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5080D – King’s Pond

King’s Pond Design Report

Prepared for

ALTON Town Council

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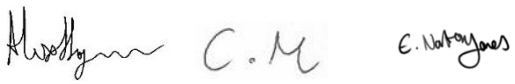
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Introduction

The King's Pond project is a multi-benefit pond restoration and enhancement project commissioned by Alton Town Council. The overall aim of the project is to transform a sediment-impacted urban pond into a more resilient and sustainable, ecologically valuable environment. The scheme seeks to improve water quality, manage sediment accumulation, control of non-native species, enhance biodiversity, and remain a valuable asset and space for the local community.

The site is within Water Framework Directive (WFD) waterbody North Wey at Alton (ID: GB106039017800) and is currently rated as a Heavily Modified Waterbody with a 'Moderate' ecological status. King's Pond forms part of the River Wey and the North Wey at Alton Water Body catchment (Figure 1, Site Location within the WFD waterbody: North Wey at Alton Water Body) within the Wey and Trib management catchment. Immediately upstream of the site the watercourse is culverted underneath the existing railway track, whilst the downstream River Wey is culverted away from the weir, emerging in open channels flowing through Waterside Court, before being re-culverted beneath Paper Mill Lane, re-surfacing again at The Lamports (SU 72368 39621) as the River Wey. The North Wey at Alton is failing to reach 'Good' ecological status due to physical modifications as a result of urbanisation, flow changes resulting from groundwater abstractions, and point source pollution from intermittent sewage discharges. However, it is acknowledged that the sewage discharges are known to take place downstream of King's Pond.

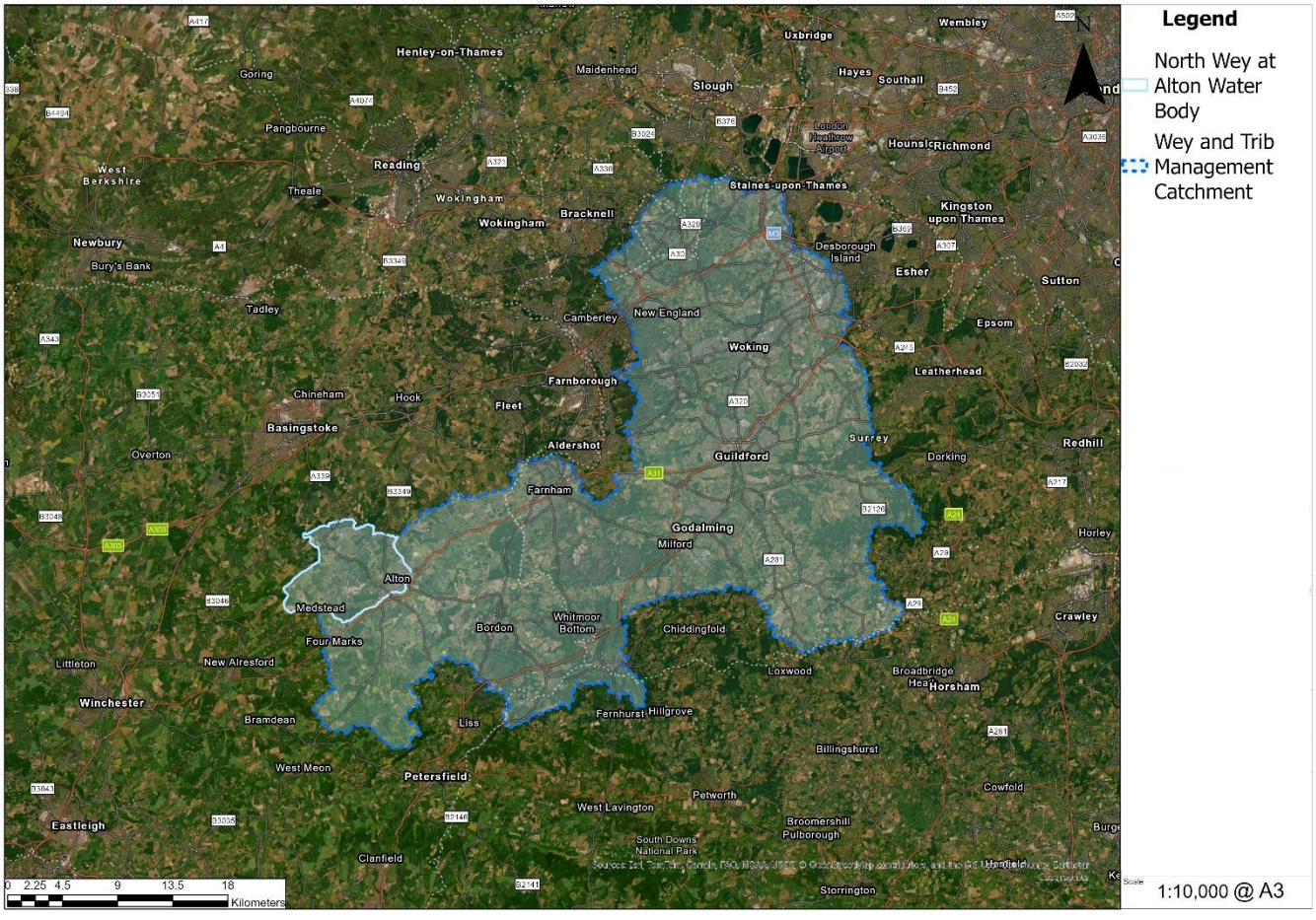


Figure 1: Catchment Map.

Alton Town Council have instructed FiveRivers to deliver outline designs for two options for the restoration of King's Pond in order to achieve the project aims given above. Initial concepts were produced by Water Environment and have since been given to FiveRivers to develop to the outline design stage. The "Dredging" option, consists of dredging the pond, reprofiling the banks, constructing silt traps along the upstream source and downstream mouth of the pond, as well as the construction of berm features along some of the banks. This option will increase the silt trapping potential of the pond which will reduce future maintenance dredging costs, whilst improving pond biodiversity and ecosystem resilience by reducing invasive species habitat and their associated necessary pond conditions. The "River and Pond" option includes dredging of the pond and the reinstatement of the channel of the River Wey through the site extent, here the pond will be maintained in a smaller connected state with walkways provided across the site for public accessibility. The river and pond option also details sediment traps located at the upstream end of the pond, as well as the downstream surface water drain outfall and culvert connecting the downstream extent of the River Wey. This option will significantly improve the sediment transport across the site and reduce the necessary maintenance of the pond long term. Due to the reduction in siltation along the bed, the river and pond will also serve to reduce invasive species presence, whilst improving habitat conditions for desired species such as Bullhead.

This summary report intends to evaluate the existing condition of the waterbody and surrounding environment with its associated ecology. This evaluation will be used to propose and assess potential improvement options for the project area
based on the scope provided by the client, Alton Town Council.

Site Location

The project area is located in the centre of Alton Town, Ashdell Rd, Alton GU34 2SZ (NGR SU 72315 39404) (Figure 2). The River Wey currently flows into King's Pond via a culvert at the upstream extent of the pond before flowing out at the downstream end of the pond via another culvert into the River Wey. The downstream River Wey is culverted away from the weir, emerging in open channels flowing through Waterside Court, before being re-culverted beneath Paper Mill Lane, re-surfacing again at The Lamports (SU 72368 39621) as the River Wey. King's Pond sits within a suburban area of Alton, the downstream extent of the Wey flows through increasingly commercial areas and industrial estates, before flowing further east into a more rural setting. The site is bordered by a railway line to the north west, Ashdell Road to the south and south east, while Paper Mill Lane runs along the north east. A public footpath is also currently located around the pond perimeter and connects Waterside Court with the pond area.



Figure 2: Site Map.

Option Development

1. Access and site set up

Site access was assessed by FiveRivers, and the junction off of Ashdell Road (NGR SU 72374 39436) connecting to the car park of King's Pond was deemed most appropriate for primary access. As the access route is within a residential area the maximum speed is 30 mph. Mitigation measures to noise and air quality should be considered when accessing and operating on site.

The main compound is assumed to then be established within the car park of King's Pond, Ashdell Road, Ashdell, Alton, Holybourne, East Hampshire, Hampshire, England, GU34 2TA, United Kingdom (NGR SU 72315 39404). Access to this area is possible via the main access route. The site team are to undertake pre-construction services check and all services on site are to be marked out, and all staff alerted to their presence.

South East Water has one live distribution main asset and several fire hydrant assets within the surrounding area of site boundary.

Within the site extent, one surface water outfall pipe connects the downstream end of the pond to the river which flows through a connecting culvert pipe system. The River Wey flows into the site via a culvert located at the upstream extent of King's Pond.A Hampshire County Council asset which drains King's View and Ashdell Road runs beneath the site, discharging to the north-east corner of King's Pond. A Thames Water drain is currently routed along Turk Street, beneath the railway bridge and through the site, outflow is located at a headwall adjacent to the inflow culvert. SGN has one medium pressure gas main utility running along the upstream section of King's Pond. One Openreach split coupling utility is located over the surface water outfall pipe utility at the downstream end of King's Pond.

2. Dredging Option

The overall scope of the dredging option primarily involves improvements to the pond to address outlet blockages and water level fluctuations, reinstating and strengthening the banks of the existing island and margins, silt capture, and ecological improvements to the pond ecosystem. These aims will be targeted through a variety of site activities. Silt capture will be achieved by installing an in-channel silt trap to the upstream end of the pond, with areas of marginal reed bed planting to act as naturalised sediment buffers capturing sediment prior to settling in the pond and leaving the site via the outfall culvert at the downstream end of the pond. The edges of the pond are to be reprofiled and vegetated by plug planting. The wetland to the north of the site will be planted with reeds, and will be located at the outfall unit of a surface water drain. Implementing a raised marginal wetland here aims to capture sediment, organic pollutants such as nitrates, and generally reduce the pollutant load flowing out of King's Pond into the receiving River Wey.

Significant sections of the pond bank area will be reprofiled to improve bank stability and connectivity. Re-profiling with berm features will help stabilise the banks of the islands and banks of the pond by reducing erosion and therefore reducing siltation to the bed. Sediment will be initially dredged from the bed of King's Pond to increase capacity and

reduce siltation in the pond – thus improving habitat for intended fish species such as Bullhead. This material will then be assessed for pollutants and invasive species to ensure it can be re-used on site for the construction of berms, and the spoil re-use area.

Bat boxes will be installed to the wooded areas on site, in particular the existing island at King's Pond. Hibernacula will also be created using excess woody material found on site, this is intended to support the invertebrate, amphibian, and reptile community of King's Pond. The creation of reed bed areas will also improve invertebrate and wetland species abundance at King's Pond further, along with the channel infilling area. Dead hedges will be implemented along sections of the perimeter of King's Pond to limit visitor access to the waterbody and marginal areas, this is intended to support ecological assemblage by reducing disturbance at King's Pond.

3. Dredging Option Spoil Calculation

There is estimated to be between 10,000-11,500 m^3 of silt within the pond due to accumulation from the 30 years since the last dredging was undertaken. It is proposed to leave between 200-250 mm of silt in most areas to retain habitat for invertebrates, as well as suitable areas for planting. With this layer of remaining silt taken into account it is estimated that there will be 7,100 m^3 for removal.

The marginal habitat features will be constructed partially from dredged material, this total of material is estimated at 1,900 m^3. These features will also require an additional import of spoil to cap the dredged material used on site. The additional material is estimated at 200 m^3 and will be laid 0.2 m deep on each marginal feature. The silt trap will also require being lined with 0.3 m of gravels, and the new area of path will require 17 m^3 of Breedon gravels.

The total capacity of the pond will therefore be increased by just under 5,000 m^3. This will result in an initial drop in water levels, but it is anticipated that the water levels will rise again over time. The outfall for the pond is a weir set at 99.25 mAOD, current water levels are approximately 99.26 mAOD. The bed will be lowered by up to 1 m in places, which would lower the water level to 98.26 mAOD, far below the level required for water to flow out of the pond. As flow continues to enter the pond but not leave over the weir the level will rise until it can once more flow over. The capacity increase will be maintained as the new wetland areas and silt trap are designed to capture incoming and suspended sediment.

River and Pond Option

The river and pond option involves a series of improvements to the pond including addressing blockages and water level fluctuations, reinstating and strengthening the banks of the existing island. The option will also create a new flow pathway through the centre of the area to alleviate siltation pressures and therefore reduce future maintenance costs. The option also includes silt capture mechanisms, and ecological improvements to the pond ecosystem.

The primary works of this option includes the dredging of much of the pond area, and then the subsequent creation of a channel through the site, connecting the downstream and downstream sections of the River Wey. A smaller pond extent will remain towards the upstream outfall point of King's Pond and will be connected to the channel to provide access to fish species, support water quality in the pond, and maintain the pond water level. The main channel is estimated to be 3.9 m at bank full width and 1 m deep. This depth includes a 1.4 m wide low flow channel within the channel, 0.5 m wide at the base, designed to overtop into the main channel at Q50. The smaller channel will concentrate flow to support fish passage, and also create higher velocities to flush sediment out of the system. This will keep the gravel bed clean, which is a characteristic of healthy chalk streams. Site won spoil from the pond works will then be re-used to enlarge the existing island and define the new narrow channel.

A secondary channel will be created along the existing island, this will flow through an area of wetland. The secondary channel is intended to provide additional capacity during high flow events. An additional backwater channel will also be created towards the downstream extent of the site, this is intended to divert high flows into an adjacent wetland area when the downstream culvert is at capacity. The edges of the pond are to be reprofiled and vegetated by plug planting. This is to reduce erosion along the banks of the pond. Marginal shelves are also included in the river and pond option, as these will provide shallow aquatic habitats which are important to several fish, invertebrate, and bird species at King's Pond, under normal water levels the shelf will not be visible and therefore will have minimal impact to the visual appearance of the pond. A raised area for a marginal wetland will front a small deeper section of pond to form a natural silt trap. The wetland will be planted with reeds, and will be located at the outfall unit of a surface water drain. The raised marginal wetland here is intended to capture sediment, organic pollutants such as nitrates, and generally reduce the pollutant load leaving King's Pond.

A deeper profiled section of the channel at the upstream river portion of the pond is to provide a silt trap to improve water quality. Large rocks are used as a natural partial impoundment to slow the water and allow the sediment to drop out of suspension. Proximity to the path network will enable maintenance access to the silt trap.

The area of existing wet woodland is proposed to be enhanced with additional willow planting. Tree works will be required across site to enable work activities, this will mean preferentially targeting invasive and diseased trees found on site. Site won trees will then be assessed and if possible, re-used on site. Native tree species will be planted across the site, including in the marginal and spoil re-use areas.

Bat boxes, as recommended within the ecological reports provided by Alton Town Council, will be installed to the wooded areas on site, in particular the existing island at King's Pond. Hibernacula and log piles will also be created using excess woody material found on site, this is intended to support the invertebrate, amphibian, reptile, and small

mammal community of King's Pond. The creation of reed bed areas will also improve invertebrate and wetland species abundance at King's Pond further, along with the channel infilling area. Bird boxes will also be constructed within the more densely vegetated areas of King's Pond, this will support the targeted bird species, whilst not benefitting invasive species assemblages at King's Pond. Dead hedges will be implemented along sections of the perimeter of King's Pond to limit visitor access to the waterbody and marginal areas, this is intended to support ecological assemblage by reducing disturbance at King's Pond.

Brash berms and Willow spilling will be made from site won material and will provide bank protection from the flow exiting the secondary channel during high flow events. Brash fronted berms will be constructed around the existing island to stabilise the banks, and to reduce sediment input. The existing Island is to be planted with trees to deter Canada geese.

Two clear span bridges are to be constructed, running over the created channel. These will provide public access across the site and enable visitors to interact with different elements of the site than previously possible, therefore providing greater amenity to the site. Additional pathways will also be created across the site once again improving access across the site and offering visitors additional viewing points and routes across King's Pond. Benches are also to be installed in this option, providing visitors an outdoor seating area to enjoy the pond from.

4. River and Pond Option Spoil Calculation

For the river and pond option there is a significant amount of material movement and processing required. The total volume of silt for removal from the existing pond configuration is estimated at 11,600 m^3; this is higher than the amount estimated based on the previous dredging, and is a guideline volume. There are many new features that are proposed to be created through reuse of dredged material. These primarily consist of new wetland areas, reedbeds, and new wet woodland extents. The total volume of dredged material that can be reused through this is approximately 7,200 m^3. This leaves an estimate of 4,400 m^3 to still be removed from site.

To create the new channel and raised walkway area there will need to be material imported, as the dredged material will not be stable enough to support these features. The volume of imported material required is estimated to be 4,500 m^3 of earth and soil, 60 m^3 of river gravels, and 110 m^3 of Breedon gravels for the new paths.

The total material balance of the site will be approximately - 60 m^3, however this is split between the different materials required for the different elements of the proposal.

Future Resilience

5. Climate Change

The full effects of climate change in the UK remain uncertain, however the frequency and magnitude of extreme weather is suggested to increase. This threatens the security of our natural environment and therefore supporting nature to create sustainable and resilient ecosystems is important.

Precipitation is vital to the ecological and social value of King's Pond. The upstream River Wey feeds into King's Pond and is dependent upon precipitation. However, climate change has led to UK winters and autumns being significantly wetter, with previous research suggesting 7 % increase in rainfall per 1°c of warming in the UK. Therefore, the River input to King's Pond may increase seasonally, resulting in more erosion and siltation of the pond.

As the climate warms, evaporation increases and the air holds more moisture. This means UK springs are increasingly humid, while the land and waterbodies such as King's Pond, have a greater potential evaporation. Evaporation is a major risk to King's Pond primarily from drying out, but drying out will subsequently cause the ecosystem of King's Pond to decline, and over time recovery will be increasingly difficult.

Decreasing water volume causes the specific heat capacity to change, and so temperature of the pond may become less stable. An increase in water temperature would cause an increase fish and other organism mortality in the pond, which can trigger further cycles of ecological decline. A declining ecosystem within a pond such as King's Pond, can cause a forward switch in ecosystem structure. This means the pond becomes stable in being dominated by algae and microbes, indicative of poor water quality and reduced biodiversity, this also tends to reduce the amenity value of pond features. This stability is then often expensive and difficult to reverse. Therefore, it is vital to prevent the initial change from occurring by developing a resilient pond ecosystem at King's Pond which can resist this process.

UK summer precipitation trends are also anticipated to change with longer periods of drought followed by flashy and intense rainfall events occurring. In suburban and urban settings such as Alton, the impermeable nature of road and paved surfaces combined with drought conditions, causes organic pollutants and inorganic pollutants to accumulate. Eventually the drought ends and a sudden and intense period of rainfall causes these deposits to re-mobilise and flow into the surrounding watercourses and waterbodies – here King's pond. These pollutants have a variety of negative effects on waterbodies. As summer droughts in the UK are anticipated to extend and summer rainfall expected to become more intense, it is likely that this process is an increasingly pressing issue for King's Pond in relation to the existing ecology.

Based on the above information on how a changing climate may impact the pond, it is vital that the chosen design for King's Pond mimics and works with natural processes to improve the overall resilience of the pond to reduce its susceptibility to climate change. It is felt that through bank erosion protection, reduction of invasive species, silt trapping and removal, and native planting that this can be achieved.

6. Sustainability

Sustainable development should be a driving principle in all ecological and sociological projects, it is the idea of meeting the needs of current generations, without compromising the ability of future generations to meet their own needs. This idea is represented within these works at King's Pond by aiming to produce a waterbody which provides the local community with urban shade and cool zones, outside public communal spaces, and the opportunity for the public to connect with nature into the future by creating a climate change resilient environment. The sustainable use of the King's Pond and the resilience of it under climate change is also represented in the Sustainable Development Goals; Goal 3: Good Health and Well-being – Ensure healthy lives and promote well-being for all ages, Goal 6: Clean Water and Sanitation – Ensure availability and sustainable management of water for all, and Goal 15: Life on Land – Protect and restore terrestrial ecosystems and halt biodiversity loss. It is therefore key that the work at King's Pond produces a resilient and sustainable environment in which both people and the environment can thrive.

6.1. Tree Cover

Tree cover and marginal planting provide shade to aquatic species within the pond shallows. Many aquatic species have a lethal temperature range in which if water temperatures pass, life sustaining processes of the species fail. However, shaded marginal areas, included in the designs for King's Pond offer an optimal nature-based solution, which reproduces natural pond processes.

6.2. Sediment Dynamics and Hydrology

As King's Pond is a generally low flow waterbody found along the natural flow path of the River Wey, this introduces a sediment depositional zone to the river in the upper reaches where deposition of medium – fine grain material would not naturally occur. By reducing the ponded extent in both the dredging option and river and pond option, the flow velocity through King's Pond is increased therefore reducing sedimentation to the bed. This method also intends to improve aeration of the water column and so maintain the desired ecosystem of King's Pond. Siltation is also intended to be controlled by the sediment traps utilised in both designs. Whilst the upstream in-channel sediment trap in both options offers a more engineered approach, the use of marginal wetland and reedbeds in both options provides a nature-based solution to sediment control, whilst also providing water quality control benefits to downstream receiving waters. Overall, this should enable King's Pond to remain in a healthy state for both options, characterised by clearer waters and greater biodiversity, requiring limited maintenance through continued management of the sediment traps.

6.3. Invasive Control

Several invasive species are currently present at King's Pond and threaten the local ecosystem through their impact to King's Pond ecosystem. Several mitigation steps will be taken during construction to stop the spread of invasives and maintain biosecurity of the site and surrounding ecosystem. Common Carp have previously been sighted in King's Pond. The main impact of common Carp is that feed on macrophytes along the bed of the waterbody. Because common Carp are non-native invasive species the wider ecological community is not evolved to balance the feeding demands of common Carp and therefore, common Carp have a disproportionately negative effect on UK waterbodies such as King's Pond. This then leads to less habitat, food, and other requirements of these resources for other native species within the ecosystem. Common Carp are also bioturbators, meaning their bed feeding re-mobilises deposited bed

materials generating a turbid and light depleted waterbody, which may then trigger a uninhibited negative cycle of ecosystem decline towards an algae-dominated waterbody and eutrophication. Part of the proposed works in both options is to actively tackle common Carp populations by capture and rescue to off-site location during pre-enabling works.

Invasive non-native Waterfowl namely Canada Goose (*Branta canadensis*) are also abundant at King's Pond. Canadian Geese also rework the soil and sediment (known as bioturbation) of the bed of the pond through their foraging activity, this has led to high algal concentrations in the water column. Both design options intend to manage the abundance of Canada Goose by planting trees creating more densely covered areas of the existing island. This reduces the terrestrial habitat available to the geese, which they use to incubate their eggs.

Several invasive plant species are found at King's Pond this includes Japanese Knotweed (*Reynoutria japonica)*, Bamboo (*Bambusoideae spp*.), Buddleia (*Buddleja davidii*), and Ground Elder (*Aegopodium podagraria*). These species present a number of detrimental impacts to King's Pond, Japanese Knotweed has no natural predators in the UK and can therefore grow unchallenged and outcompete many native species, its root structures also threaten underground assets such as sewerage pipes and cables whilst damaging pavements and roads too. Bamboo also has no natural predators in the UK, can break through pavements and roads and its root structure can be damaging to other plant species in the area. Buddleia is very adaptable and consequently extremely successful in the UK, it outcompetes many native floral species and whilst found to successfully support many pollinator species and may also distract pollinators away from other native species therefore reducing reproduction. Buddleia also fails to produce nectar which certain native species can consume. Ground Elder is also very successful in the UK and spreads easily, it's main threats to native wildlife are its ability to spread through its root layer, and that it may easily outcompete native species for light. The management of these invasive species has been considered for the project and is detailed within 5080D – Buildability Statement.

6.4. Pollution

The sediment traps located at the upstream and downstream extents of King's Pond in both design options aims to reduce siltation in the pond as well as downstream conveyance of sediment and associated pollutant particulate matter to receiving waterbodies.

7. Siltation Rate

King's Pond was dredged in 1996, producing approximately 9,400 m^3 of silt, it is not currently known how long this had been accumulating for, however the weir was only installed in 1991, so it is likely siltation was increased following this impoundment. In the 30 years since the previous dredging there has been an accumulation of material leading to a total silt volume of around 11,600 m^3. The previous dredging did not remove all the fine sediment, so a portion of this total silt volume will be a remnant from prior to 1996. As we do not have a precise measurement of the volume of silt left by the 1996 dredging, but the values of 1.75 m depth to the north, 1.25 m in the central pond, and 1m on either side of the island, we can estimate that there was a 0.3-0.4 m layer of silt left in the pond. With our proposal of removing all but 0.2-0.25 m of silt generating an estimated 7,000 m^3 it is likely that the height of the silt was greater in 1996.

In the past 10 years there has been significant change in the management of land to the upstream of the site. By 2018 a new housing estate was in construction along New Odiham road, to the north of the River Wey. The land use before construction was agricultural, which is often a significant input of fine sediment into rivers. The initial construction of the new estate will also have likely generated significant sediment runoff, even with sediment control measures, however following the completion of construction the volume of fine sediment runoff will likely have reduced, although the composition of the inputs from surface water will likely now contain higher concentrations of heavy metals and petroleum hydrocarbons.

Upstream of the railway culvert at the boundary of site there has also been recent construction, changing a business estate into a new housing estate on the northern side of Lower Turk Street. As the River Wey runs through this site it has likely also been subject to increased runoff from construction activities.

Following the calculations of silt level in 1996 and today, it is estimated that the silt build up from the past 30 years may be as low as 5,500 m^3. The Wey is a low flow and low gradient ephemeral chalk stream, so it is likely that the sediment loading comes from period flashes of inputs when flow levels exceed 0.1 m^3/s (Q25 annually, Q50 in winter). The other high input of sediment has come from bank erosion caused by excessive waterfowl activities, particularly Canada geese and recent growth in flocks of Egyptian geese, neither of which are native species.

Due to the uncertainties around changing upstream inputs, and the targeted management of geese at the site through displacement measures it is not currently possible to accurately estimate the rate of siltation within King's Pond in the future. Through the design proposals it is intended that siltation across the site will be significantly reduced, the silt trap at the upstream end of site will likely require dredging on a 3-5 year cycle depending on catchment conditions, if there is higher rainfall then there may be greater volumes of suspended sediment transported from upstream, particularly if heavy rainfall occurs following arable harvest prior to the growth of cover crops.

In the river and pond option the rate of siltation should be drastically reduced as there will be flow out of the site at all but the lowest flow conditions where the Wey can experience a complete lack of flow from upstream. This will ensure that there does not become a deposition area at the outflow from the site. Without the impoundment from the weir the river should be able to maintain 0.001 m^3/s flow required to retain mobilisation for 80 % of the year based on the flow duration curve presented by the Environment Agency.

Further investigation may be undertaken to more accurately assess continued sedimentation rates within the River Wey at King's Pond, however this would require additional data such as spot sampling upstream of site and within the site to assess current suspended sediment.

Flood Risk Summary

8. Flood Risk Assessment Summary

The flood map (Figure 3) is split into three discreet reaches, upstream of King's Pond, King's Pond, and the surrounding parkland and downstream of King's Pond.

The King's Pond area shows Flood Zone 2 covering parts of the southern island in the pond as well as a small area of flooding to the pathway on the western bank of the pond (Figure 3). Flood Zone 3 envelopes the extent of the pond and some parts of the path of the path on the western bank.

Downstream of King's Pond, Flood Zone 3 is shown in the Waterside Court area. The watercourse is culverted here, and this extent of flooding is assumed to illustrate the effect of King's Pond overtopping into the surrounding landscape. Causes of this may include a blockage at the culvert or a lack of capacity due to siltation. Downstream of Paper Mill Lane, the River Wey returns to open channel, and the flood zones are largely contained within the channel extent.

There is the opportunity to reduce flood risk to the Waterside Court area through culvert/sluice outlet modifications on King's Pond to reduce blockage and ensure appropriate downstream conveyance to reduce backing up and flooding.

The water level in the pond is known to fluctuate, the seasonal variation in level due to changes in through flow is around 100/150 mm. However, there are more frequent fluctuations due to blockages at the outlet screen, these can be up to 450 mm.

An Environment Agency gauging station (ID 39119 – Wey at King's Pond) is located at the outfall from the pond. The description of the gauge notes that debris obstructing upstream of the grill can cause minor fluctuations in level. The flow regime is described as baseflow-dominated, with some local urban runoff. Mean flow is 0.116 m^3/s. The Q5 flow is 0.339 m^3/s, and the Q95 exceedance flow is 0.002 m^3/s.

The impact of the potential designs upon flood risk are discussed within 5080D - Flood Risk Statement_V1.



Figure 3: Flood Zones.

Conclusion

Next steps

The next stage of the project will include a public consultation with the local community where the information gathered and developed during the concept design stage will be shared for both the river and pond option and dredging option. The local community will be presented with both options before a decision to proceed with the favoured option. Once the favoured option is determined, the detailed design stage of this can be undertaken and project details finalised.