

Langley Park Archaeology

Old maps of Langley show several features which warrant some investigation. The demolition of earlier houses, the infill of ponds and rerouting of Red Lodge Road have all left some possibility of remains.

It has long been known that a Roman Road from Lewes to London passes through West Wickham and Beckenham and several landmark estates may have been established on or near the route of the road such as Wickham Court, Beckenham Manor, Langley, Stone Farm and Foxgrove perhaps before it fell into disuse. However that may be coincidence.

We have contacted Langley Park Golf Club and with their permission and cooperation have visited the site to carry out some investigation. Despite several mysteries surrounding the evolution of Langley we have some known features which warrant further exploration.

From the maps and some surviving photos and engravings we know of the landscape water features, the site of earlier houses, the route of the earlier Wickham to London (Red Lodge) Road and the alignment of the substantial avenue of trees from Langley mansion toward Hayes Lane.

The possible features are positions and remains of ponds, bathhouse, ditch or canal, field boundaries, old Red Lodge Road and the Roman Road. I was not aware of the Ice Well remains until these were pointed out to me.

This map in the British Library shows fields, ponds and buildings circa 1735



This map from Kent Archive dated as a copy of a 1735 original made us curious about the features shown and any possible remains.



This photo on Beckenhamhistory.org (courtesy of Ian Muir) is the best impression of what the pool and bathhouse looked like. The photo is undated but seems to be before 1910 according to evidence that the Goodharts maintained the feature to some

extent. A large tree growing at the corner of the bathhouse would be undermining the walls. There is some evidence that the brick lined walls of the pool are beginning to sag. The door to the bathhouse appears to be missing and the roof is overgrown with ivy. But the surrounds of the pool are well manicured. The remains of a shingle path around the pool can be found in places but mostly covered over with soil slumped from the banks.



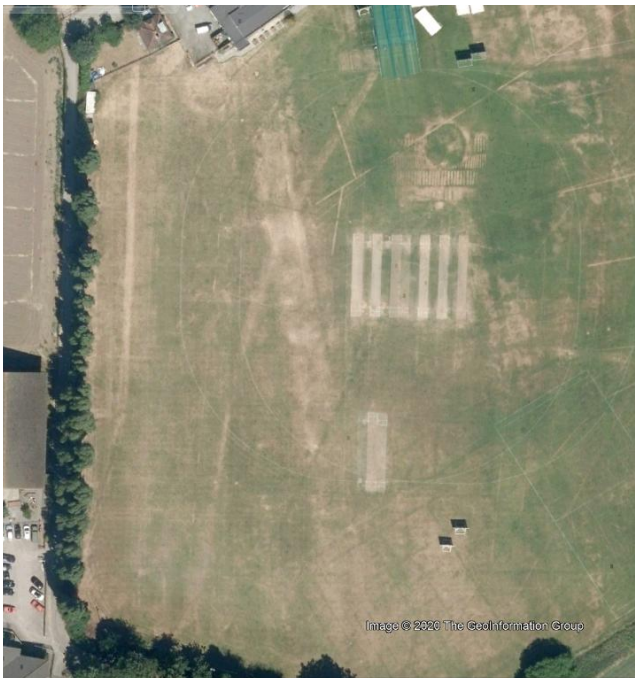
The map is aligned with North toward the left edge. The Roman Bath is on the line of the Parish boundary which has since moved. The oblong pond has been described as a swimming pool. The pond is fed by a spring and as the Beck rises at nearby Spring Park part of the Addington Hills and runs West of the site of Langley then ground water is not far beneath the ground level. Other springs and brooks in the area feed into the Beck so the emergence of a spring here is not surprising. So we can say that a water feature was present here for at least 300 years. The long ponds nearer the mansion may have been fish ponds or just architectural features as the fashion was for gardens to have long formal stretches of water called canals often described in gardens by the diarist John Evelyn between 1640 and 1700 and one survives at Hampton Court.

This similar map in the British Library shows more of the southern part of Langley in the possession of Jones Raymond between 1738 and 1768 shows the ponds and canal and what looks like a possible structure at the Roman Bath? There are some variations in the detail between the two maps which raise questions on accuracy. Also, there is the likelihood of alterations or rebuilds to structures.

There is some anecdotal evidence from golf club members regarding some periodic cleaning up work to the bathhouse but the decay has continued as weather and nature reclaim the site. The club is enthusiastic about conserving the pond, bathhouse remains and ditch. The long west/east pond is now a ditch with a brick wall side running for some distance along the northern side. The scale on the 1735 map indicates this pond would have been about 8 chains long (more than 500 feet). It looks like substantial parts at both ends have been filled in and so far no evidence of brick lining on the southern bank of the ditch.

The Roman Road

With aerial photography available on such sources as Google Earth we can see evidence of the road from pictures taken in dry periods when the road causes scorch marks in the grassed areas that cover the road. The best places to see these marks are at Sparrows Den West Wickham and across the Old Dunstonians Sports Ground near Langley Park School. If we join these visible features on a map it takes a line across Langley Park Golf Course where it seems to be visible along one of the fairways.



The Roman road crossing Old Dunstonians sports ground and at Sparrows Den.

The old Langley house would have been very close to the Roman Road in this area and currently the Old Dunstonians pavilion is on the line of the road. The construction of the Road is said to be of large flints available from chalk (near Wickham Court?) covered with shingle and gravel which is available from the Blackheath Beds within the Harwich Formation which are present across Beckenham. This is complicated by the fact that the Blackheath Beds have been reclassified by the British Geological Survey as part of the 'Harwich Formation' and the area of Langley Park Golf Course is described as Harwich Formation which can consist of gravels, sands and clays. In any case this explains why local gardens can have gravel or clay present. This also explains perhaps that if anyone digs and unwittingly finds the surface of the Roman Road they might think it is just the natural subsoil or bedrock. Since several gravel pits have been dug across the area some of these may have excavated Roman Road material before it was generally known that the road existed. They might even have originated as Roman quarries? London Clay overlays the Harwich Formation at the edges of the golf course as the land rises toward Pickhurst Green. This overlying London Clay in some areas as well as clay in the Harwich formation and areas of 'brickearth' have given rise to several brickworks having come and gone around the area. Langley itself had 'Brickkiln Fields' named on its estate maps.

Some large flints found around the bathhouse are curiosities as they might be from the nearby Roman Road foundation? The maps and BGS geoindex shows a pit or quarry on the route of the roman road. The pit is still there and will be explored in due course. There is speculation as to whether it was dug in when the course was constructed or maybe during the occupation of the Burrells as they recorded maintaining roads on the estate which would have used locally sourced materials.

The "Roman Bath" folly and pond or swimming pool

Another curiosity pertains to the "Roman Bath" which was constructed at Langley. There is very little reason to suppose that this is actually Roman, probably an early 19th Century folly or fanciful construction because the Roman Road was nearby. The earliest available map shows a pond and canal with a dam between the two and no evidence of a 'Roman Bath' structure on the dam. A copy of a 1735 map of Langley when it was owned by Hugh Raymond shows an oblong pond with a ditch or canal running north toward the house where three other long ponds formed part of the formal garden landscape.

There's some confusion as to how the features are referred to such as Plunge Pool, Cold Bath, Roman Bath, Bathhouse, Swimming Pool. If we take it that the former indoor pool or plunge pool is the Roman Bathhouse (Ruin) and the outdoor pond which collects water presumably from a spring is the swimming pool it may be clearer. "rp" is a mapping reference point akin to a trig point.



Courtesy of National Library of Scotland OS 1953/4 shows the situation at the time of G.W.Tooley's investigation. (rp is a reference point for the map survey)

The 1809 Burrell Estate map shows the oblong swimming pool pond but no bathhouse is evident and the canal or ditch and three ponds near the house have not been illustrated on the map. The omission of the three long ponds near the house may indicate that these had fallen into disuse, dried up or been filled in possibly as part of works carried out to at least partially complete Humphrey Repton's recommendations for Langley in 1790 as Repton disliked formal gardens.

The next available map is the 1868 surveyed OS map which shows the bathhouse structure, oblong pond, ditch or canal, a footbridge and an ice well. The long ponds are not illustrated but a boundary line follows the outline of the longest west/east orientated pond. A similar situation applies for the 1880's 25inch OS map. A 1950's OS map shows the bathhouse as a ruin, with the pond and ditch.

The bath is mentioned in the 1910 Goodhart sale of Langley as a cold bath but indications are that it was already in a state of disrepair. The estate bailiff had shored up the sides of the oblong pond with timbers to arrest subsidence and some press articles describe an intention to make the pond a swimming pool and reinforce the bathhouse, this does not seem to have been carried out.

The remains of the bath which are in a ruinous state show that it was an octagonal building and may have been inspired by actual Roman Baths which had a Frigidarium or cold bath sometimes in octagonal rooms. We can imagine some occupant of Langley going on a grand tour of Europe and seeing the remains of Roman baths and being inspired to construct a replica next to the pool which is fed by a clean spring. Or perhaps the fashion of spending 'the social season' in Bath may have inspired the construction. The lack of evidence for a structure until after 1809 indicates that it would have been one of the Burrell family or the later Goodharts who may have constructed it. There is evidence to show that William Burrell was a historian and antiquarian. Peter Burrell IV (Lord Gwydir) is shown to be a man of fashion according to a picture of him. Lindsey Burrell, a brother of Gwydir's was the last Burrell occupant of Langley and Emanuel Goodhart was also a wealthy individual from sugar refining so these are 'in the frame' as suspects for its construction. I suspect that the building material is largely recycled bricks and masonry from other parts of Langley and earlier demolished and rebuilt houses. The original long ponds and ditch or canal we take to be formal landscaping for earlier pre 1735 Langley buildings perhaps as fish ponds. Tookey tells a story that pike and perch from Langley Lodge lake which was filled in were put in the bath or pond.

To return to the Roman Bath evidence we have some photos and observations from a few sources. Some newspaper articles from 1910 and some records made by G.W.Tooley in his archive in Bromley Historic Collections give us a bit of a timeline.

The newspaper articles of 1910 explain how the walls of the pool are shored up with timber and there is an intention to reinforce the bathhouse walls with concrete. The latter does not appear to have been carried out but earth has either been piled up or slumped against the walls.



This picture above from the G.W. Tooke archive possibly from circa 1950 shows the bathhouse in a more advanced state of decay. The timbers floating in the pool we may assume are the timbers installed to support the sides of the pool and one side has collapsed. It is said that a lot of vandalism advanced the decay but pure neglect after the demise of the Langley estate and the fire which destroyed the mansion in 1913 did not help. The large tree by the bathhouse is still standing and larger than the earlier photo. The roof of the bathhouse has collapsed and the banks around the pool are advancing into the pool covering the path.



This picture shows the interior of the bathhouse possibly 1910 or after Tooke and a colleague carried out some cleaning in the 1950's. We can see a contiguous surround to the plunge pool with what looks like the outlet sluice. The interior of the bathhouse is roughly octagonal with recesses at the sides which may have accommodated benches at one time. It's possible to imagine an enclosed space with perhaps some rudimentary form of heating for a dip in colder periods while the outdoor pool may have been used for swimming? The sunlight on the floor seems to indicate that the roof is missing. There is no evidence of windows apart from the doors at either end.



It's unclear whether this picture is before or after the previous one but further investigation of Tookey's archive will probably clarify. Nevertheless it looks in a poorer condition in this one than the previous one. Tookey comments on clearing rubble from the floor of the pool and carrying out some repairs. How he drained it is unknown but there was a period when the spring dried up for a while.

Today, the sides of the banking around the site have subsided and pressed against the walls of the bathhouse. An unknown quantity of masonry has fallen into the plunge bath and the walls of the bathhouse are now only about 1 to 1.5 metres high. Much of the remaining walls are in need of stabilisation. The sides of the plunge bath have subsided apparently because water is going behind the walls instead of through the bath. The large tree at the corner of the bathhouse had blown over and been felled and removed but a decaying stump is still present. One side of the bathhouse floor is clear but showing some signs of subsidence whereas the other side is overgrown with bramble, nettles, elder etc. Some clearance of the latter reveals that most of the terracotta tiles of the floor are missing, perhaps in the bath. Most of the tiles on the clear side are in place. The subfloor of the bathhouse is a concrete of cement and pebble aggregate which have probably been locally sourced. The masonry is a mixture of bricks of what look like various ages. Some have a rudimentary 'frog' scooped out when moulded and some are very red and prone to break having no frog. The practice of builders making their own bricks on site of construction could be attributed to the variety of bricks and different phases of building and demolition. Some of the red bricks are of such a soft material as to make me believe they are 'rubbing bricks' which were made soft enough to be shaped for ornamental brickwork.



This map OS Kent Sheet XV (NLSScotland) shows the pool, bathhouse structure, canal, footbridge and an ice well above "Br".

The timescale and evolution of this feature can only be guessed at. The Romans may well have utilized the spring which is well below the level of the surrounding ground but very near the road. Perhaps the spring was discovered while material was

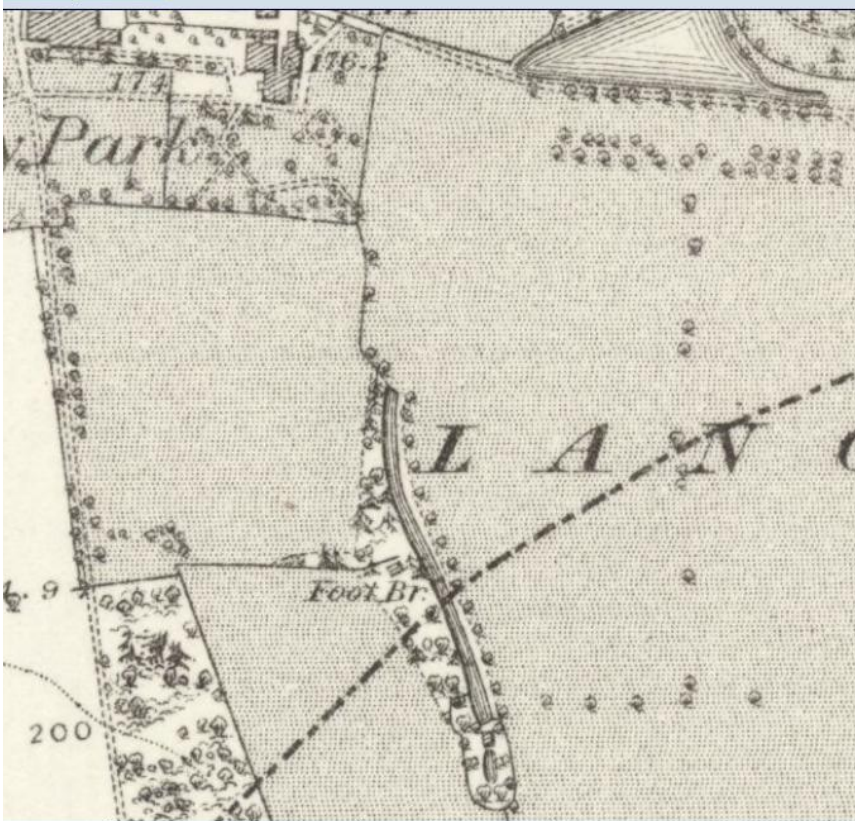
excavated to build the road? This may be a flight of fancy but I do believe that the first or an early construction of Langley was Tudor at the time of Humphrey Stile circa 1520 which agrees with G.W. Tookey's opinion. Tookey had carried out some cleaning and restoration work in the 1950's and gave lectures concerning the site. The grounds of Langley could have been laid out in the fashion of the time with the formal water features or moats. The Stiles occupied the house until circa 1720 which could have encompassed another rebuild? A subsequent Humphrey Stile circa 1650 was a Civil War royalist which may have affected the fate of a Tudor Langley prompting a rebuild and Hugh Raymond was in possession a short time from 1732 to 1738. His son Jones Raymond until 1768 and the Burrells via marriage to Hugh's daughter Amy Raymond had the property until 1820. A print in Hasted's History and Topography of Kent 1778 shows a house belonging to Peter Burrell IV, Lord Gwydir with what looks like Tudor wings or outbuildings. Peter Burrell III had died in 1775. The Burrells apparently replaced that house after 1780 with a Georgian building and constructed Langley Lodge as a dower house. Emanuel Goodhart post 1820 could have added a late Georgian or Victorian extension. The Goodharts sold the house in 1910 and the house burnt down in 1913 in marginally suspicious but well documented circumstances having fallen into some disrepair. At the time it was let by the then owners to the Langley Park Golf Club as a Club house.

Fast forward to today's visible evidence and the long pond or bath is still there although somewhat overgrown with watercress etc. (This watercress has died off in winter 2022/23 and we'll see if it returns). The remains of the 'Roman Bath' are evident although in a severe state of decay. The ditch or canal is still a wide running stream until it gets to the vicinity of the first long pond near the site of the house. The water is then diverted away across what was Oak Field, now part of the golf course. A depression in the ground is present where the first long pond would have been and then another depression is where the longest pond would have been. This is adjacent to a present day golf green which seems to be on top of the site of the filled in smallest pond. Various ditches are across the golf course and there is still a lake in front of the club house which was there throughout the period for which we have maps although it is smaller now due to some partial filling in. The ponds on the map just above the G and L in Langley have been filled in and are part of the grounds of the School or sports fields. Langley house itself went through at least three rebuilds which are evident from the maps and prints or photographs of the houses.



Looking South, the "Roman" bathhouse and cold bath/plunge pool with pool beyond. Overgrown with watercress etc. October 2022.

A mysterious mound near the bath may reveal whether it is a midden of demolition material from earlier houses? One theory is that the bathhouse was constructed from such material. Revealing brickwork shows that some 'chunks' of mortared masonry consisting of half a dozen bricks or so were directly laid onto the bathhouse walls so a degree of 'bodging' was employed in the construction.



This portion of OS map Kent Sheet XV circa 1870 shows the canal with the bathhouse and long pond near the bottom. The upper long ponds are not marked indicating they have fallen into disuse, dried up and partially filled in? The footprint of the house is also different from the 1735 map. A footbridge and structure nearby which is an Ice Well can be seen. The lake at the top which was adjacent to Langley Lodge has since been filled in.



This picture taken from the end of the long pond October 2022, you can make out the banking encroaching on the edge of the pool which is covered in watercress which was perhaps a purpose of some of the pools as watercress was a 'fast food' for labourers. The brick surround has probably collapsed into the pond.

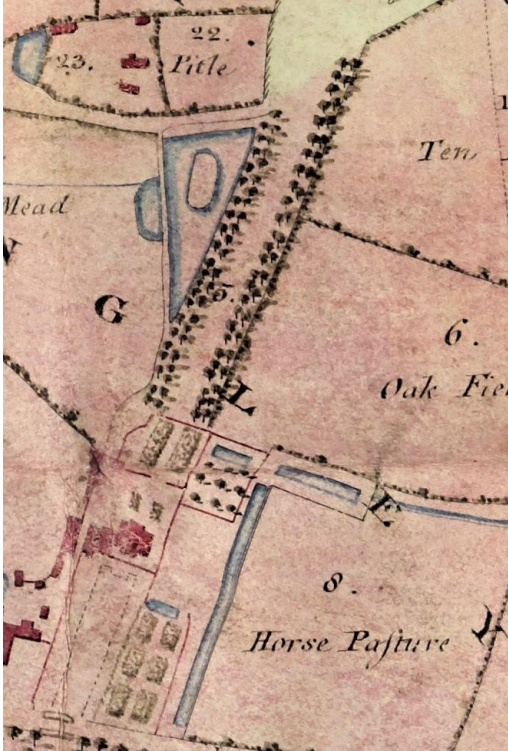
Initial aims would be to arrest further decay by removing plant growth which eats into masonry. Stabilise the water level which is flowing around and under the walls of the bath. Remove some soil which is putting pressure on remaining parts of walls. It is likely that the large tree now a stump has undermined the structure and rotting away of the roots could be contributing to further subsidence. Perhaps the only long term solution would be to record what is left and accept that nature will eventually reclaim the site.

As I have said, the pool is at least 300 years old, possibly much longer. As the Tudors and early Georgians were not famous for cleanliness or bathing it may be that a late Georgian and Victorian passion for bathing machines etc prompted the building of the bathhouse.

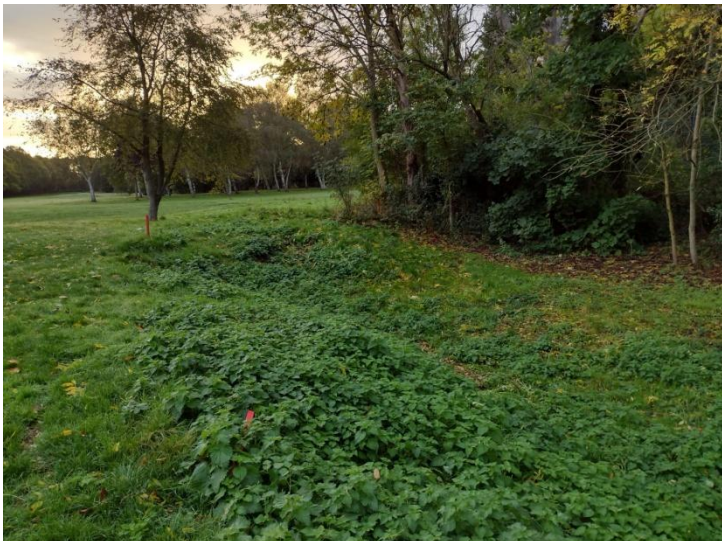
Since many old buildings have been allowed to pass into obscurity it would be a good thing if the architectural and archaeological remains could be preserved and perhaps the fact the Roman Road and nearby ice well remains are buried has contributed toward their preservation. The eroding effects of water and harsh winters can't be avoided with the bathhouse but could be controlled. In any event the wetland habitat is good for wildlife and an enhancement to the golf course.

Long Ponds near the site of the Mansion

The water from the swimming pool and bathhouse flowed along the canal and fed three ponds of varying length at the edge of the grounds to the house as shown in this map extract. The water could have gone to either the ponds by the avenue or to the Beck to the west of horse pasture.



The eastern end of the longest pond is approximately at the tree top left of this picture and some walling on the right side in the second picture.



Depressions of a Long Pond near the site of the house

At the point from approximately where this photo was taken there are the remains of some brick lining to the edge of the pond. The extent of the wall needs investigating. It is laid at an inclined angle and we assume the other ponds would have been of the same construction? We have exposed a bit more of the wall which as some collapsed sections which might be repaired. One part of the wall has been removed in the past to install a land drain. There doesn't seem to be any mortar between the bricks so they may have been laid with clay mortar. Its hard to imagine that all of any lime mortar would have eroded away.

Some excavation of the wall in January/February 2023 has revealed more of the wall which is estimated to have been approximately 7 or 8 chains, up to 500 feet originally although now about half of it is under or demolished to build the nearby school.

Map and aerial photo evidence indicates that some or all of the southern side may have been demolished which requires some investigation.

Various masonry lies at the bottom of the ditch, either dumped rockery or demolition material. We also want to investigate how deep the pond may have been and whether brick lined. The bricks of the north side seem to be laid in a variation of 'garden wall' bricklaying pattern, seems to be three runners then two stretchers alternating.

The two smaller ponds running north/south are now filled in but we can see some outline in LIDAR ground radar images



The LIDAR image on the right shows the remaining part of the long pond, the end of the canal at bottom with drainage ditch across the golf course. Where the end of the canal turns into drainage ditch the vague outline of the southernmost of the three ponds can be followed. Some outline of the northernmost pond can be seen running up to the square golf tee. We could search for any wall remains where the drainage ditch zigzags on the line of this feature.

The Ice Well or House

The Ice Well is mentioned in the details of the Goodhart sale of Langley along with the Cold Bath etc but as it is shown on maps as a structure but not labelled 'Ice Well' I wasn't aware of its location.



What remains today is the brick lined pit of the well approximately 12 feet in diameter. The structure above ground level is gone, either fallen into the pit or removed and the pit is full with at least the top few feet of earth. We were curious as to the

profile of the pit either tapering or bowl shaped but revealing a few courses of bricks indications a tapering structure probably similar to nearby Kelsey Park Ice Well which is almost intact. Probably both structures are of similar date and maybe constructed when both sites were in the possession of the Burrells?

Although there is some desire to excavate the well, it is probably advisable to leave it full of earth for structural soundness and safety. Curiously the upper structure is drawn as a rectangle on maps rather than an igloo shaped dome.

LIDAR image

The LIDAR image shows us ground features with vegetation stripped away so any surviving features are revealed along with landscaping associated with the golf course.

Top ditch behind green.



Bottom left/diagonal route of the railway and West Wickham station. Left of centre Roman bathhouse/swimming pool with canal running north. Just below the swimming pool, slightly to the right is the pit or quarry.

Closer inspection of LIDAR images shows old field boundaries, the lake by the clubhouse with drainage and the route of the old road which roughly followed Red Lodge Road.

Progress of Investigation

Perhaps I should start by saying that the investigation has encountered several types of bricks and masonry. Some bricks are of soft red clay and possibly 'rubbing bricks' used in Tudor architecture. Some are yellowish clay with some charcoal content. Both of these have no frog or indentation. A third type has a rudimentary frog roughly scooped out. Probably all of these were locally sourced being made 'on site' by the relevant builder. Some substantial pieces of dressed limestone have been found around the site. Some pieces of small bricks have been found of unknown origin and not in large numbers. The quarry tile floor of the bathhouse is possibly salvaged material from an earlier mansion. Some pieces of broken iron grating were salvaged from the pond, very corroded. Several large flints randomly buried around the bathhouse and the origin suspected to be from Roman Road foundation, possibly dug out when drainage was laid across parts of the golf course. These flints would have to have come from some distance such as the North Downs or perhaps as near as Wickham Court.

Swimming Pool and Bathhouse (Plunge Pool)

The comparison of earlier photos of 1910 and 1950's and the current condition of the swimming pool and bathhouse demonstrates that time, weather, vandalism and neglect have all contributed to the continuing decay of the remains of the swimming pool and bathhouse. Some evidence of the buried remains of the long ponds near the site of the Langley mansions has been seen in the banks of the stream which drains from the canal or ditch running from the bathhouse. The exposed wall of one long pond will be mentioned later.

By May 2023 we have revealed the outside surface of the bathhouse walls although only between 0.8 metres to 1.8 metres of height remain in places and some walls show signs of imminent collapse or earlier subsidence.

Removing earth away from the outside of the walls to relieve pressure has not encountered any collapsed material apart from some broken roof slates and disintegrated mortar. In one section there are dumped bricks either whole or broken. Much of the demolished material seems to have been dumped in the swimming pool. The inside floor of the bathhouse is of red earthenware quarry tiles unglazed on a screed of concrete made up with presumably local pebble aggregate. Much of this is either subsiding or disintegrated with large areas of tiles loose or missing. Several whole and broken tiles salvaged from in the swimming pool or other areas around the bathhouse indicating random demolition or vandalism.

Monitoring one area of subsidence shows that the wall foundation in one place is still subsiding. As there had been a large tree (Alder?) at one corner of the bathhouse, seen in the early photos, this has died and the golf course informs us that the tree fell down and was removed for the most part. The stump remains in situ but the roots had been pulled up contributing to collapse of the wall in that corner and possibly some rotting roots under the bathhouse contribute to subsidence.

The water level in the swimming pool had been lower in October 2022 because a breach in the wall was allowing water to undermine the bathhouse. Plugging the breach has increased the water level which now flows over a sluice into the plunge pool. At the northern end of the plunge pool is a dam or weir over which the water escapes into the canal or ditch. The relative water levels are approximately 5cm higher in the swimming pool than the plunge pool and a few centimetres drop from the plunge pool to the level of the canal.

It's evident that a lot of masonry has been demolished or removed around the plunge pool possibly by long term vandalism and some decay. Any mortar remaining has a high lime or chalk content and is not highly waterproof. As mentioned earlier the construction of the walls is of re-used brick sometimes laid as large chunks of pre mortared demolition material presumably from earlier demolished buildings. Some evidence of the use of over window or door arches.

The surrounding wall of the swimming pool has completely collapsed or long stretches and is only relatively sound at the end constituting a dam between the swimming pool and plunge pool. Substantial parts of the surround of the plunge pool have collapsed or been demolished. Some of this due to undermining and subsidence.

Canal or Ditch

Apart from silting up and accumulation of fallen leaves the Canal is a substantial water feature with wildlife value. Water Cress and Yellow Iris are present. Several water fowl species use it including Mallards, Mandarin Ducks, Canada and Egyptian Geese, Coot and Moor Hen. There is very little evidence of amphibians so far apart from one toad.

The northern end of the Canal drains into a narrow stream which has been cut across the site of the most southerly 'long pond'. There is some visual evidence of bricks of the surround of the long pond crossing the stream in two places. At some point pre 1950's a drain was dug out of the canal to cross the golf course and one or two 'sinks' are near the edge of the canal. These appear to be for overflow of the canal?

Long Ponds

Of the three 'long ponds' nearer the site of the earlier mansions the smallest is completely filled in, the one orientated north/south is filled in with the small stream crossing it and running through breaches in the buried walls. Of these two we cannot say what material was used as infill but as some rebuilding of Langley took place under the Burrells then it would not surprise me if material from the demolition was part of the infill. No excavation has been undertaken here but we might explore some bricks on the bank of the stream at the western edge of the golf course which seem to be close to the west wall of the north/south oriented pond.

The third long pond running West/East was to the south of Langley mansions almost forming a one sided moat. It is partially filled in where it runs under the site of Langley Schools. The southern wall of the pond appears to be mostly robbed out or

demolished. The northern bank or wall is partially exposed brickwork laid in a “garden wall” pattern. This is partially covered in some sections, partially exposed and some buried in woodland. Some parts are collapsing due to growth of tree roots or decay of bricks, some of which are the soft red ‘rubbing bricks’. Some large limestone blocks dumped in the bottom of this pond. A relatively modern land drain enters the pond from the south and a drain has been installed on the north side involving some demolition of the north wall. Some evidence points to this pond having been used in golf course management such as storage of sand for bunkers shown in 1946 aerial photos.

Several local houses had substantial water features in the grounds and I suspect that the production of local bricks involved the quarrying of clay on or near the site of the house. The kiln would be a constructed nearby ie Brickkiln Field on the Langley estate. Fuel sourced from woodland. Some London houses were described as being built out of the material excavated for foundations.

Cleaning the site

Some moderate cleaning up of the site was carried out to remove plants which were breaking into the remaining structure and remove some earth which was pressing on walls causing some collapse. This also allows some assessment of the construction of the bathhouse. As already said the construction of the octagonal bathhouse is substantially out of demolition rubble from other structures, probably the earlier Langley mansions. A lot of red brick and lime mortar and some pieces look like from over door or window arches. The two end walls of the bathhouse were constructed out of two courses of brick forming 9inch thick walls. Both end walls are only a maximum of 5 feet high and collapsed or demolished to ground level in places. The internal floor of the bathhouse was laid with quarry tile but several areas removed, broken or subsided. Several tiles have been salvaged from around the site or from the pond. Similarly a good number of bricks either whole or broken and of 3 or 4 types have been salvaged from the pond or being buried around the site.

Recapping on the stabilisation or reconstruction of the site it is possible that continued deterioration will take place due to subsidence. I strongly suspect that this structure was poorly constructed on inadequate foundations which are on sandy clay which is part of the local Harwich Formation (sandy clays, pebbles, etc. And include the Blackheath Beds among other geological types).

So far some limited investigation of the exposed wall of the long pond reveals some partial collapse or destabilisation due to plants growing out of the wall.

The Ice Well has not been touched as the infill of earth and possible collapsed roof will be supporting the buried walls.

The Red Lodge site was briefly investigated and apart from a few bricks and bits of cement nothing significant found but warrants a more comprehensive investigation.

A pit or infilled quarry on the route of the Roman Road was also briefly investigated but nothing revealed near the surface apart from sandy gravels. The presence of large flints around the bathhouse may indicate that golf course construction work dug up Roman Road foundation in order to install land drainage. The large flints are foreign to the area geologically. If one imagines Roman traffic travelling up and down the road then the transport of flints from the Downs and gravels from locally or other areas then a process of construction from a preliminary dirt track to a metalled road is possible.

Water Quality

A survey of water quality in the Ravensbourne catchment area showed the spring to be of clean water with low Phosphate and Amonia values.

Geology

The area is described as Harwich Formation on British Geological Survey maps. This can include Blackheath beds of pebbles, Sandy clays and gravels. Large flints found around the site are believed to come from excavated foundations of the Roman Road as they are foreign to the area. London Clay overlays the Harwich Formation but only where the ground rises toward Hayes Lane. The sandy clay on which the bathhouse is built is believed to be one reason why some subsidence is taking place where foundations were insufficient. This is also probably one reason for the surrounding sides of the swimming pool subsiding and falling into the pool. Also a reason why water can undermine the foundation as the clay is very porous.

When we wash out the sediment from the clay we are left with fine grained quartz-like sand.

Dredging

Some bricks either whole or broken have been dredged from the swimming pool presumably having been thrown in as a result of vandalism. A good deal of twigs and branches as well as leaf litter has accumulated in the pool but the soft mud goes down to at least about 1 metre.