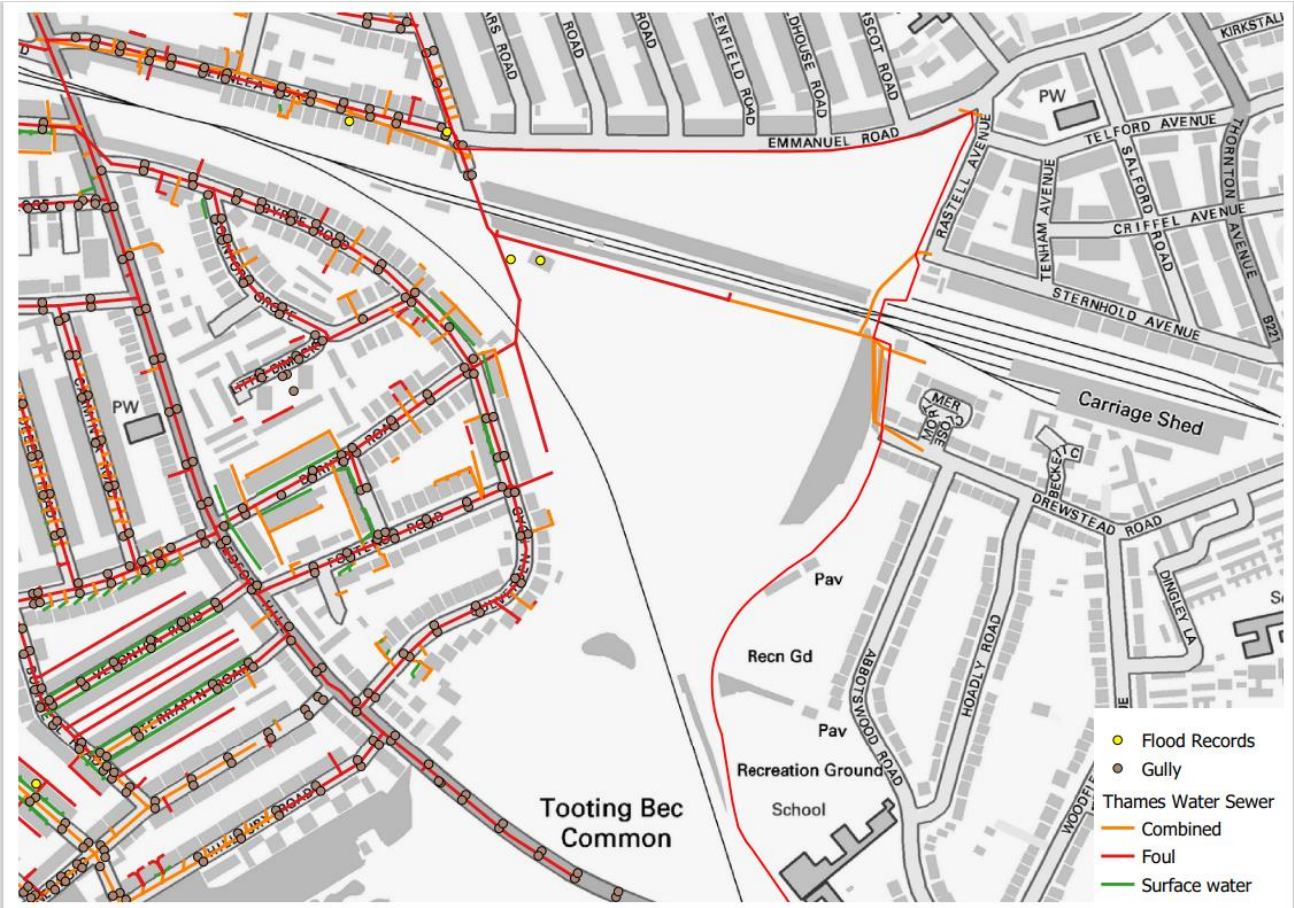
iii. It would be for a hydrologist to analyse the effects of raising the levels of the footpaths so that the issue is not simply recreated elsewhere locally.

b) Chapter 7 Hydrology - Capital Investment solutions for the Bedford Hill area

i. *'The second situation is the water collecting beside Bedford Hill. Here it is suggested that a new land-drain could be laid behind the footway and connected into the highway drains (via the road gullies) to relieve the ponding of water in this area. However, this option needs to be balanced against the biodiversity requirement to provide more wetland habitat, with the suggestion of leaving the southern section of the ditch beside Bedford Hill open in its current condition to encourage biodiversity'.*

Appendix 2

Site Map of Tooting Commons northern section.



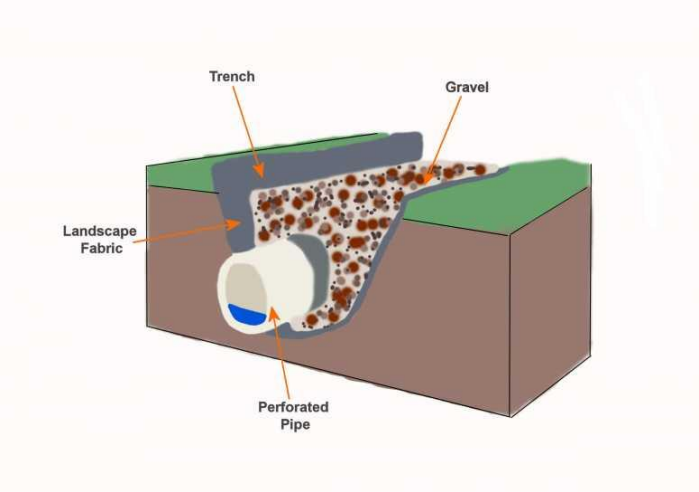
Map showing highways and Thames drainage network. Note the position of previous flood events shown in yellow.

Appendix 3

Examples of engineering elements available to support flood alleviation.

<u>French drain</u>

A French drain is a trench filled with gravel or rock or containing a perforated pipe that redirects surface water and groundwater away from an area



<u>French drain grills</u>

Grill covers used to cover open or stone filled French Drains.

<u>Debris Grill</u>

Debris grills or covers are used to stop larger items entering the drainage network. These are usually located at the entrance to the drain or soak away.

Silt Traps.

A silt trap is a 'basin'-type device that is placed in the upstream of a soakaway crate. Its main job is to prevent any silt, soil, sediment, metals or pesticides (everything unwanted) from entering your water storage system. It does this by temporarily containing the water in the trap, allowing unwanted materials to settle at the bottom of its bucket and separate from the water.

Generally these are highways or engineered river course solutions as part of integrated flood alleviation solutions, an example of these can be seen here from a series installed at the River Wandle;

https://www.wandletrust.org/tag/silt-traps/

The above is an example near the River Wensum, Norfolk.

Appendix 4

Leaky Dam.

Leaky dams are a flooding prevention measure, moderating the flow of water downstream. Barriers are added to a stream/river to prevent soil and silt escaping and allowing water to escape at a slower rate