

**BOROUGH OF TWICKENHAM LOCAL HISTORY SOCIETY**

Paper Number 97

## **Down The Drain**

The Long And Difficult Transition  
from Night Soil Men  
to Public Sewage Treatment Schemes:

Local Democracy stretched to its limits  
in Hampton Wick, Teddington,  
Twickenham (with Whitton) and Hampton

1863-99

**Ray Elmitt**

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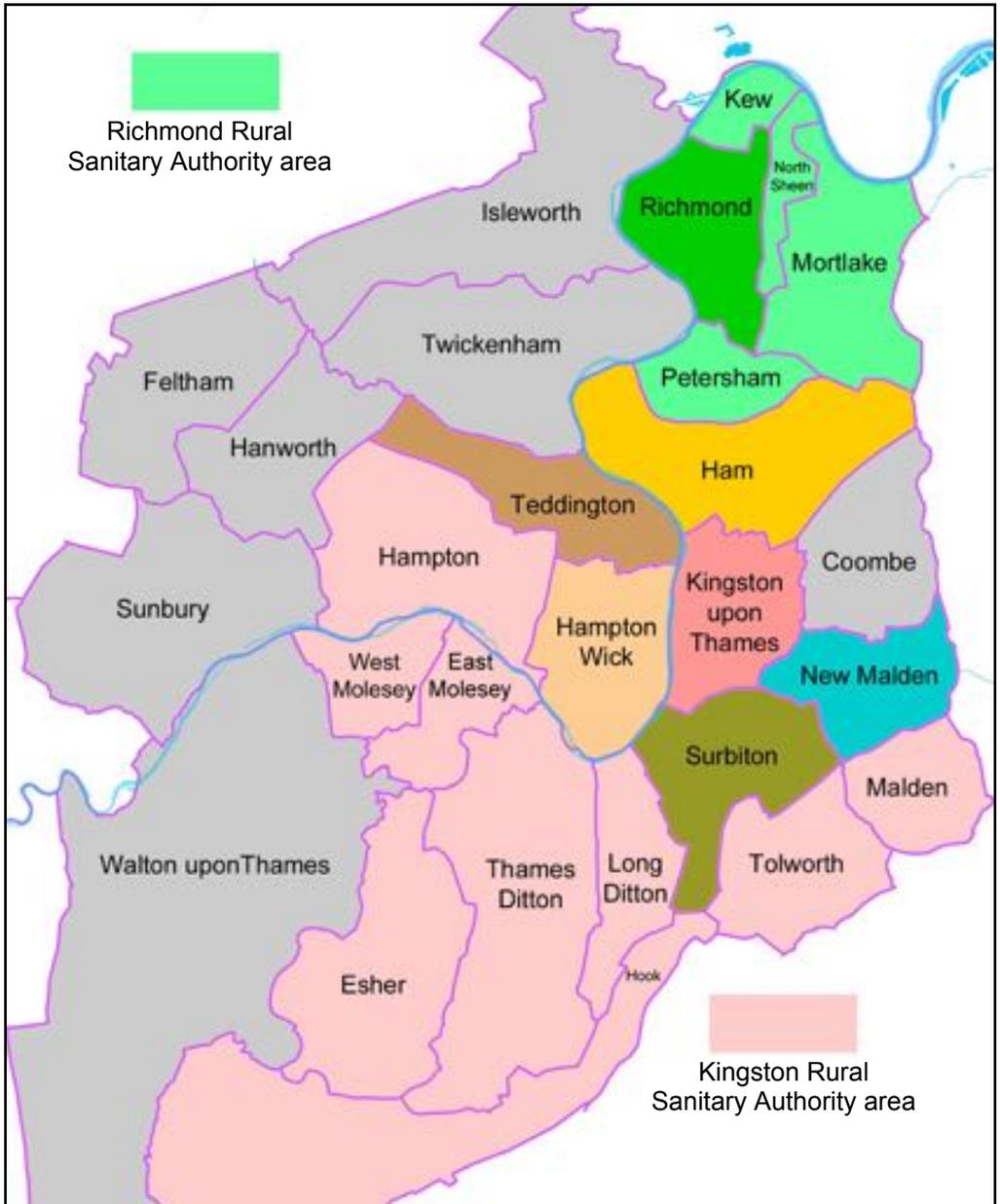
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*Lower Thames Valley: these 27 parishes bordered onto the River Thames or one of its tributaries. The Thames Conservancy Act 1866 forbade them from draining their sewage into the river. It took almost 40 years before all authorities had completed their sewage treatment schemes.*

## PREFACE

**A**RGUABLY THE MOST down-to-earth yet intractable problem facing communities and their local government institutions in the second half of the nineteenth century was how to deal with the human waste generated by an ever-growing population.

It was a topic that occupied huge numbers of column inches in newspapers and fuelled lively and sometimes bitter debate. As one Local Board chairman at the time put it:

*“Next to contests about religion there is nothing which waxes so warm as a sewage fight; orators grow apace and become diffuse and excited on this subject, and when much talking is done facts often have a struggle for life, and if the facts do not fit the oratory so much the worse for the facts.”<sup>1</sup>*

How did such an unprepossessing issue come to force itself centre-stage in the attention of so many worthy and capable local politicians? Why did it leave them struggling to find solutions for so long? How was it eventually resolved?

This paper seeks to answer these questions with specific reference to the communities of Hampton Wick, Teddington, Twickenham (with Whitton) and Hampton in the period 1863 - 99.

## INTRODUCTION

### **Traditional Sanitary Practices**

**F**OR GENERATIONS, PEOPLE had availed themselves of two basic sanitary provisions: the well for their water and the cesspool (or privy) for their relief. It was accepted that the two facilities should be kept separate although the scientific imperative behind this was slow to emerge. Cesspools (and their smaller cousin, the privy) held back the solid element of human waste whilst allowing liquid to percolate into the ground or be carried off by local streams. The cesspools were emptied (by night soil men) and the contents sold to local farmers as manure for their crops. Thus a seemingly virtuous and self-sustaining cycle existed.

Two factors upset the equilibrium of this long-serving approach. Firstly, huge population growth (central London grew three-fold between 1801 and 1861) generated more waste whilst the outward spread of towns meant the primary consumers of this waste (i.e. farmers) were now located further away. The night soil men, having further to travel, put up their prices just at a time when - starting in the 1840s - Britain began importing cheaper guano fertiliser from Peru in significant quantities. Unable to get their existing cesspools emptied, householders had new ones dug until some gardens were honey-combed with these "receptacles of filth". The second factor that brought about a change in sanitary approach was the increasing availability and use of piped water supplies, often leading to the installation of water closets and creating water-born sewage systems. The resulting larger volume of liquid waste frequently overwhelmed the existing infrastructure and often ended up entering the local aquifers and contaminating well water.

## The need for change

**A** NEW APPROACH TO sanitation was needed, designed to run at a community level rather than on an individual property basis. There were clear advantages in having an integrated system of sewers capable of carrying off the waste of a whole community to a plot of land where it could be treated collectively and disposed of by irrigation, filtration or precipitation. To implement such schemes, local authorities would need new powers sanctioning them to raise capital and to enforce adoption of their schemes. Parliament therefore passed a programme of enabling legislation in the mid-1800s to provide such powers locally, but its adoption was not compulsory. The traditional *laissez-faire* system of government in Victorian Britain typically left it to local communities to choose whether they wished to adopt the new powers offered or to remain with the existing less-powerful Vestry system of local administration. But attitudes and practices were changing, driven by pure economic considerations.

When Queen Victoria came to the throne, only half of London's infants lived to their fifth birthday. The economic impact of such attrition in the future workforce - and hence Britain's continuing ability to compete in world markets - became an increasing concern. The *1837 Registration Act*, in establishing a national system for recording births marriages and deaths, also enabled mortality rates to be compared across the country. For the first time the links between poverty, ill-health and the cost of both of these to the local community became firmly established. Under the *1848 Public Health Act*, the establishment of a Local Board of Health became mandatory for any community with a death rate above 23 per 1,000.

With a growing sanitary crisis looming, the government moved to shore up the existing infrastructures. In the *1847 Towns Improvement Clauses Act* local authorities were given specific powers for their sewers "to communicate with and empty themselves into the sea, or any public river". However, many local authorities were by now also

openly sanctioning their populace to connect private cesspools directly to the local sewer system. The effect of the new legislation was therefore to legitimise the use of rivers to rid the community of its waste. This would soon come back to haunt the government. Meanwhile a different catalyst was bringing about a fundamental rethink of national sanitary strategy.

## **Cholera**

**T**HE FIRST INCIDENCE of cholera in England had occurred in Sunderland in October 1831 when a ship carrying sailors who had the disease docked at the port. The disease made its way northwards into Scotland and southwards toward London. Before it had run its course the disease had claimed some 52,000 lives, including 6,500 in the metropolis. The symptoms were vomiting, diarrhoea and sweating. Death could - and usually did - occur within hours of the first symptoms showing. The cause of the disease was unknown and opinions were divided as to how it was transmitted: was it by touch (contagion) or by smell (miasma)?

Miasmatic thinking dominated official medical and government policy. As a result, and following a second cholera outbreak in 1848-9 which killed 14,137 in London, the sewer system in the metropolis was regularly flushed to get rid of the smell (and hence, it was thought, the risk of disease) from the houses and streets - but at the expense of hugely polluting the Thames itself. Yet because these measures were actually ineffective, cholera returned once again in 1853-4 with deaths in London totalling 10,738.

## The Great Stink

**I**N JUNE 1858, the combination of sewer flushing and a severe and prolonged heat wave provided “perfect storm” conditions that would directly and swiftly lead to a radical change in policy. The level of the Thames had dropped significantly leaving raw sewage deposited on the foreshore. For several days it lay there whilst temperatures in the shade averaged mid-30s °C - rising to 48 °C in the sun. The effect on the accumulated sewage was so noisome that the Press soon began calling the event “The Great Stink”. The government attempted to carry on business as usual in its newly reopened Houses of Parliament by the river but the stench forced MPs to retreat from some of the committee rooms on the other side of the building. On 15 June 1858 Disraeli, the Chancellor

of the Exchequer, responded to what he described as “a Stygian pool, reeking with ineffable and intolerable horrors” and tabled a bill (it passed in just 18 days) that would authorise the Metropolitan Board of Works (MBW) to borrow £3m (now £7.5bn) to fix the problem.



The MBW’s Chief Engineer Joseph Bazalgette had by 1856 already completed plans for a combined system - capable of handling both sewage and rainwater - to serve the total area covered by the MBW

*The Great Stink in Punch*

(which went as far west as Hammersmith and Putney, north to Stamford Hill, east to Beckton and south to Crystal Palace). Bazalgette's plans were based on a hierarchy of small street sewers (existing and new) with a combined length totalling 13,000 miles. These would in turn feed into six new main intercepting sewers (three serving the area on each side of the river) built at different heights to match the contours of the surrounding areas. These totalled 450 miles in length, with the lowest-level sewers being hidden within massive new embankments - Chelsea and Victoria on the north side, Albert on the south. (The works reclaimed over 52 acres of land from the Thames.) Finally, major pumping stations raised the flows from the intercepting sewers into a gravity-fed outfall sewer on each bank of the river to the final discharge<sup>2</sup> points of the (untreated) sewage at Beckton in the north and Crossness on the south side, both sites being beyond the boundary of the metropolis as stipulated by Disraeli in his original bill.<sup>3</sup>

Despite the vast scale of these works, the southern part of the system had already been completed by April 1865 and began operation. The northern drainage system followed in 1868.

In 1866 there had been a further cholera outbreak in London that claimed 5,596 lives, but it was confined to an area of the East End which was not yet connected to Bazalgette's system. It was the last outbreak of the disease in the capital. However since the link between cholera and sewage contamination in drinking water was not yet generally recognised, the eradication of the disease by the new system was more of a lucky bonus than an intended outcome.

### **Focus on the upper Thames**

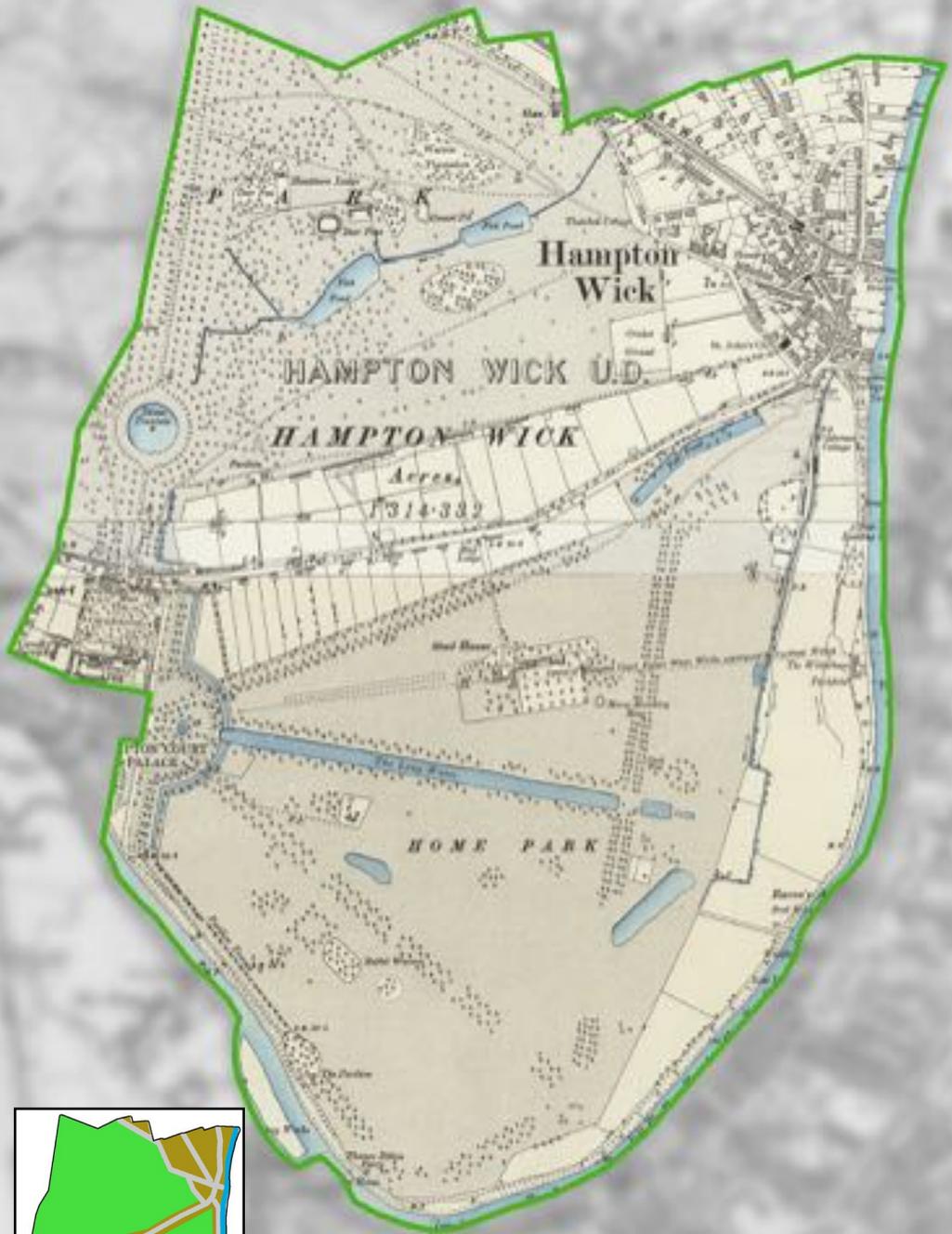
**H**AVING ENSURED THAT, in due course, central London would no longer be polluting its own stretch of river, it was inevitable that the government's attention would next turn to those communities upstream who continued to use the Thames to carry off their sewage outfalls. The *Thames Navigation*

*Bill of 1866* placed the whole of the river - from Cricklade to the sea - under the jurisdiction of the Thames Conservators. In a complete reversal of their 1848 legislation, the government decreed that “no new flow of sewage into the river or its tributaries was allowed and existing sewage works were to be removed”. Penalties of £100 per day could be levied although a period of grace was allowed for removal of existing connections.

This threat of draconian penalties focused the attention of all riparian communities. As mentioned above, constituting a local board under the provisions of the *Local Government Act 1858* gave a community power to raise capital by borrowing against future rates. Hampton Wick had already established its Local Board in 1863 and both Twickenham and Teddington now voted to do likewise. Only Hampton decided to remain with the Vestry system and so by default eventually found themselves part of the Kingston Rural Sanitary Authority. The struggles that each of these local communities went through in their attempts to conform with the legislation were both long and difficult - and very different.

### **About this paper**

**T**HE REMAINING SECTIONS of this paper chronicle how these struggles were separately dealt with by the four communities. Each section starts with a brief description of the community, its topography, demographic profile and the existing drainage systems at the time of the 1866 *Thames Navigation Bill*. The efforts of the Local Board to be consistent with the law and the drainage schemes they considered are described - based largely on records of their discussions as reported in the *Surrey Comet*. Finally the scheme ultimately adopted by each community is described in detail and the account brought up to date by explaining what, if anything, remains of it.



1.1. Hampton Wick in 1895. As the inset (left) shows, almost all the land was owned by the Crown (shown in green), leaving little scope to site a sewage treatment works within the boundary

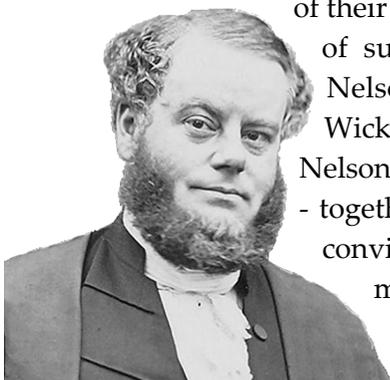
# 1. HAMPTON WICK

## ORIGINS

**T**HE ANCIENT MANOR of Hamntone lay in a large bend in the River Thames where it turns northward, passing by Kingston and flowing onward to Teddington and Twickenham. The manor occupied 3,350 acres and contained two communities - Hampton Town in the west and Hampton Wick in the east.

On 26 July 1831 a notice appeared in the *London Gazette* defining the boundary of a newly-created parish to be known as Hampton Wick. One third of the land lying in the east of the original parish of Hampton was hived off and a new church, then on the point of completion in the Wick - and originally intended to be a chapel-of-ease for St Mary's Church in Hampton Town - became Hampton Wick's own parish church. The area of the parish was just over 1,300 acres of which 90% consisted of royal park or other lands managed on behalf of the Crown.

In 1863 Hampton Wick became the first of the local communities to adopt the *1858 Local Government Act*. This legislation allowed communities to form a Local Board to take control of a wider range of their parish affairs. The proposal for the formation of such a Board was tabled by Thomas James Nelson, a recently-arrived resident of Hampton Wick who was the Solicitor to the City of London. Nelson used his knowledge of law and current affairs - together with his skills as an orator - to present a convincing case to his fellow parishioners. The main plank of his argument was that the adoption of the Act would exempt the parish from levies that would otherwise become due



1.2. *Thomas James Nelson*

under the recently-passed *1862 Highways Act*. He added an urgency to their decision by warning that the allowable lower limit for the population of a new Local Board was shortly to be raised to 3,000: the 1861 Census had recorded the population of Hampton Wick as just 1,994.

The resolution in favour of adopting the Act was passed unanimously, as was a second resolution that the Board should consist of nine members. The provisions of the Act became effective two months later. No time was lost in arranging an election and the Hampton Wick Local Board held its first meeting on 22 June 1863. The nine members of the Board consisted of a cleric, two gentleman, yeoman, school-master, surveyor, coal merchant, hotel-keeper and a solicitor.

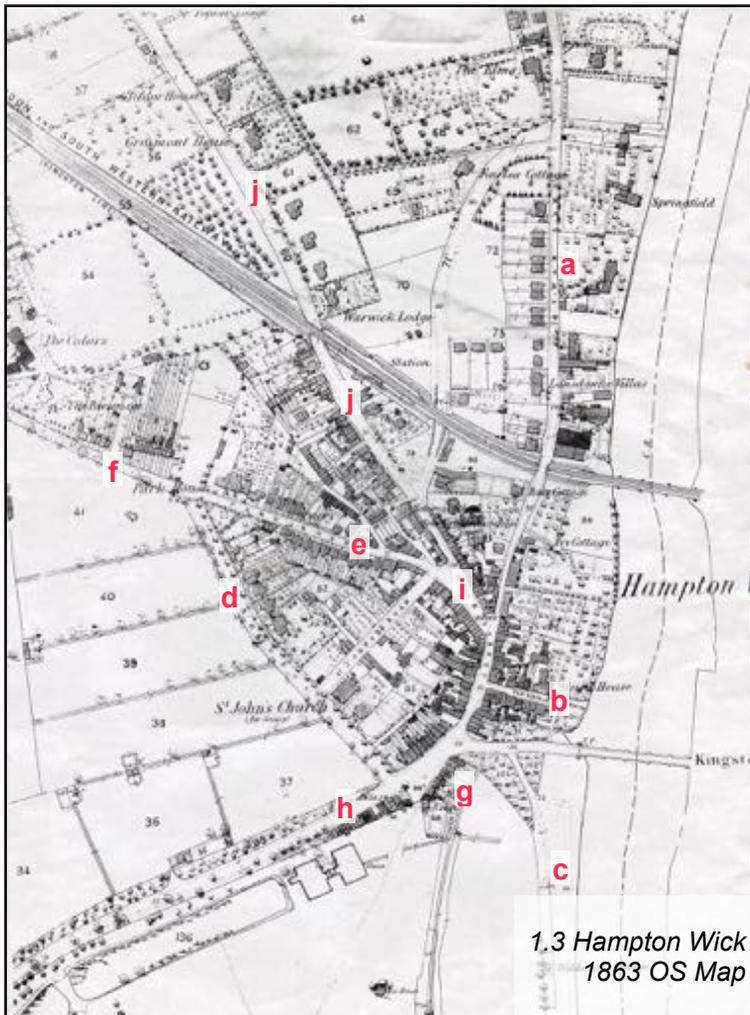
Appointments were quickly made for the positions of Clerk, Surveyor/Inspector of Nuisances (combined), Rate Collector and Treasurer. The Board also agreed to meet on the first Monday of each month.

According to the minutes of their Board meetings (corroborated by reports carried by the *Surrey Comet*) the main preoccupations of the Board were:

- the public health of the village,
- issues with sanitation and the supply of drinking water
- the reporting and abeyance of nuisances<sup>4</sup>
- maintenance of roads and footpaths together with the lighting thereof
- approval and regulation of new building in the village.

## HAMPTON WICK IN 1863

**T**HE AREA ADMINISTERED by the new Board contained around 450 houses mainly in the north east part of the parish (see Figure 1.3 below). The finest of these were located along the riverside on Lower Teddington Road **a** , Old Bridge Street **b** and the Barge Walk **c** . Other major properties were located along Church Grove **d** , Park Road **e** and Sandy Lane **f** as well as around the royal park gates **g** and along the Hampton Court Road **h** . Several older but still serviceable middle-class properties (including several shops) were situated along the High Street **i** and Upper Teddington Road **j** .



1.3 Hampton Wick  
1863 OS Map

The majority of the poorest housing stock lay in a low lying area between Park Road and Upper Teddington Road. The insanitary state of some of these latter dwellings was of early and immediate concern to some members of the Board. There were suggestions that maybe the Board should purchase and demolish them. However since some of these properties were owned by other Board members, the idea did not get carried out at the time.<sup>5</sup>

The Board wasted no time in instituting a regular programme of Sanitary Inspections of these areas. The practice was for a sub-committee of the Board, led by the Chairman and accompanied by the Surveyor, to walk around the poorest parts of the village. They noted the worst nuisances they found and reported these back to the Board. Their recommendations for abating the nuisances were invariably adopted and the results closely monitored by the Board. Some extracts from these inspections give a depressing insight into some of the prevailing sanitary conditions during the Board's early days:

*... the committee have now to report upon what appears to them to be, if possible, a worse state of things, viz., that which exists in Brice's-row. The Row contains nine homes, and about 60 inhabitants. There is one privy at each end of the Row, there is an open drain in front of the cottages, and there is no water supply of any description. The inhabitants are allowed by the kindness of the landlord of the Rose and Crown to use the pump attached to the water trough in front of his premises, and this causes a nuisance from the path on the high road being constantly wet, and obstructions being caused by the pails and other vessels used by the Brice's-row people to draw their water in ...*

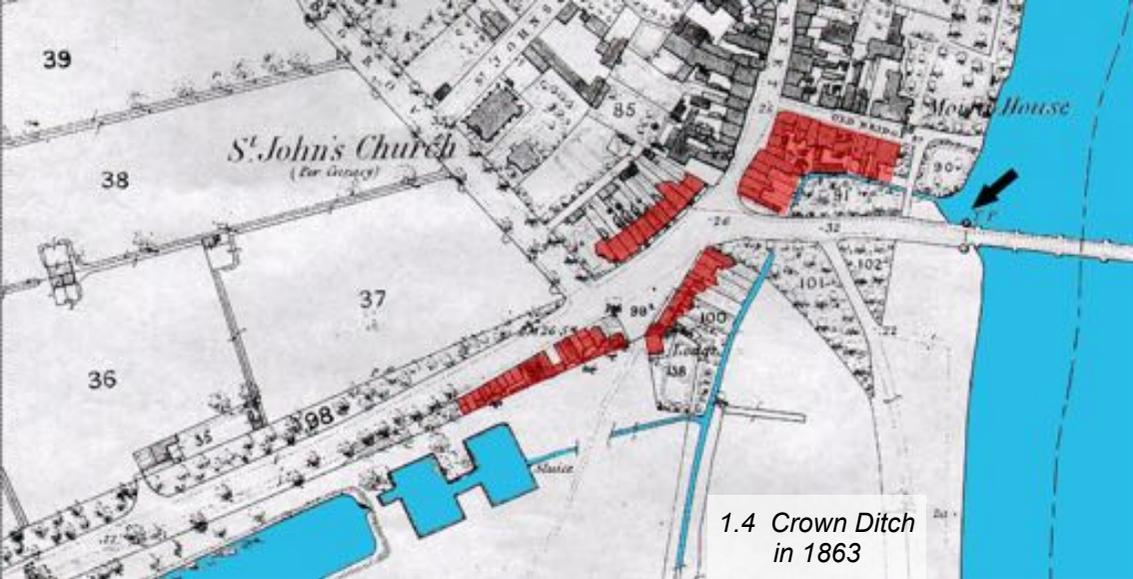
*The next place visited was The Pits, and the committee found that the only remedy they could suggest to the Board, to make the Pits more decent for habitation, was first of all to require the*

*cesspool to be put in proper order, it being now full and in other respects in an offensive state; and secondly, in order to obviate the slush and wet they saw there, that the place should be paved.*

Despite these reports, it would be wrong to assume that the dangers to health arising from sewage polluting drinking water were confined to the poorer classes. An incident occurred in the summer of 1872 in which the chairman of the Local Board arrived late for a monthly meeting, reporting that several members of his household had suddenly fallen ill. His immediate suspicion was deliberate poisoning. However he promised, in order to set an example to the local community, to be totally open once the true findings of the case were known. He reported at the next meeting that an analysis of the water from one of the wells had shown it to be heavily polluted with sewage material. The same well had previously been opened and the drainage of the house checked after the Prince of Wales (the future Edward VII) had also fallen ill after visiting the chairman's house. Whilst the health risk was classless (and even royal), nevertheless the solution available - simply to use one of the other two wells existing at the premises - was not.

## DRAINAGE OF HAMPTON WICK

**I**N 1863, a basic system of sewers already existed in the village and around 40 houses were draining into the Thames (see Figure 1.4). The main sewer served the High Street and part of Park Road. It passed down Old Bridge Street and had an outfall into the river. Another smaller sewer drained *The Terrace* opposite Kingston Bridge into the Thames just beside the bridge. A third - open - sewer, known locally as the Crown Ditch originated in Home Park as one of the outlets from the Long Water. This ditch had long been used as a drain by the residents of a row of cottages along the park wall as well as the houses on Home Park Terrace behind which



1.4 Crown Ditch  
in 1863

the ditch next passed. Having been carried in a culvert under the approach to Kingston Bridge, the ditch then turned towards the river passing behind several cottages on Old Bridge Street - for which it again served as a drain. Over the years, the contents of the ditch had carved a bay in the riverbank at the point where it flowed into the main stream. Thus the contents of two sewers and an open drainage ditch were discharging near to each other at the foot of Kingston Bridge. In summer - when there was little stream to carry it away - the offensive material became trapped in the bay (arrowed). Unsurprisingly, remedying this very public nuisance



1.5 Crown Ditch  
in 1915

was a high priority for the new Local Board and eventually a new covered sewer was built to relieve the Crown Ditch and the bay itself was filled in (see Figure 1.5).

At its third meeting on 3 August 1863, the Board commissioned its Surveyor to devise a new system of drainage for the village. Preparation had to await publication of the first edition Ordnance Survey 1:10,560 (six-inch to the mile) maps with the essential elevation measurements needed to calculate pipe gradients and trench depths. The preliminary schemes were ready for the March 1864 meeting. The main proposal was to replace the old drains with a new brick sewer from the *Man of Kent* (now *The Foresters*) to the existing outfall at the foot of Old Bridge Street. Before proceeding any further, the Board thought it expedient to ascertain whether the Thames Conservators would object to this scheme. This proved to be a wise precaution. The Conservators were currently in a heavy dispute with Kingston Town Council which had just embarked on a major new sewerage scheme which would result in several hundred properties in Kingston being directly drained into the river. Whereas the Conservators might otherwise have sanctioned Hampton Wick's modest request, they were now unable to do so on a point of principle.

The Thames Conservators decided to challenge Kingston in the Court of Chancery and seek an injunction to prevent the Town Council from enlarging the existing outflow or to use the new sewer system to increase the volume of sewage flowing into the river. In their defence, Kingston argued that there were already 12 public drains from the town discharging into the Thames. The Conservators counter argument was that "the discharge would be injurious to the health of persons navigating ... the river ... or dwelling on ... the banks of the river ... and would destroy the fish in the river, and to this and other respects be a great and serious nuisance". In June 1865, the Court ruled that they could only grant

an injunction on the basis of the existence of *actual* rather than *potential* nuisance.

The Conservators had thus lost the case but a little over a year later they not only turned the tables on Kingston but forever changed the drainage landscape for Hampton Wick and all other riparian communities along the entire length of the river. *The Thames Navigation Act (1866)* ruled that no new flow of sewage into the river or its tributaries was to be allowed and all existing sewage works that used the river were to be removed. A brief moratorium was allowed for this to be accomplished but thereafter a fine amounting to £100 (now around £180,000) *per day* would be levied.

As if to underline the need for these sanitary measures, a fourth<sup>6</sup> outbreak of cholera befell central London. A Special Meeting of the Hampton Wick Local Board was convened for the evening of Thursday 2 August 1866 to receive a report of the first-ever death from cholera in the village. Dr Hermann Günther, a local medical practitioner, was immediately appointed Medical Officer of Health for Hampton Wick and the role of Inspector of Nuisances was transferred to him from the Surveyor.

## THE THREAT OF THE THAMES CONSERVATORS

**I**N SEPTEMBER 1867 the Thames Conservators notified the Board that they had until October 1868 to comply with the new Act and stop the current sewage discharge. Following a deputation to the Board of Trade led by Kingston Town Council and supported by the Hampton Wick Local Board and others, the deadline was deferred to December 1868. In June 1868 Thomas James Nelson became chairman of the Hampton Wick Local Board, an office he was to hold for the next 18 years until his death. His first act as chairman was to remind his colleagues that the clock was ticking on the Conservators' embargo on sewage discharge into the river. He pointed out that so far they had failed to come up with any plans. For his part Nelson declared that he was convinced they would never be able to find and acquire a site for their own sewage treatment undertaking. Their previous efforts had proved that obtaining permission to drain into the royal parks was completely out of the question whilst the land between Hampton Wick and Teddington was far too valuable as building plots to be taken for sewage purposes. He concluded that, with no solution of their own in prospect, they should actively seek opportunities to combine with neighbouring authorities on joint schemes.

Shortly after this discussion, Nelson discovered that Kingston Town Council were planning to acquire land on Ham Fields for a sewage treatment works. Nelson persuaded the Board to immediately<sup>7</sup> issue the necessary Parliamentary notices of Hampton Wick's intent to compulsorily purchase land on the river bank opposite the proposed Kingston works in order to build a tunnel under the river connecting Hampton Wick's drainage into the Kingston sewage system.

Some members of the Board felt they had allowed themselves to be steamrollered into precipitate action. In February 1869, they used their own bye-laws to require that a Special Meeting be called, allowing them to discuss the issue at more leisure. The *Surrey Comet* for Saturday February 20 carried a very full report of this highly-animated meeting. Nelson had opened by giving a thorough and objective summary of the history of current situation. He then put forward his three arguments.

Firstly, he urged that the Board must take urgent and definite action or face being fined by the Thames Conservators. Secondly he explained he was convinced they should not limit their consideration to just the 50 houses currently draining into the river - asking "*how many other properties ought we to be providing for?*" Thirdly he insisted he was utterly convinced they could not tackle the problem alone: combining with Kingston seemed the obvious - if not the only - current alternative. Thomas Barker declared himself unconvinced by the Chairman's reasons for wanting to join the Kingston scheme. He put forward an alternative: they should create a large communal cesspool in Hampton Court Road - linked to a single interceptor drain - which would collect and hold all of the drainage currently falling into the Thames. The liquid content would percolate through the porous sides and bottom of the cesspool which would itself be made so large that it would never fill. Barker argued that, by implementing his scheme, they would satisfy the Conservators' immediate demands and buy themselves time to devise a longer-term solution. Barker's motion - that his scheme should be referred to a new drainage sub-committee - was carried almost unanimously.

The Board's decision to find an alternative solution was somewhat prescient for, in March 1869, Kingston's plans for the Ham Fields were turned down by the Local Government Board and Nelson's preferred option disappeared with it. It took Barker and his sub-committee until the August 1869 Board Meeting to ready and present their proposals (importantly, Nelson was absent from the meeting on holiday). The main cause of the delay had been the refusal of the Crown authorities to allow drainage tanks to be sited under Hampton Court Road.<sup>8</sup> The original plan for a single very large receptor tank was now replaced with a scheme involving five main drains and six dispersed sewage tanks or cesspools. The full scheme would cover the drainage needs of the whole village with the exception of the houses at Hampton Court. It was projected to cost £3,000 (£5.5m). A sub-set sufficient only to allow disconnection of the offending sewage outfalls would be £600 (£1.1m). The Board voted to adopt the smaller scheme and instructed the sub-committee to go ahead and obtain tenders to carry out the work.

It was a further six months before Barker returned with estimates for the selected scheme at the Board meeting on 7 February 1870. He faced an uphill task. Nelson was back in the chair. Since the previous debate, Barker and his team had discovered underground water at the site proposed for the two tanks. To prevent the tanks being inundated with this water, the walls would need to be made impervious. This meant the liquid element of the sewage could no longer drain away through the soil, so an overflow pipe had been added to carry off the excess. The raw effluent would also now need to be filtered before discharge into the river. This significant increase in the overall specifications had resulted in the estimates (they were not yet tenders) increasing to £950. Barker explained the enforced changes but nevertheless boldly concluded his presentation by recommending that it be "*referred to the sub-committee to carry out the proposed scheme at a cost not to exceed £1,000*". His recommendation met with stony silence from the rest of the Board. Since no one moved the adoption of his report, Barker had to do so himself. It was seconded by another member of his committee. Barker's Board colleagues identified what they saw as two fatal flaws in the proposed scheme. Firstly, they doubted it would ever be possible to cleanse the effluent sufficiently for the Conservators to allow it to enter the Thames. Secondly, they were convinced the holding tanks would need emptying frequently, which would be a major - and expensive - task. Barker attempted to negate these objections. But when the Surveyor confirmed that he also shared these same concerns, the scheme was lost and the meeting broke up.

Throughout this period the Hampton Wick Local Board had continued to request - and receive - regular extensions to the Thames Conservators' deadline for suspending their sewage outfall. In September 1870, the asked-for extension was again granted for a further 12 months. But this time it came with a new stipulation: that in return for the extension, the Board must undertake to carry out a drainage system with the outfall sited *below* Teddington Weir (which was a mile beyond the parish boundary). Whilst they were still considering their response to this fresh demand, the Board received two further letters. The first was from the solicitors to the Conservators

advising that they had been instructed to institute proceedings against Hampton Wick to recover the penalties due. The second was from the Thames Conservators themselves abruptly withdrawing their previous offer of an extension. In response to these two communications, the Clerk gave formal notice of the Board's desire to refer the matter to arbitration by the Board of Trade.<sup>9</sup> Almost by return of post the Conservators reinstated their offer of a moratorium, though still coupled with the same stipulation that the outfall should be located below the weir. This latest moratorium expired at the end of September 1871.

To coincide with the new deadline, the Thames Conservators then wrote an identical letter addressed to all riparian authorities whose sewage outfall was still connected to the river. The Clerk read the following copy of the letter to the 2<sup>nd</sup> October Board Meeting:

*Thames Conservancy Office,  
41, Trinity Square,  
Tower Hill,  
28th September, 1871.*

*Sir, — It having been reported to the Conservators of the River Thames that the sewage of Hampton Wick is still allowed to flow into the river, I am directed by them to inform you that it is their intention to take immediate proceedings against the Local Board of Hampton Wick for disregarding the notices which they have served on that body for the discontinuance of the passage of sewage into the river, and thereby to enforce compliance with the terms of the Thames Acts of 1866 and 1867.*

*I am, Sir, your obedient Servant,  
E. BURSTALL, Secretary.*

The Board was at a loss to know how to respond but, despite the apparent finality of the letter, it would be another three and a half years before the Conservators took any steps to follow it up ...

## IMPASSE

**A**LL THE AUTHORITIES to whom the letter was addressed were fully mindful of their legal obligations but frustrated in their many attempts to acquire land on which to process their sewage by irrigation or filtration. Each proposal required a Local Government Board public inquiry to be held prior to sanctioning the borrowing of the necessary capital. At each Inquiry numerous objectors would appear to explain the irreparable damage that the scheme under discussion would do to their properties and/or interests. Each time the application would end up being refused. Worse, the cost of the Inquiry (typically £100 - £900) would have to be borne by the authorities' own rate payers.

In March 1874, after this cycle of application and rejection had been repeated several times, Thomas James Nelson wrote an open letter to Benjamin Disraeli the incoming prime minister of the new Tory administration. In it, he explained the current *impasse* and the impossibility of an individual authority complying with the law in the continuing absence of any government action to enable a solution. Perhaps in response to this appeal, the government passed the *1875 Public Health Act* in August which further widened the scope of a local authority's sanitary responsibilities but also crucially provided the possibility of local authorities acting in *combination* to complete comprehensive sewage schemes.

As a result, the Surbiton Improvement Commissioners applied to the Local Government Board in November 1875 for permission to form a Joint Sewage Board. They proposed a scheme whereby the sewage of all the authorities from Windsor to west London would be removed from the Thames and taken instead to an outfall near the sea below the central London outfall. After yet another lengthy (and expensive) hearing, the LGB Inspector turned down the proposed scheme as being "too heroic". In its place he recommended the adoption of a more modest scheme involving the 20 riparian communities on the stretch between Hampton and West London (and therefore including not only Hampton but also Hampton Wick, Teddington and Twickenham/Whitton).

## ATTEMPTS TO CREATE JOINT ACTION

**T**HE THAMES CONSERVATORS had held off their legal actions whilst the Surbiton application was pending. As soon as the result was known they started proceedings to recover the penalties against several authorities. Their first port of call was Hampton Wick with a summons for penalties due amounting to £98,000 (equivalent to £143m now). Since the entire freehold value of Hampton Wick was little more than this figure, the Conservators would have had to seize and sell off most of the properties to meet the penalties due, whilst at the same time ousting the residents. The unlikelihood of this ludicrous prospect ever coming to pass emboldened the Hampton Wick Local Board. They voted to take on the Conservators by themselves applying to the Local Government Board for the formation of a joint sewage board - precisely in line with the recommendations of the previous LGB Inquiry inspector. Though the Local Government Board approved the application, not all the local authorities affected by the proposal were in favour of joining the proposed Lower Thames Valley Main Sewage District. Twickenham and Brentford both succeeded in "escaping" before the bill for formation of the Joint Board received Royal Assent on 10 August 1877. The remaining 15 authorities covered by the new Sewage District were now no longer held individually accountable for their sewage outfalls. The first meeting took place in Kingston in October 1877 and Thomas James Nelson himself was voted into the chair.

He remained in this capacity until his death in February 1885, by which time the Sewage District was itself in its death throes. Kingston Town Council had been bitterly opposed to its existence - and their enforced inclusion in it - from the outset whilst Richmond became increasingly disillusioned. By 1885, both authorities were openly attempting to bring about the demise of the Joint Board via a Dissolution Bill promulgated in Parliament by Kingston Town Council. Opposition to that Bill came from

Hampton Wick and from the Surbiton Improvement Commissioners. Whilst the Bill was in the House of Lords Committee stage, the opposition was withdrawn in return for a package of important concessions made by Kingston. These were negotiated by John Arthur Buckley, Nelson's replacement as chairman of the Hampton Wick Local Board and himself the Chief Clerk at the Court of Chancery. The most significant concession was that, if formally requested by Hampton Wick, Kingston would agree to take and deal with the sewage of Hampton Wick on the same terms *pro rata* as their own. (The same concession was made with Surbiton.) With all opposition withdrawn, the Dissolution Bill was won and received Royal Assent on 20 August 1885. So the Lower Thames Valley Main Sewage District ceased to exist after eight years of effort and £30,000 (£40m) of fruitless rate payers' expenditure.

## THE BATON PASSES

**S**HORTLY BEFORE HIS death Sir Thomas James Nelson<sup>10</sup> was able to realise one of the major ambitions of his local public life. He had long harboured a scheme for the Local Board to purchase land in the centre of the village allowing them to demolish The Pits and Ayling Place, two of the village's most infamous and unsanitary areas. The redevelopment scheme for the area included extensions to both the Boys and the Girls/Infants schools and an impressive new building to house the Local Board itself. When he chaired the first meeting to be held in the Local Board's new offices (which was also to be his last attendance at a Hampton Wick Local Board meeting), he expressed deep regret that two of the Board's original duties still remained unfulfilled after 18 years: there was no provision for their dead to find their last home within the parish boundary neither was there a proper means for sewage disposal.

Nelson probably knew the poor state of his own health and, recognising that none of the existing Board Members would be capable of delivering a sewage scheme to meet his own exacting standards, Nelson had invited the 59-year old Henry Parsons to join the Board. Parsons was the Surveyor to the London district of Lambeth and Camberwell and his external perspective and inside knowledge of the workings of other local authorities was clearly valued by Nelson. As a member - and soon-Chairman - of the Hampton Wick Local Board, Parsons adopted a very much hands-on, authoritarian approach, similar to that of his sponsor. Though not necessarily a popular colleague and chairman, Parsons nevertheless proved effective in getting things done and ultimately fulfilled Nelson's faith in him.

## A SOLUTION EMERGES

**B**Y 1885 KINGSTON Town Council was known to be well advanced on its own new scheme. They planned to build a river-side sewage treatment works on land which they had previously acquired from the trustees of the Earl of Dysart. This site, just downstream of the railway bridge then known as the Corporation Eyots, was as close to Hampton Wick as it possibly could be (now the site of Canbury Gardens). The opportunity to provide an easy connection across the river into the planned works soon presented itself. Some years previously, the London & South West Railway Company had presented a Bill to Parliament seeking powers to create a new line from Kingston to Fulham. It was widely believed that this was purely an anti-competitive move and that the L&SWR had no intention to build such a line. Nevertheless when, in early 1886, the company were formally seeking Parliament's permission to abandon the plans, they were forced to make concessions to those such bodies as might otherwise oppose them. In March 1886, the Hampton Wick Local Board negotiated

an improved rail service along with the provision of both a waiting room on the down-platform and a urinal on the up-platform. But most importantly L&SWR undertook that, if requested, they would carry sewage pipes on the side of their bridge across the river to Kingston's Sewage Treatment Works.

In April 1886 Kingston Town Council finally revealed the details of its plans for a joint scheme with Surbiton. It was announced that a ten-year contract had been signed with the Native Guano Company Ltd whereby that company would operate its patented ABC treatment process on behalf of - and in premises provided by - the Kingston Corporation. The buildings themselves had been somewhat further distanced from Hampton Wick and the river by moving them off the Corporation Eyot and into the Down Hall meadow behind.

The ABC treatment process (for an explanation see Endnote 5 on page 115) took the sewage of the two communities and, having separated the liquids from the solids, the former were deodorised and filtered to such a state of purity that the Thames Conservators would allow the effluent to flow directly into the river. Meanwhile the solid elements were dried, filter-pressed and ultimately oven-baked to produce a completely hardened cake which, when ground up, would be sold as fertiliser.

The commercialisation of sewage-derived manure was the Holy Grail for many Victorian engineers and entrepreneurs. Between 1846 and 1886 some 450 different processes for producing it were defined and patented. However, there were very few commercial implementations and almost all were soon abandoned. Kingston's joint project using the Native Guano Company's ABC process was the notable exception. The Corporation received £3 10s from the Native Guano Company for each ton of the bagged fertiliser sold (it was sent as far afield as Singapore and the sugar plantations of Barbados). When the contract with the Company was renewed for

a further ten years in 1895, demand for the product was said to exceed annual output by 700 tons.

By November 1886 an agreement was reached on the financial terms of Kingston’s undertaking to treat the sewage of Hampton Wick. The cost to the latter was to be six per cent of the overall capital costs. These terms were negotiated by Henry Parsons. They were modelled exactly on those already agreed with Surbiton<sup>11</sup>. That the overall agreement was favourable to Hampton Wick is amply shown by the following figures:

	No. of Houses.	Population.	Rateable value.
Kingston Borough	4,500	20,648	£105,342
Surbiton	2,000	10,500	£89,978
Hampton Wick	460	2,300	£12,673

Thus Hampton Wick was enjoying all the economies of scale from a scheme designed for more than ten times their own population at a cost of just 6% of the overall scheme. Just as importantly, space for the treatment works no longer had to be found within the village boundary, a challenge that had defeated Hampton Wick for more than 20 years.

### THE LATEST DRAINAGE COMMITTEE STRUGGLES

**M**EANWHILE, AT THEIR meeting on 1 February 1886, the Local Board had appointed six members to a new Drainage Committee “to make the necessary preliminary enquiries as to the most advantageous method of carrying out the public drainage of the parish”. The subject of Drainage thereafter disappeared from the regular Board Meetings and from *Surrey Comet* reports<sup>12</sup> until

the First Report of the Drainage Committee was received and considered at a Special Meeting of the Board held almost exactly two years later on 30<sup>th</sup> January 1888. The content and conduct of the Drainage Committee meetings can only be guessed at since no minutes were kept nor were proceedings reported in the press. We have to read between the lines to get a real sense of the conflicts, confrontations and contortions that took place within the Drainage Committee during their two years of deliberation.

The Minute Book for 30<sup>th</sup> January 1888 simply says "*the 37-page printed report (which was bound into the Minute Book itself) was received and adopted by a majority of 7 votes to 2*". All members present signed the report with the two people voting against its adoption - including the immediately past chairman J Arthur Buckley<sup>13</sup> - adding a comment that their dissent was "*on the grounds that further time should be obtained - until it can be ascertained whether some combination can be formed on our side of the river*".

It was reported that the six members of the Drainage Committee had met a total 16 times over the two years. From the outset, the Committee had apparently considered itself too large for the investigation of a detailed scheme and had therefore set up a sub-committee of three members specifically to report on sewerage the district. The sub-committee, having had eight sittings, produced two detailed and fully costed alternatives (see below). They were at pains to stress that their recommendation referred "*merely to the collection of the sewage, and was distinct from that of its ulterior disposal and treatment, which point the Committee reserve for their own consideration*".

The sewerage sub-committee had considered two alternative systems:

**slow gravitation:** with gradients of 6 feet to the mile, created using cast iron pipes laid in lengths of 9 foot for maximum economy in installation

**accelerated gravitation:** with gradients up to 22 feet per mile which would allow the use of smaller and cheaper earthenware

pipes. To achieve such gradients, periodic lifting of the sewage along the way using Shone Ejectors (see the Appendix on page 148) operated by compressed air, was proposed.

The sub-committee's recommendation was for the second system, along with a proposal to engage Isaac Shone (inventor of the ejectors) as the consulting engineer. This recommendation was accepted by the main Drainage Committee and subsequently by the Board itself.

The Sub-Committee also submitted several series of documents containing:

(1) Correspondence with Teddington in mid-1887 exploring possibilities for cooperating on their scheme (the response was that it was "too soon" to say whether such a combination would be feasible or desirable. In fact it was another *six years* before the Teddington Scheme was finally completed)

(2) Correspondence with the Kingston authorities who, as the Sub-Committee points out "are under obligation to receive the Hampton Wick sewage". The earliest document was dated 4<sup>th</sup> June 1886 and, as already stated, contained the terms on which Kingston Corporation were prepared to receive and dispose of the sewage of Hampton Wick.

These submissions were intended "*to assist the Drainage Committee in determining whether the sewage from Hampton Wick should be diverted to Teddington or to Kingston*". The obvious fact was that - for a period of over 18 months and at least 12 meetings - the Drainage Committee had been unable to make a decision from such an obvious "choice of one". This suggests how divided the committee was when it started and how completely dysfunctional it had now become.

The fallout from the Special Meeting was not long in coming. At the Board meeting held on 5<sup>th</sup> March 1888, the Clerk read letters of resignation from the two dissentients both of whom expressed disapproval with the Chairman's handling of affairs. Although the

Chairman was asked to write to both and ask them to reconsider, there must have been a collective sense of a log jam having been cleared. The Drainage sub-committee was now authorised to complete the negotiations with Kingston and report back to the Board. A Special Meeting was called for 19<sup>th</sup> March by which time it was said the report was ready. However, “in consequence of a quorum of the drainage committee not having met” the report could not actually be presented - for once, Parson’s pragmatism and autocracy had caught up with him. They tried again a few days later by which time his fellow committee members had caught up with the doings of their chairman.

In concluding the deal, Kingston were adamant that the agreement with Hampton Wick had to be of equal date with that already signed by Surbiton. Hence Hampton Wick’s liability for payment towards the expense of the buildings was to be back-dated to July 1887 and the first instalment was therefore already overdue. In mitigation, there was a promise from Kingston that it would – as soon as it could – put the eyots back into the condition of an ornamental promenade, effectively masking the sewage works from the river and from Hampton Wick. Today’s hugely popular Canbury Gardens is proof that Kingston kept its promise.

More than 20 years of local democratic effort, anxiety and frustration were finally brought to an end by the concluding paragraph of the sub-committee’s report:

*“We could have desired better terms, but as there is no probability of obtaining them from Kingston, and as we are of opinion that there is no other scheme which will offers equal advantages, we recommend to the Board that an undertaking be given to sign and seal the agreement as soon as the Local Government Board shall enable us to borrow the necessary capital.”*

The recommendation was adopted unanimously.

## PREPARATIONS ARE MADE

**T**HE SURREY COMET of 28 April 1888 reported that Henry Parsons, as Chairman of the Local Board, had issued a circular to the ratepayers explaining the Board's action on the Drainage Scheme. The following extracts from that document provide a summary of the choices faced by the Board.

*As chairman of your Local Board of Health, I take the somewhat unusual course of addressing you individually on the very important subject which has for the past two years been occupying the earnest consideration of the Board, I mean the subject of the drainage of the parish ... You may be aware that some 50 houses are known, and others are shrewdly suspected, to discharge their sewage more or less into the river, and it would appear that individual occupiers so offending are liable under the Rivers Pollution Preventions Act [1876] to heavy penalties.*

*Under these circumstances I cannot but think the great majority of you will agree with me that further delay in dealing with the matter would not be consistent or judicious conduct on the part of your Local Board.*

*The greater part of the houses are drained into cesspools, a system which, when facilities existed for a proper overflow and for a periodical removal of the contents, might have been tolerated. But, as such removal is now impossible except at great cost and annoyance, it is found cheaper and more expedient to sink additional cesspools, until in many circumstances premises are fairly honeycombed with these receptacles of filth, and the surrounding ground saturated and contaminated to an excessive and even dangerous degree, and a state of affairs produced which is no longer in the general interests to be tolerated and allowed to exist.*

*We have therefore resolved to ... properly sewer the Parish, and to deal with the sewage in the manner seems to us the most efficient and economical.*

*The rateable value of the place is so small, the number of inhabitants so few, and the possibilities of increase in the number of houses so limited, that any attempt to establish works exclusively for our own purposes ... would be out of all reason.*

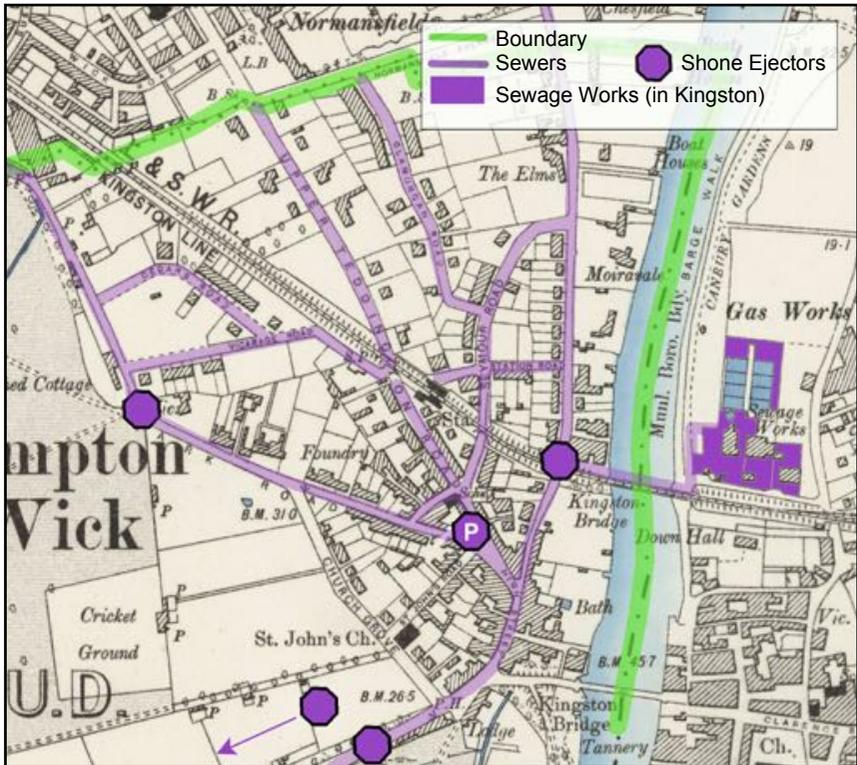
*Any attempt to combine with Teddington on one side, or Hampton on the other, would necessitate a line of sewer 3,000 yards in length or over two miles ... it would also follow that at its lowest end it would be laid at a considerable depth below the surface, as the natural gravitation of the land is from both ends of the parish, to the centre at Kingston Bridge, falling 14 feet from Hampton Court, and 10 feet from [the parish boundary on Lower Teddington Road].*

*Common sense therefore suggests that our natural outfall is at that central part of the parish, and not at either extremity nor inland. The Corporation of Kingston have undertaken to provide us with that outfall on very equitable and reasonable terms, which we have unanimously agreed to accept: subject to the approval of the Local Government Board.*

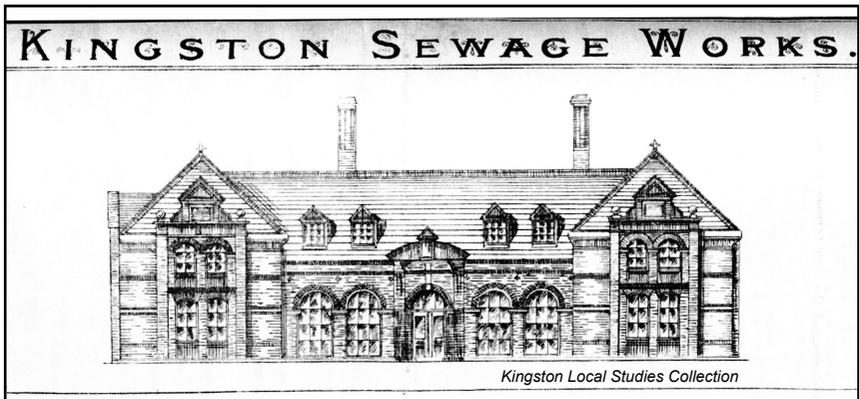
*I may observe here that we, as a Board, strongly objected to the Kingston authorities placing their sewage works on the banks of the river, as likely to be prejudicial the interests of both parishes; but we were powerless to prevent it.*

The finishing touches to the design of the sewer network were approved at a Special Board Meeting on 26 May 1888 and it was resolved to apply immediately to the Local Government Board for permission to borrow £8,000 with repayment spread over 50 years. The main change to the previous scheme was the decision that the three Shone ejectors should be capable of operating on a 24/7 basis

under local control to cope with any heavy overnight rainstorms (the Kingston sewage works were shut down from 10pm to 6 am). A pumping house using the newly-invented Atkinson gas cycle engines was now to be erected immediately behind the Board’s new offices in the High Street. These would ensure that the sewers could be filled to their capacity of almost 18,000 gallons as an overnight holding system whilst the sewage works were closed.



1.6 The Hampton Wick Sewer Network completed in 1891 showing the pipelines and the position of the four Shone Ejectors used to raise and transport the sewage on its way to the Kingston Treatment Works on Down Hall Meadow (now Canbury Gardens). The pumping station (marked P) supplied compressed air to operate the Ejectors and was located in a shed behind the Hampton Wick Local Board Offices.



*1.7 Kingston Sewage Works were located on the river bank just downstream of the railway bridge. Although sited at a distance from any private residential accommodation in Kingston, it was directly opposite some choice housing in Hampton Wick. To reflect this, Kingston Town Council deliberately chose pumping machinery in the works that would minimise the height of the building. They also hid the site behind an attractive wall and landscaped the surroundings to form Canbury Gardens*

## **TRIAL BY LOCAL GOVERNMENT BOARD**

**T**HE LOCAL GOVERNMENT Board held its Inquiry on 20 June 1888 at the Local Board Office. Apart from the Hampton Wick Board team and their consulting engineer Isaac Shone, attendees included a delegation from Kingston Corporation and several local ratepayers. Two unexpected attendees were Richard Starkey, an aggressive and loud-mouthed local builder and property developer, who was accompanied by C Baldwin Latham. Starkey claimed Latham was present as his legal representative although he was in fact an eminent civil engineer, responsible for designing several local sewerage schemes. Latham was also an arch professional rival of the Shone system of sewerage; his presence was clearly intended to hamper the Hampton Wick cause. According to the newspaper report of the Inquiry, Latham asked for and was shown the plans for the scheme but made little other direct contribution to the proceedings.

Not so his “client” Richard Starkey who, in typically combative mood, was apparently seeing intrigue, conspiracy and illegal actions at almost every point in the proceedings. Thornhill Harrison, the Local Government Board Inspector, worked hard to keep him under firm control and was assisted in this by Walter Wilkinson, the highly experienced Town Clerk of Kingston whose quick and witty legal brain was well attuned to dealing with Mr Starkey<sup>14</sup>.

The Inquiry lasted four hours and closed without any apparent major controversies. Indeed, at the next Local Board meeting, Parsons reported that, at the end of the Inquiry, the Inspector had given him to understand he was perfectly satisfied and that permission to borrow would be duly forthcoming.

However, subsequent events did not justify that confident forecast and the road from Inquiry to final resolution proved to be very long and eventful.

\*

By their September 3<sup>rd</sup> Board Meeting, Hampton Wick had still heard no outcome from the Inquiry. Parsons had already been to see Inspector Harrison in person and had since received a letter saying from him they would be hearing “very shortly”

The promised letter was finally sent on 19 September 1888 and was not at all what they were expecting. It requested responses to several specific questions about the agreement with Kingston Corporation. It also enclosed a 13 page set of “representations” from Starkey and Latham on which the LGB now asked the Local Board to furnish them with their “observations”. Parsons immediately gave each Board member a copy of the LGB correspondence together with his proposed responses.

The LGB had requested “*more precise information than that so far given*” about how the sewage would be treated before discharge into the river. (The background to this request will be explained shortly.)

The LGB were also anxious to understand whether the proposed Hampton Wick sewer system could be connected into an alternative scheme if the agreement with Kingston were to be terminated. The LGB continued with an apparently innocent remark:

*“The Board observe that, although the agreement between the two authorities is proposed to be for 25 years, it may be determined [terminated] by either party at the end of three years.”*

Whether or not this was an intentional trap Parsons, in his haste to get his proposed responses seen and adopted by his fellow Board members, fell straight into it. His proposed wording that

*“this was a stipulation by the Surbiton authorities, concurred in by Hampton Wick, as giving them power, if necessary or desirable, in a few years to avail themselves of another scheme”*

was accepted without question by his colleagues and was included in the formal response. The truth was that the LGB’s observation was totally wrong - the initial agreement period was an unequivocal 25 years after which either party could terminate it by giving three year’s notice. Embarrassingly, it was left to Walter Wilkinson, the Kingston Town Clerk to point out this error to Parsons and, although the latter immediately wrote a letter of correction to the LGB, the damage to Hampton Wick’s credibility was probably already done.

So why was an apparently straightforward application, heard at an Inquiry that had itself passed off seemingly calmly, now gradually turning into a protracted and punishing bureaucratic nightmare? The *Surrey Comet* leader writer on the 6 October 1888 had no doubts about the reason:

*“The Local Government Board have undoubtedly long had a keen desire to intermeddle with the sewerage scheme of the Corporation of Kingston. That the Corporation should have dared to have raised monies for the construction of sewage works*

*without having first obtained the formal consent of the great central authority, has been a source of irritation to the officials who compose it; and it would seem that at last they have found an opportunity of venting their spleen."*

It is certainly true that Kingston went out of its way to avoid involving the Local Government Board with its latest scheme, even to the extent that, rather than Kingston applying for permission to borrow the large capital sum involved, it instead required the selected contractor to fund his own work and agree to receive payment as an annuity spread over 25 years. Whilst not totally unheard-of, such an arrangement would certainly have been considered fairly extreme.

Hampton Wick however had no option but to play by the rules and apply to the LGB for permission to borrow in the conventional way. In return for this they were turned into the whipping boy for Kingston's audacity. But, instead of recognising and accepting the inevitability of this role, the Hampton Wick Local Board decided instead to take on the LGB but, without either the gravitas or the contacts to underpin such a strategy,<sup>15</sup> the sometimes petulant responses of Parsons and his colleagues to the bureaucratic challenges probably simply made matters worse for themselves.

It was not until 5 January 1889 that Parsons finally received a letter of permission from the LGB although this too came with a set of further costly conditions. These plus the effect of the overall delay since the scheme was first devised in 1888, were calculated by Parsons to represent a total a sum of £1,220. He was in no doubt as to whom to blame. *"In other words"*, he reported to his colleagues, *"the interference of Mr Starkey and his engineer Mr Baldwin Latham has saddled the ratepayers with an excess of 14% on the cost of the scheme put before the Local Government Board without one iota of benefit to anybody."*

## ACTION AT LAST

**A**T LAST, THE Local Board were in a position to invite tenders for the scheme they had devised over 12 months previously. A dozen tenders were received for the main contract which involved the construction of the sewer network itself. They ranged from £4,673 to £9,770. The six tenders for the construction of the four ejector chambers ranged from £695 to £1,190. In both cases the lowest tender was from William Cunliffe of Dorking who, as well as offering the lowest price, came highly recommended as having been the main contractor for both the Kingston and Surbiton sewer schemes together with the Kingston Sewage Treatment Works. All of those contracts had been delivered impeccably and without a single dispute arising. Cunliffe was duly awarded both Hampton Wick contracts.

Work began immediately and reports were soon coming in that the excavation works had drained many local wells. However, it was later reported the wells were full again. The Surveyor gave the Board regular reports of steady progress with nothing more than minor problems to be resolved. By the October 1890 Board meeting, the Drainage Committee reported that “for all practical purposes the new sewers were complete and efficient, except in two sections where there were leakages in the Hampton Court Road and in Sandy Lane.” The total length of sewer laid was just over 10,000 yards of which almost 40% was laid under water. So the fact that there were only two sections amounting to around 50 yards with any leakage problems at all was surely remarkable and to be celebrated?

Not according to the members of the Hampton Wick Local Board and ominously, it was variously reported that “*the contractor does not seem disposed to admit his liability to make the defects good*” and also that “*many members expressed their very strong opinion that the surveyor very greatly to blame in the matter*”.<sup>16</sup>

There was no official opening ceremony but the *Surrey Comet* marked the event with an article in their 28 February 1891 edition:

#### COMPLETION OF THE SEWERAGE SCHEME.

*The new sewers are now completed, and the system may be said to be in operation, for some 50 connections have been made, and the sewage is being delivered to the Kingston works. The system adopted is Shone's "Hydro-Pneumatic," of which the following is a brief description. The power required for compressing the air is derived from two 6-h.p. nominal gas engines, running alternately, and situate in the compressing station at the rear of the schools. The air is delivered into a receiver, 14ft. by 4ft., and is conducted to the four ejector chambers in cast-iron pipes. These chambers are situated in the following positions: No. 1, opposite Lancaster-lodge, Hampton Court-road; No. 1a, in the same road, nearer Hampton Wick; No. 2, at the Park-gate, Park-road, and No. 3, by the malt-houses, Lower Teddington-road. The sewage from Hampton Court gravitates to No. 1 ejector, and is then raised 16ft., gravitating to No. 1a where it is again raised 13ft., and flows by gravitation to No. 3. The sewage from the Upper Teddington-road, Cedars Park Estate, and Sandy-lane, falls into No. 2 ejector, and is raised 17ft., gravitating again to No. 3, where the whole is finally lifted some 28ft. on to the railway bridge, and delivered through 8in. cast-iron pipes ... to the works at Kingston for treatment.*

The 50 house connections reported in February 1891 had grown to 271 out of a total of 452 houses by March 1892 and the Board were increasingly using their powers of compulsion to force the remaining householders to connect.

## AN UNEXPECTED END

**I**N THEIR EDITION of 10 September 1892, the Surrey Comet reported

*At the Lambeth Police-court ... Henry Parsons ... chairman of the Hampton Wick Local Board and surveyor for the district of Lambeth and Camberwell, was summonsed for "having ... travelled on the London & South West Railway Company between Hampton Wick and Vauxhall without having previously paid his fare, and with intent to defraud the Railway Company." It emerged that Parsons had been a season ticket holder from 1863 - 1887 but, having let it lapse, had continued to travel and pass himself off as a "Season" at the ticket barrier. Parsons denied the offence and said that "it was perfectly absurd, with his reputation, that he should do such a paltry, mean thing as to defraud the railway company." In response, the magistrate said "I deeply regret to say that I have come to a different conclusion. I have no doubt that for years past you have been travelling without a ticket at all and availing yourself of your position to pass as a season ticket holder, and thus defrauding the railway company. I say this with the greatest possible regret, because I have known you for many a long year now and hitherto had had a high opinion of your integrity. No one can listen to the evidence without being absolutely certain that you have been guilty, to use your own phrase, of a mean and paltry act.*

Parsons immediately tendered his resignation to the Hampton Wick Board but, on hearing that he was taking steps to appeal against his conviction for defrauding the railway company,<sup>17</sup> they refused to accept the resignation at that meeting - or at the following two meetings. However, finally the Clerk read a letter at the January 1893 Board Meeting:

*December 29, 1892*

*Dear Sir*

*I fear from what I have read in the local papers that the majority of the members of the board have, in kindly sympathy with me, hesitated to accept my resignation as chairman. I am sure that this position must be inconvenient to the board, and not conducive to the interests of the parish. Will you therefore kindly state that I have not the slightest intention of remaining a member of the board? I became a member at the request of the late Sir T Nelson expressly to assist in solving the difficult question of draining the parish and disposing of the sewage, this is now successfully accomplished, and the result will, I am sure, compare favourably in every way with that of any other district.*

*There is therefore no longer any reason why I should continue to occupy my mind and expend my time upon matters which do not directly concern me, nor is it right that I should occupy an office which can no doubt be easily fulfilled by some worthy person who would better appreciate the position*

*I am yours &c*

*Henry Parsons*

The sewage saga was finally over.

## POSTSCRIPT

**A**LTHOUGH THE AUTHOR has been unable to confirm the following facts with Thames Water plc, it seems that much of the original sewer system created in the late 1880s is still in place. The chambers in which the Shone Ejectors were installed are still visible on Hampton Court Road, Sandy Lane and by the railway bridge on Lower Teddington Road. Judging by the humming sounds coming from them, it seems the ejectors have been replaced electric motors. The most visible relic of the system is undoubtedly the pipe which is still strapped to the side of the railway bridge - and is still carrying the sewage of Hampton Wick on its way to the Hogsmill Sewage Treatment Works.

*1.7 A key component of the Hampton Wick sewerage scheme was the pipe fastened to the side of the railway bridge which carried the contents of the sewers across the river to the Kingston Sewage Treatment Works which were located on the site now occupied by the 18-storey tower block. The current pipe, replacing the original, still performs the same function.*



## **HAMTON WICK ENDNOTES**

<sup>1</sup> Thomas James Nelson, chairman of Hampton Wick Local Board for 18 years, made this observation in his open letter to Benjamin Disraeli, written in 1874.

<sup>2</sup> Discharge was made at high tide.

<sup>3</sup> Bazalgette's scheme did not solve the drainage question for central London so much as intercept it and move the problem downstream. It was not until 1904 that the raw sewage was treated before discharge.

<sup>4</sup> A nuisance is defined as something offensive or annoying to individuals or to the community, especially in violation of their legal rights.

<sup>5</sup> A scheme was eventually carried out in the mid-1880's whereby the Board purchased some of the worst hovels, redeveloping the area around today's School Road to provide school extensions and the Assembly Rooms.

<sup>6</sup> And - as it turned out - final.

<sup>7</sup> The urgency was created by the necessity to meet the deadline for having their notice of intent included in a confirming bill compiled by Parliament every November which governed which Provision Orders would be considered in the next Parliamentary Session. Failure to be included in this list would mean Hampton Wick would have to wait a year to promulgate its own Private Bill.

<sup>8</sup> Which was administered and paid for by the Crown.

<sup>9</sup> Provision for this was included in the Thames Navigation Act 1866.

<sup>10</sup> He had been knighted in 1880 for his services as the City Solicitor.

<sup>11</sup> Parsons unsuccessfully argued for preferential treatment on the basis firstly, that Hampton Wick were much more affected than Surbiton by the proximity of the works and secondly, that Hampton Wick would be delivering its sewage with no disruption to Kingston unlike Surbiton who were proposing to lay a major sewer causing disruption right through the centre of the town.

<sup>12</sup> Members of the press were not allowed to be present at committee meetings nor were minutes of these meeting published.

<sup>13</sup> It was Buckley himself who had engineered the agreement with Kingston to treat the sewage of Hampton Wick as their own.

<sup>14</sup> Richard Starkey had also been a thorn in the flesh of Kingston Town Council during their own long sewage crusades.

<sup>15</sup> Unlike Sir Thomas James Nelson's deft touch.

<sup>16</sup> After a lengthy legal wrangle, the Board won a case for compensation against the Contractor but most of the award was swallowed up by legal fees.

<sup>17</sup> Parsons had been dismissed from his Surveyor position at Lambeth and Camberwell by his employer London County Council as a result of the magistrate's conviction. In July 1893 he succeeded in an action against them for wrongful dismissal. In an extraordinary decision, Mr Justice Stirling said that in his opinion that there had been a miscarriage of justice in the original trial; it was not the magistrate's fault but down to Parson failing to adequately defend himself!



2.1. Teddington in 1868 when the Local Board was formed. Most of the population of 10,000 live along the High Street and around the newly-arrived Teddington railway station.

## 2. TEDDINGTON

### ORIGINS

**T**HE ANCIENT PARISH of Teddington lies on the river bank to the south of Twickenham. At this point the River Thames flows south-east to north-west so that Teddington, a long narrow strip lying east to west, has a river frontage of nearly two miles and stretches away from it another two. Its southern boundary adjoins Hampton and - since 1831 - Hampton Wick.

Teddington covers 1,214 acres and except for the river banks, nearly all of it lies between 25 and 50 feet above sea-level. The soil is alluvial gravel overlying London clay which is generally found at depths of 18 - 20 feet (5.5 - 6.0 metres). The subsoil water exists chiefly at a depth of 6ft. to 8ft. (2 - 2.5 metres) below the surface which formerly encouraged and facilitated the sinking of wells. In the earlier days many of the houses had their drains connected direct into the Thames by means of the ditches or small water-courses which intersected the parish. These inevitably became a nuisance and were often built over. The resulting culverts were the earliest form of sewerage in the parish, and later became the basis of a comprehensive system of storm water sewers<sup>1</sup>.

Teddington Common - which was part of Hounslow Heath - covered the whole 450 acres of the parish west of Park Road and Stanley Road. It is now the site of Fulwell Golf Club. The land to the east contained extensive meadowland and fields totalling 370 acres.

The village grew up around the church and manor house both of which stood near the river at the corner of High Street and Twickenham Road. Between the 17th and 19th centuries Teddington attained a certain popularity among the gentry - probably because of its proximity to Twickenham and Richmond. A number of large houses, nearly all of which have now been pulled down, were built in the village during this time.

In 1861 the population was 1,183 living in 254 houses. Soon after, the large estate of the lord of the manor came onto the market and two railway lines opened through Teddington (in 1863 and 1864). By 1871, the population had become 4,063 living in 1,034 houses. The rapid growth continued and the population had already exceeded 10,000 before 1891.

The drainage system mentioned above was later used only to carry off the storm water into the Thames whilst separate domestic sanitation systems (using the cesspool) existed throughout the district. Teddington was unique amongst the local authorities in having no sewage draining into the river and therefore - unlike their neighbours Twickenham and Hampton Wick they were under no immediate threat from the Thames Conservators.

### A LOCAL BOARD IS FORMED

**A**DOPTION OF THE *Local Government Act 1858* leading to the formation of a Local Board was not the smooth and swift process it had been in Hampton Wick. The first public meeting took place in May 1864. Those in favour made much of the instances of bad drainage in the village such as the pond near the Schools (Elmfield pond which was described as a "*pestiferous nuisance*") and the widespread pollution of wells by cesspools. They pointed out that by adopting the Act the Parish would have authority to borrow elsewhere the money needed to set matters right. The opposition recognised the need for improvements in the sanitation of the village, but favoured raising the money within the parish. As the so-called protagonists had shown themselves to be little more than lukewarm in their actual support for the Act, the opposition had little difficulty in carrying the day amid deafening cheers.

Interest in the matter was not revived until 8 November 1866 when, at the conclusion of a public meeting, twenty-five hands were raised in support of forming a Local Board but more than double that number against. A public poll having been demanded, a "No Local"

party was immediately formed to carry on the fight. A large crowd gathered at the Girls' School Room on the night of Thursday 22 November 1866 to hear the result of the poll: for adoption 246; against 224. Mr. Binns, a local solicitor, thereupon declared the whole proceedings illegal and the "No Local" party organised a formal petition against the adoption of the Act. This was sent to the Home Secretary, who ordered an official Inquiry to be held in January 1867, at which the previous proceedings were gone into in great detail. As a result the Home Office ruled that the procedure had indeed been invalid because insufficient time had been allowed between the demand for a poll and the taking of it.

The ruling did not prevent the promoters from starting proceedings afresh and so, for the third time, a requisition for a public meeting was duly signed by twenty ratepayers. This was held on 9 May 1867 and, despite noisy opposition, the voting was 17 to 9 in favour of adopting the Act. This time there was no demand for a poll and no petition to the Home Secretary. At a further public meeting held early in July it was resolved that there should be fifteen members of the Board, an election was held, and the Board held its first meeting on 12 August 1867.

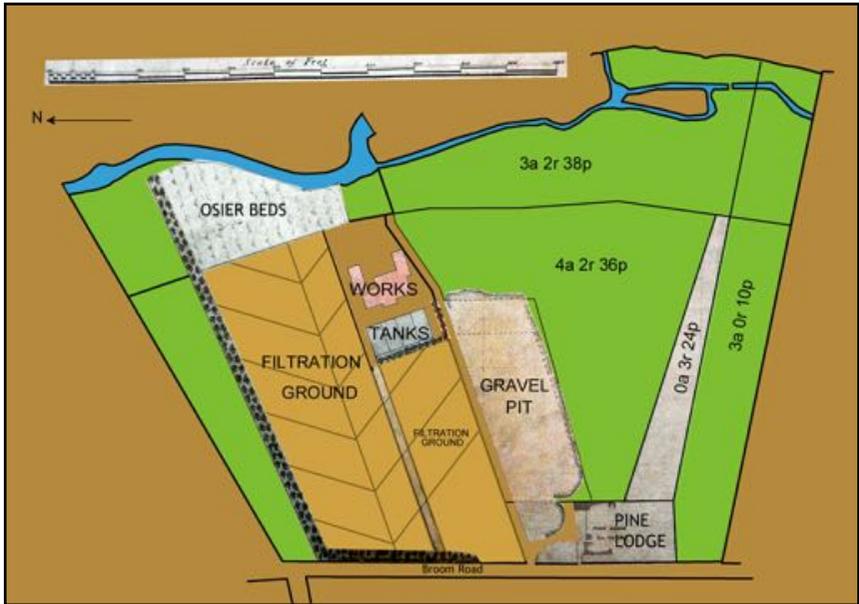
Those in favour of forming a Local Board back in 1864 had cited as a main advantage that it would give the community the ability to borrow money to improve its poor drainage. Surprisingly the issue never featured to any great extent in early Board discussions and activities.

In October 1877, Teddington Local Board was one of the many authorities corralled into membership of the Lower Thames Valley Joint Sewage Board. Under its terms of reference, responsibility for the drainage of Teddington was so totally assumed by this new Joint Board that the local authorities were expressly forbidden from undertaking any independent drainage schemes. The embargo lasted eight years before, with the Joint Board failing to secure any wider-scale solution, it was dissolved in July 1885 and the question of drainage reverted to local control.

## A SEWERAGE SCHEME IS PROPOSED

**T**HERE WAS STILL little appetite for action. At its July 1886 meeting a Local Board member, William Collier, attempted to table a motion calling for the formation of a committee to consider the question of the disposal of the district's sewage. In response Henry Page, the Board Chairman, earnestly appealed to him to withdraw the motion. Page claimed it was premature to consider the matter given that they were under no compulsion from the Thames Conservators to take any action since their system of cesspools did not pollute the river. Collier countered that, with the dissolution of the Joint Board, all the other local authorities were now considering their options. By not even being prepared to consider the matter, Teddington might miss out on opportunities to act in combination with an adjoining parish. This argument won over the dissenters and the motion to form a drainage committee was carried unanimously. It was further agreed that the committee would consist of the whole Board.

In 1887 Henry York the Board's Surveyor was instructed to prepare a scheme for the sewerage of Teddington and John Charles Melliss was appointed Consulting Engineer. The first step was to agree a location for the treatment of the sewage. The Board was in favour of acquiring land on Broom Road in the south east close to the border with Hampton Wick. The 25 acre site ran down to the river and included a gravel pit which the Board were already exploiting. The owner of the land had been John Cornelius Park a prominent builder and landowner. However he had died in January 1887 and left his property to his wife. It appeared that Park's executors were not willing sellers<sup>2</sup> since the Board were having to seek powers under the Land Clauses Consolidation Act 1845 to compulsorily purchase a 10-acre part of the land, which was sufficient for their needs. The transaction required the approval of the Local Government Board and a public inquiry was therefore arranged for 18 January 1888. The proceedings did not last long.



2.2 A plan showing the land purchased by Teddington Local Board in 1888 showing the eventual layout of the treatment works. Note how Edward Acard, the northerly neighbour, having become a member of the Local Board, persuaded his colleagues not to use the land nearest his property.

*Richmond Local Studies Collection*

Several local residents objected to the Board's proposal and had engaged a barrister to represent them. It seems that many had built houses on land sold to them by the same John Cornelius Park. The Clerk to the Board had scarcely finished his preamble at the Inquiry when the residents' barrister, George Cohen (himself a Teddington resident) rose to raise a fundamental objection to the hearing proceeding. Cohen quoted the *Public Health Act 1875* which he said required the Local Board "to publish an advertisement describing the nature of the undertaking in respect of which the lands are proposed to be taken". Since the Board had published no such plan, he insisted that his objection was valid and prevented the inquiry from proceeding.

Both the Clerk and the Board Chairman counter-argued that plans of the sewage treatment works themselves were irrelevant at

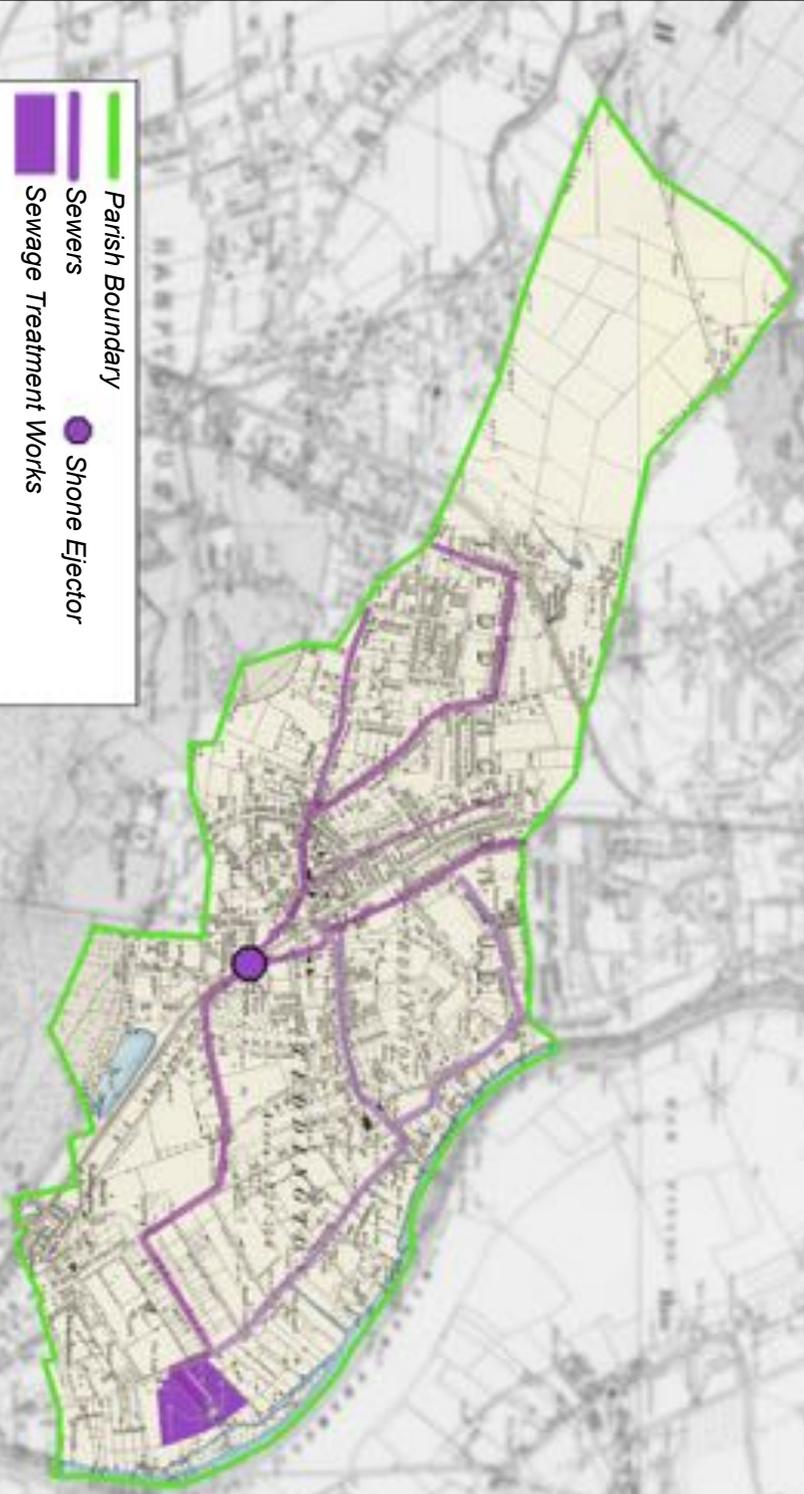
this stage, but the residents' lawyer stuck to his guns and, after some deliberation, the LGB Inspector adjourned the Inquiry *sine die* whilst he sought an opinion on the dispute. A few days later he wrote to the Teddington Local Board suggesting the only certain way forward was for the Board to try and persuade the group of dissenting residents to withdraw their objections! The Board considered the LGB was ducking the issue and that, even if they succeeded in getting the Inquiry restarted, it would be open to any other disapproving ratepayer to raise the same technical objection and cause the process to be adjourned all over again.

Meanwhile Henry Page, Chairman of the Teddington Local Board, succeeded in finding a way round the difficulty by privately agreeing terms to purchase all 25 acres direct with the executors. A provisional agreement for the sale was concluded on 14 May 1888 and would remain valid until 19 August 1888. The purchase price agreed was £10,000 which represented a very reasonable £400 per acre. With the site for the treatment works assured, detailed planning for the overall sewerage scheme could go now ahead.

## DETAILS OF THE SCHEME

**H**ENRY YORK, THE 29-year-old Surveyor to the Teddington Local Board, prepared a detailed description of the drainage scheme he had devised with input from the Consulting Engineers. The following is an extract from a report carried in the *Surrey Comet* on 16th March 1889 (see map opposite):

*For the purpose of the scheme the parish is considered to be divided into three parts. First – that part lying west of the [London & South West Railway - L&SWR] Thames Valley railway line (Shepperton Branch). Second – that part lying between the Shepperton Branch and the [L&SWR] Kingston railway line. Third that part lying east of the Kingston Line and extending from thence to the river. The first part is entirely agricultural land and at present there is no prospect of its being developed for building purposes. The second part is proposed to*



2.3 Teddington in 1895

*be sewerred by means of pipes which are collected at a point a short distance south of the Teddington railway station (where the sewer will pass under the railway) and carried on to the corner of Cromwell and Fairfax Roads. At this spot the sewage will be lifted to a height of 14 feet by means of Shone's Ejectors and will be discharged into a high-level sewer which will convey the sewage by gravitation into the works, and which will receive the tributary sewers from the streets adjacent to its course ... all these sewers will be constructed of glazed stoneware pipes, laid watertight, and will be ventilated by means of open gratings in the manhole and lamp home covers. They will be at sufficient depths to receive the subsidiary sewers from the small roads in their vicinity and also to allow of the sewerred of certain plots of land which, although at present undeveloped, are marked out for proposed roads. All the sewers are laid at what are known as self-cleansing gradients and sewage will travel from Wellington Road [the furthest point in the system] to the works in 1 hour 22 minutes. Manholes will be provided at each street corner and at every bend of the sewers and also at distances of about 100 yards along the line of sewers. At the commencement or top end of each principal sewer, an automatic flushing apparatus will be provided.*

*The present population of the parish being estimated at 10,000 persons, the sewers are calculated to allow an increase in population to 30,000 persons<sup>3</sup>."*

The Surveyor also explained that, when completed, the sewer network would consist of 14 miles of pipes ranging from 9in to 21in in diameter. The calculations of the network capacity were based on needing to deliver 45 gallons (200 litres or 20 buckets) of sewage per head per day to the treatment works. It was further assumed that half of this quantity would arrive in a six hour period. As first built, the treatment works was designed to cope with a population of 10,000 but the site would allow expansion of the works to handle 30,000 - the maximum capacity of the sewer network.

The sewage arrived at the treatment works (see drawing page 59) at a depth of 26ft below the surface of the ground and the contents were then pumped vertically 36ft to flow into one of the four precipitation tanks<sup>4</sup>. Chemicals were added to the sewage on its way to the tanks in order to deodorise the contents and accelerate the precipitation of the solids. The effluent water from the tanks after the sewage had precipitated was led to a filtration area extending to nearly 7 acres (figure 2.2 on page 53) which was under drained at a depth of about 6 feet. The effluent water passed through the land and intercepted by the under drains. It was then conveyed through a stoneware pipe 15 inches in diameter and discharged into the (then) tidal portion of the river just below Teddington weir. The discharge rate was up to 2,200 gallons (10,000 litres or 1,000 buckets) per minute!

The total estimated cost of the scheme was £42,000 including the purchase of the land.

### APPLYING FOR THE LOAN SANCTION

**T**HE LOCAL BOARD applied to the Local Government Board (LGB) for permission to borrow this sum and a Public Inquiry was accordingly scheduled to be held in the Town Hall on 30 July 1888. It was to be conducted by Major General Constantine Phipps Carey RE, the same Inspector as the previous application. The opposing residents<sup>5</sup> were represented by the same barrister, George Cohen, who had succeeded in halting proceedings on that occasion. The Local Board were taking no chances of being outwitted again and had engaged their own eminent Counsel, Charles Cripps<sup>6</sup>, to present the application.

As if to warn Cohen that he had met his match, Cripps opened the proceedings by immediately citing the *Public Health Act 1875* (which Cohen had used to such a devastating effect last time round). "*As a matter of fact*" said Cripps "*that Act does not require a public inquiry to be held when, as in this case, the amount to be borrowed*

... does not exceed one year's assessable value of the district". Nevertheless explained Cripps his client was happy to submit to an inquiry "since they thought it was a proper case for the holding of such an inquiry". Having thus ingratiated himself with the Inspector, Cripps went on to present the details of the scheme and justification for the loan. This time, the opposition was relatively muted. For the opposing residents, Cohen tried to attack the Local Board for buying more land than they needed but the Chairman committed that the Board would sell off the surplus. Cohen also claimed that the site was totally unsuitable as it was subject to frequent flooding. He produced several witnesses who were each asked to recount the highest historic levels they had known. However since even the highest recalled levels would not anyway have come within 10ft of overtopping the precipitation tanks, Cohen could not substantiate his claim. Thus the proceedings were concluded with no notable dramas.

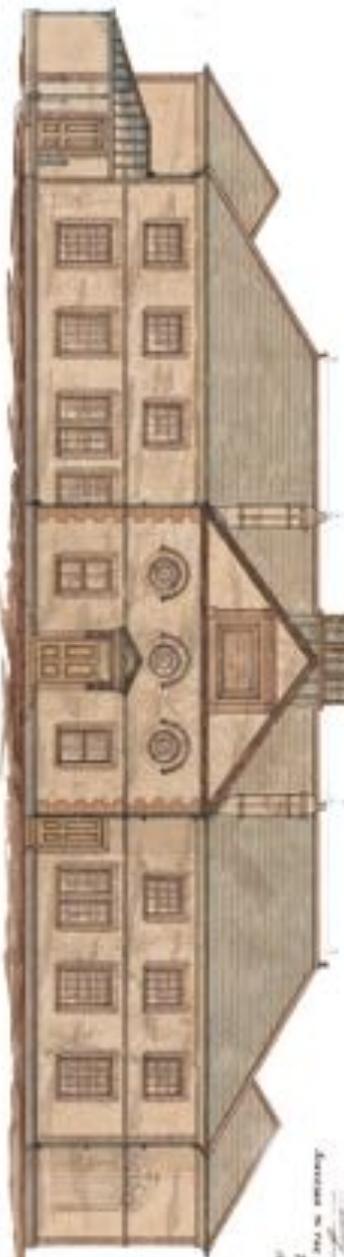
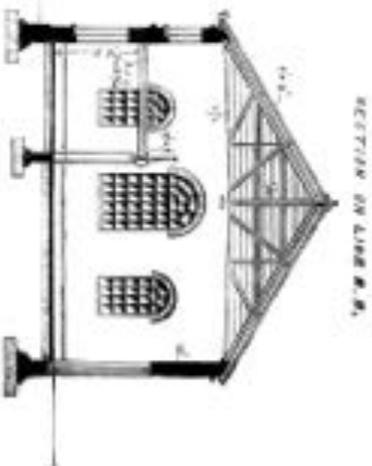
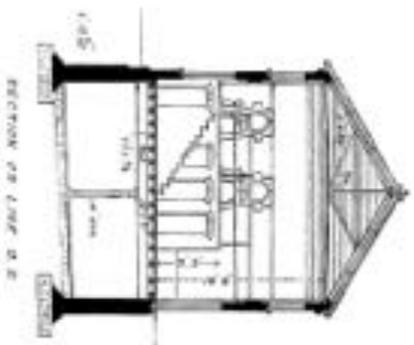
Cripps had reminded the Inspector that the offer to sell the land would expire in six weeks and the latter agreed to expedite his report. He was as good as his word and a letter dated 13 August 1888 was delivered to the Local Board telling them:

*I am directed by the Local Government Board to state that they have ... decided at once to give their consent to the borrowing by the Teddington Local Board of the sums of £7,500 [to be repaid over 50 years] and £2,800 [to be repaid over 5 years] for the purchase of land for the purpose of sewage disposal, the last-mentioned amount being the estimated value of the land which will be available for resale.*

The structure of loan sanctions seemed designed to ensure the Board stuck to their commitment to sell off the surplus land. The Board agreed to approach the Public Works Loans Commissioners but already had an offer from their own bankers should they be unable to negotiate an alternative by 19<sup>th</sup> September (the date fixed for completing the purchase of the land).

— TEDDINGTON LOCAL BOARD —

— *Planned House for Division of District* —



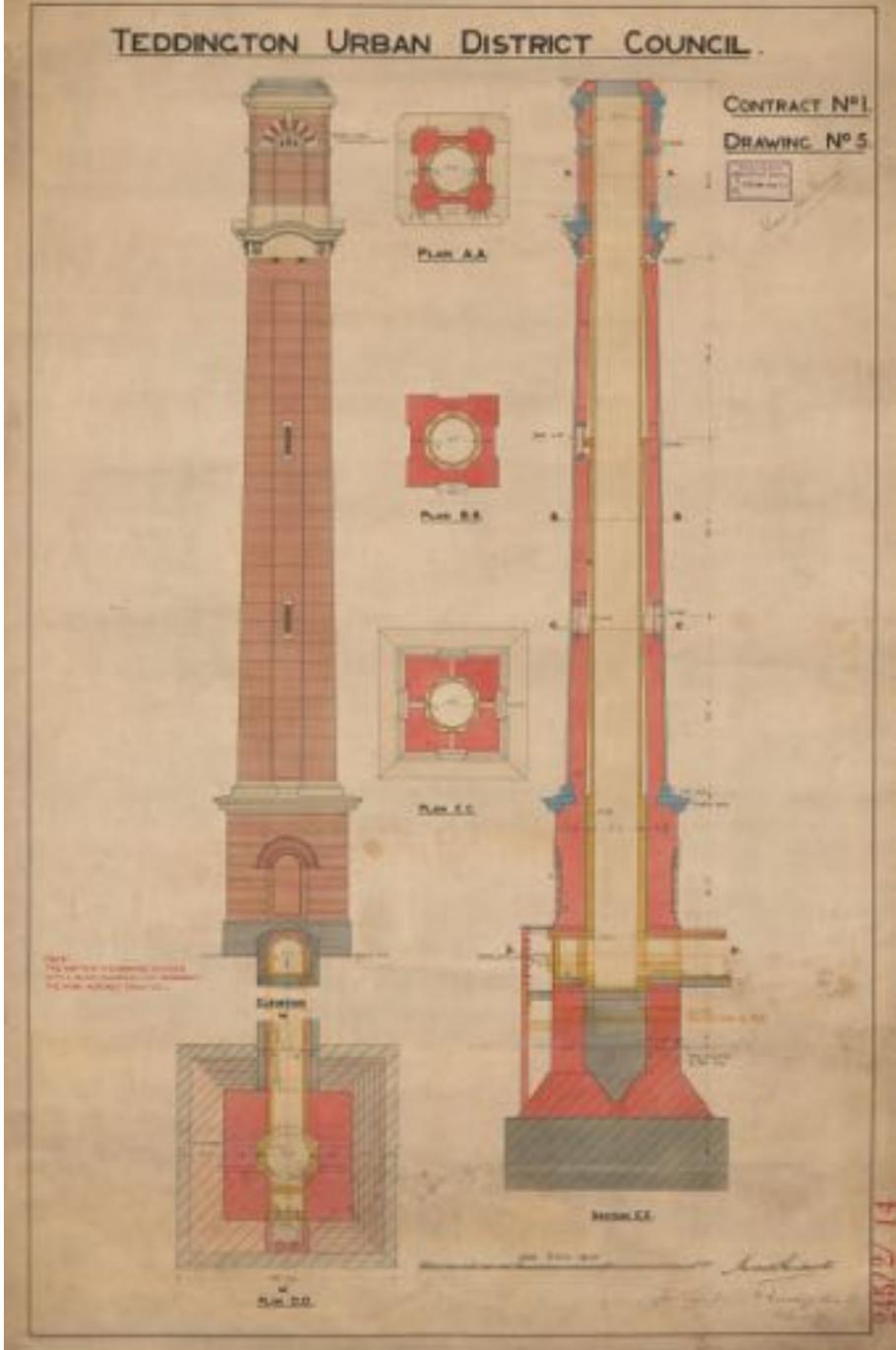
*James McKim*  
Architect to the Local Board  
Teddington  
1874-1875

## TENDERS AND CONTRACTS

THE LOCAL BOARD had to wait until January 1899 before they finally got full approval from the LGB to the balance of their loan application. They were now in a position to go public with their detailed plans for the sewage scheme and the *Surrey Comet* of 16 March 1899 carried a full report of the general description that had been submitted to the Board by their Surveyor (see previous extract on page 54). A quantity Surveyor was appointed to prepare information for inclusion in the invitations to tender and legal opinion was sought on what should be the contractual terms and required sureties.

In due course, the Teddington Local Board was able to hold a Special Meeting on 23 September 1889 at which they opened the tenders received. The scheme had been split into two main contracts: the first covered all the work involving pipe-laying (including 12 miles of sewers themselves plus the under-drained filtration beds and the effluent sewer); the second contract covered the construction of the sewage disposal works including the four precipitation tanks. 14 contractors competed for the first contract and eight for the second. Messrs Martin Wells and Co were the lowest for both contracts. It was therefore unanimously resolved that their tender for each contract be accepted, subject to their references and sureties being approved by the Board.

The meeting adjourned while these checks were carried out. It resumed two days later, confidently expecting to sign and seal the contract and get the work underway. Instead, the Board were greeted with the news that the Clerk and Surveyor had both been in touch with the chosen Contractors, who now refused point-blank to offer any sureties and asked the board to allow their tenders to be withdrawn, "*apologising for the trouble and inconvenience they had caused the Board*". This caused considerable annoyance but eventually the Board unanimously resolved to ask their Consulting Engineer to make enquiries regarding sureties with the three runners-up for the



2.5 The original chimney designed by Henry York (see previous page) was seemingly unsatisfactory since the replacement shown in this 1894 drawing was significantly taller.

Number 1 Contract, two of whom were also the next-lowest bidders for the Number 2 contract.

Finally, at a Special Meeting held on the evening of Saturday 19 October 1889, the tender process was completed when it was resolved that the Board's seal be affixed to two contracts with Messrs. Holmes and King of Canning Town covering both the sewers and the treatment works. All seemed settled although the meeting had included a lengthy discussion with reference to the question of arbitrators. As the *Surrey Comet* reported: "*Messrs. Holmes and King, it appears, had submitted two names with which the Board did not feel quite satisfied, while the Contractors did not approve entirely of the names selected by the Board. The difficulty was arranged, however, by leaving the appointment of arbitrators 'to the President for the time being of the Institute of Civil Engineers.'*" No one present at the meeting could have understood the significance this discussion would later have.

## WORK IS UNDERWAY

**W**ORK GOT UNDERWAY very quickly. Less than a month after the contracts were signed, the *Surrey Comet* was reporting significant activity.

*Progress with these works is being made in various parts of the parish by Messrs. Holmes and King, the contractors. In Cromwell-road, which is closed to vehicular traffic from the railway station to the corner of Fairfax-road, the chamber to contain the three Shone ejectors is being excavated. ... The chamber will be 32ft. deep, and about 16ft. has already been excavated. Water was found at a depth of 11ft., and this has necessitated the use of a powerful steam pump, which is capable of raising 400 gallons per minute. In Fulwell-road about three-fourths of the sewer has been laid. At the outfall, about twenty-five men are employed in excavating for the pump chamber and in levelling that portion of the land which is to be used for filtration purposes. On Wednesday morning another gang of*

*men commenced operations in Kingston-road on that portion of the sewer which is to serve South Teddington. We are informed that there has been considerable dissatisfaction among the labourers in consequence of their wages being reduced from 4 1/2d. to 3 1/2d. per hour, and that some of the Fulwell-road gang threw up the work altogether rather than toil for such a beggarly remuneration. We hope, for the credit of the contractors, that there has been some misunderstanding on this point, and that this poorly paid class of men will not have to be sacrificed in order to make good the reduction of something like £150 which the Local Board allowed the contractors to make on their tender for No. 1 contract.*

Meanwhile the Local Board and its Drainage Committee were agonising over which of three alternative patented pipes and joints should be used in those areas where the ground was water-logged and water-tight joints needed to be assured. Two of the committee members were builders and - perhaps quite reasonably - expected their personal opinion on the choice of pipe to hold sway. Unfortunately (inevitably?) their very strong recommendations to their colleagues were at odds with each other. It was therefore agreed to ask their Consulting Engineer for an opinion which, after much further argument, was subsequently adopted.

A less positive report on progress was presented by the Surveyor to the January 1890 Board Meeting. He had ordered that work be stopped for nine days due to severe frost but nevertheless he felt that a combination of mismanagement and insufficient pumping capacity had hampered progress. The number of men to be employed on the sewers was to be increased from 22 to 66 and those on the treatment works to 40. The extra manpower seemed to solve the problem and the Surveyor reported much improved progress to the February Board meeting. The whole of South Teddington had been sewered. Work on the ejector chamber was now being carried on night and day and the brickwork of the chamber had been commenced.

In March the Surveyor reported that

*the progress of the sewage works continued to be steady ... the sewer in Stanley Road was completed ... at Cromwell Road a tunnel had been driven about 30 feet under the railway. The average number of men employed on this contract was about 106. The foundations for the superstructure of the outfall works were nearly all in, and the concreting of the banks being proceeded with. The average number of men employed at these works was 37.*

The visible progress of the sewer laying in the roads was, however, causing something of an interesting problem. An opportunist builder had distributed a circular implying that house connections to the main sewers could be made while they were being laid. However, since there were no outlets for the sewers at present (and anyway the Board had not yet framed any regulations regarding the connections with the sewers) the circular was completely misleading. The Board was anxious to make it clear via the Press that nothing could be done by house owners until the outlet works were completed.

By April 1890:

*the 21in. outfall sewer was well forward between the works and Broom-road, and the 18in. sewer was rapidly approaching the ejector chamber ... the effluent water drain had been brought up from Ferry-road to Cornelius-road [King Edward's Grove]. The tunnel under the railway was finished, and the pipes laid in. The work at the ejector chamber had made very little progress during the month, but the Contractors had undertaken to get clear of this road by the end of the present week. The average number of men employed on the sewer contract since Easter was 180.*

## THE ISSUE OF PRIVATE ROADS

WITH THE SCHEME getting closer to being put in operation, the Drainage Committee turned its attention to house connections. Their recommendation to the August 1890 Board meeting was that “the connections from the sewers to the front fences of the adjacent houses be constructed by the Board, and paid for by means of a loan to be raised for the purpose.” Several members of the committee now spoke out against their own collective recommendation, arguing that it was grossly unfair to the residents in private roads. One sixth of the population of Teddington lived on private roads and their properties represented one eighth of the total rateable value of the parish. Yet these people had no access to the sewers for which they would have to pay the sewer rate. Now they would also even be expected to contribute to the connection costs of their more fortunate fellow-citizens on public roads.

At the November Board meeting it was proposed:

*that the engineer be instructed to take the necessary levels and prepare plans and drawings for laying sewers in all private roads in the parish; also to furnish the Board with estimates of the cost thereof and the cost of house connections in private roads, so that application may be made to the Local Government Board for liberty to borrow the amount necessary to make present scheme complete.*

Some Board members argued that they should only consider sewerage those private roads that already had some housing - and therefore some rateable value. Others were unsure whether they were legally entitled to spend ratepayers' money on private roads. After discussion, it was felt that it could be left to the Local Government Board to judge both the propriety and legality of what they intended and the motion was carried by seven votes to three.

The Surveyor had completed his research by the December Board meeting. The motion proposed:

*that the work of sewerage and laying in of the house connections in private roads, and such parish roads as are not included in the present scheme, be executed by the Board, so as to form part of the scheme of sewerage the whole district*

It was put in the knowledge that the Surveyor had calculated the cost as being £8,516 (£10m). The proposer, a solicitor, had done his homework regarding their powers under the Public Health Act 1875. He was now convinced they were entitled to carry out this work at the expense of the ratepayers without thereby creating or implying a commitment for the Board to take over the private roads in future. Fierce - and sometimes personal and abusive - opposition came from William Collier who was several times called to order by the Chairman.<sup>7</sup>

The motion was carried by six votes to two as was a subsequent resolution to apply for permission to borrow the £8,516 required. The Chairman then also moved that that they should at the same time apply to the Local Government Board for a further loan of £7,000 to cover the overrun of the contract.

The *Surrey Comet's* leader writer praised the wisdom and justice of Teddington Local Board's decision. They pointed out that it was normal for a private road to be seweraged at its residents' own expense before it could be taken over by a local authority. However, since no private road had yet been taken over in Teddington, no residents had previously been put to this expense and thus there was no risk of inequitable treatment. Moreover, taking the step of sewerage all private roads

*must of necessity increase the value of property in the district, and so lead to its speedy development, with a consequent increase in rateability.*

The paper also named and rebuked the one Board member against the proposal claiming

*it is Mr Collier's personal stake in the parish, in other words his own pocket, that he is considering in actively opposing the resolution of the Board.*

The Local Government Board Inquiry was held on 18 February 1891, once again conducted by Major General Constantine Phipps Carey RE. A body of ratepayers representing one third of the total rateable value of Teddington had signed a petition opposing the scheme on the basis that the cost of sewerage private roads should be borne by the frontagers (i.e. the *owners* of land or property adjoining the private road) and not by the ratepayers in general<sup>8</sup>. Their barrister called several witnesses including three current Board members - as well as the immediately previous Chairman of the Board - all of who agreed that private roads should be sewerage but not at the ratepayers expense. For their part, the Local Board conceded that the LGB Inspector may indeed choose to delete from the list of private roads those on which few or no houses currently existed. Two days after the hearing, the Inspector returned to Teddington and made a tour of all the roads on the list, accompanied by the Surveyor. Between them they removed several items from the original application, reducing the total cost of sewerage the private roads to £5,848.

Although the borrowing of this lower sum was then approved by the LGB, the project to build sewers on the private roads was almost immediately put on hold for reasons which were about to unfold.

## THE CONTRACTUAL WRANGLE

GOOD PROGRESS HAD continued to be made on the original sewerage scheme during the rest of 1890. The Local Board meeting in February 1891 heard progress reports from the Surveyor and the Consulting Engineer. It appeared the sewers were six weeks off being finished and Melliss said he had no hesitation in saying that, when finished, *“the Board would have one of the most efficient systems for the disposal of sewage to be found in the Kingdom”*. However, any prospect of impending celebration was soon dashed and it would a further two years before the Board could put its “Kingdom-beating” system into operation.

The *Surrey Comet* report of the April 1891 Board meeting stated:

*“The engineer (Melliss) had laid before the Sewerage Committee a letter received from Messrs. Holmes and King, asking for the two-thirds of the retention money to which they were entitled on the completion of the works. The engineer stated that he did not feel justified in certifying that the works were complete until the sewers were in a state fit for the Board to take over, and use if desired.”*

The main concern was the degree of leakage being experienced. Ground water was finding its way into the sewers through some of the pipe joints to the extent that almost 25% of the total pumping capacity was already being used just to expel the water from the sewer network. The Board refused to release any retention money and urged the Contractors to finish the work (i.e. mend the leaks) without delay. In response, the Contractors insisted the leakages were not their responsibility - they had finished their contract and so demanded release of their money.

The Board Chairman met with the Contractors hoping to find a compromise. He promised that if they made another application it would be re-considered by the Board. Their response was contained

in a letter read to the 11 May 1891 Board meeting in which they continued to demand their money but offered to go to arbitration regarding liability for fixing the leaks. If the application was refused they would “*feel bound to withdraw our men from the works on the 13<sup>th</sup> inst.*” The Board debate was lively with the more litigious members saying “*the letter was simply a piece of unwarrantable bounce and bluff*” whilst others urged they should be more considered in their response. The *Surrey Comet* reported the outcome:

*The Board sat in committee until a late hour and finally resolved to refuse Messrs. Holmes and King’s application, and to give them notice to complete the contract within twenty-one days. On Wednesday the firm, in accordance with their threat, withdrew all the workmen employed on this contract, and have since removed a large portion of their plant.*

After consulting with their legal and engineering advisers, the Board decided to offer the Contractors £1,000 if they would agree to return and complete the work. This appeared to be accepted but, on returning to the site, the Contractors were seemingly frittering away the time allowed for completion whilst manifestly gathering evidence to be used when the arbitration process was instigated. The Surveyor reported “*The attitude of the contractors and their foremen I can only describe as being antagonistic. The orders of the clerks of works and myself are either disregarded, or are carried out in a spirit of objection. I fear that things cannot go on long as they are, and am therefore careful to do nothing which might be misinterpreted; but my position as engineer, and the positions of the inspectors, are most trying.*”

Matters went from bad to worse and, on legal advice, the Board gave formal notice of their intent to take over the works. It was finally reported that

*the works were abandoned by the Contractors at 1 o’clock on Saturday afternoon [9 January 1892].*

## A NEW CONTRACTOR IS ENGAGED

THE SITUATION THE Board found themselves in was as unfamiliar to them as it was familiar to their Consulting Engineer. In parallel with his responsibilities to Teddington John Melliss was also Consulting Engineer to the Richmond Joint Sewerage scheme. There too the Contractors had recently abandoned the works, leaving a serious leakage problem unresolved. In Richmond Melliss had found another Contractor to finish the contract and he now recommended the same firm to Teddington. Since the amount of work needed to complete the scheme was unknown, the contract with the new Contractors was drawn up on the basis of a premium of 10% above prime costs. Work restarted in April 1892 with around 50 men engaged in stopping leaks and preparing for house connections to be made.

By August the Board were discussing the contract for making house connections and at the following month's meeting they confirmed arrangements for their Consulting Engineer to send in a report of his forthcoming inspections of the work. This would be printed and circulated to each member for further reference. The Surveyor was confidently looking forward to completion of the works in about a month. Once again his optimism was thwarted by reality and it was not until the Board meeting held on 20 March 1893 that members received the following - somewhat qualified - statement signed by the Consulting Engineer and Surveyor and handed to the Press:

*we again gave a gauging of leakage with the system of sewers, and although we find that it is somewhat larger than other gaugings since the Contractors finished the works, we are satisfied such increases may be attributed to the fact that there has been a very unusual rainfall during the last month which has charged the subsoil with abnormally large quantities of water ... We are of the opinion that no object will be gained by*

*any further delay in permitting the ratepayers to have the full benefit of the sewerage and sewage disposal systems which have been provided and we advise the Board at once to allow house connections to be made and to commence immediately the treatment of the sewage at their disposal works.*

Finally, after two years delay and a cost increase of £7,000, the Teddington Drainage Scheme was ready to be put into operation. However, the final bill to the ratepayers was destined to be even higher.

### THE ARBITRATION AWARD

**B**OTH SIDES PREPARED for arbitration with great care. They were right to do so for the stakes were high. The original contract value for the sewers themselves had been £18,275 (£22m) and this had later increased to £20,338 (£25m) with agreed extras

and additions. The Teddington Local Board had already paid £15,811 (£19m) of this sum to Holmes & King but were now being sued by them for a further £13,000 (£16m). In turn the Board were counterclaiming £5,000 (£6m) relating to their costs in having to employ a second Contractor to complete the work. If they lost the case, the Local Board would be facing a cost exactly double the original contract value.



*John Wolfe Barry*

The parties had been unable to agree an arbitrator by the time the original contract was ready for signing so (as already mentioned) a last-minute clause was inserted

leaving the choice of an arbitrator (if needed) to whoever was the current Chairman of the Institution of Surveyors (now RICS the Royal Institution of Chartered Surveyors). It was announced on 15 February 1893 that the choice as arbitrator had fallen upon John Wolfe Barry, a civil engineer whose single best-known work, Tower Bridge, was about to be completed. The hearing was held at the offices of the Institution in Great George Street, just off Parliament Square. The start was significantly delayed because the Defence case was not ready due to an enforced change in the Board's legal team<sup>9</sup>. The proceedings finally got underway on Monday 15 May 1893.

Both sides agreed that, at the time Holmes & King abandoned the works, the sewers were unusable due to the high volume of water leaking into the sewer pipes. The point at issue was whether that leakage was due to design faults (specifically the use or non-use of concrete bedding for the pipes) - as claimed by Holmes & King - or due to poor workmanship (mainly resulting from unauthorised sub-contracting by Holmes & King), as argued by the Local Board.

John Fletcher Moulton<sup>10</sup> QC opened the case for Holmes & King by claiming:

*This case rests solely on the decision to cease the use of concrete to save money. This made the work more difficult increasing the Contractors costs whilst reducing his remuneration because no concrete was being used. Hence 300-600,000 gallons of water per*



Fletcher Moulton QC

*day were being pumped [out of the sewers] compared with the 300,000 gallons of sewage to be expected on top. The pipes had sunk and broken and it was rather a question of wonder as to how they remained at all instead of why they leaked so much.*

Several witnesses were called to testify to the impossibility of successfully laying leak-free pipe-runs in the soil that existed in Teddington without placing them on a bed of concrete. The Defence leapt on the fact that the contractors never, at the time, made any formal written complaint about the non-use of concrete. In fact, although Fred King wrote to the Surrey Comet in January 1892 (i.e. after he had abandoned the contract) and referred to working

*in waterlogged ground and treacherous soil, the result being a loss of many thousands of pounds to us on our contract price*

the issue had never been formally raised with either the Board or their Consulting Engineer.

The degree of leakage still existing in the system was obviously going to be an important factor in the hearing. At the end of the second day,

*it was mutually agreed that the arbitrator should arrange to take the gaugings of the water flowing through the sewers, the plaintiffs receiving permission to test any of the manholes, so as to satisfy themselves that the Board had not tampered with them in an way so as to affect the accuracy of the gaugings.*

The results were available by the fifth day of the hearing when it was reported

*“the total leakage in the 24 hours measured was 330,498 gallons.”*

After ten days of pleading the plaintiffs finally rested their case. It was by now Monday 5 June 1893. Wearily, the arbitrator asked when the case was likely to be brought to a close. It was agreed by both parties that at least another seven days would be required (in practice, it needed a further 19 days to reach a conclusion, with the last sitting being held on 15 December 1893).

The case for the Teddington Local Board was being headed by Mr Bidder QC. In his opening address he claimed:

*The Defendants did not wish to suggest that Messrs. Holmes and King intentionally avoided the due performance of their contract, but they did a thing which they were directly prohibited by the contract from doing — they sublet different parts of the work against the desire of the engineer, and obviously the moment that was done they left it to the interest of irresponsible men to get through the work as quickly as they could, and make as much profit out of it as they could. He had asked Mr. York to mark out on the plan the places where the defects had been discovered, and it could be seen that in the great majority of cases they were portions which had been sublet.*

Henry York, the Board's Surveyor, spent six days in the witness box giving evidence and being cross-examined. He admitted to having changed his mind over whether there was a need to use concrete in which to bed the pipes, deciding it need only be used in the deepest trenches and the wettest ground. Otherwise, he maintained that the predominantly ballast soil was firm enough to support the pipes unaided.

He was followed into the witness box by the Consultant Engineer Melliss who supported York's judgement on the use of concrete.

The Defence's claim of poor workmanship lacked any dramatic examples to support it so each allegation was accompanied by lengthy and copious reference back to notes on complaints logged at the time by York and his two Clerks of Works. This part of the process lasted a total of eight days. It was hard going and at one point the newspapers reported an attempt to speed things up:

*The Arbitrator, interposing, said he ought to point out that as late as February 1891, the Consulting Engineer to the Teddington Local Board, after a very long and careful inspection in company with Mr. York, expressed in a report to the Board his very confident opinion that the work up to that point had been very well done. Mr. Melliss said 'The entire work, so far, is very satisfactory.' In view of that admission from the Board's own Consulting Engineer, it seemed to him (The Arbitrator) to be a waste of time to go into any matters prior to that date, or to deal with trivial details upon which [the Clerk of Works] made complaint from time to time ... if they went into all these minute matters they would have to sit there for a month.*

The 25<sup>th</sup> day of the hearing was spent on the negotiation of accounts and agreement on what the figures should be used for the various items in dispute. The final four days were taken up with both sides addressing the Arbitrator. The latter ended proceedings by admitting

*he had never seen the district, and if the parties thought it was desirable, he would be glad to visit it. Mr. Moulton and Mr. Bidder agreed, and it was understood that soon after Christmas the Arbitrator would visit Teddington and go over the works.*

1875



1895



1912



1933



1938



2016



## THE OUTCOME

THE ARBITRATOR'S DECISION was made known on Tuesday 30th January 1894. The announcement of the award consisted purely of the stark facts, there being no requirement for him to provide any form of rationale. As the leader writer in the *Surrey Comet* of February 3<sup>rd</sup> 1894 stated:

*The award in the Teddington sewerage arbitration is a severe blow for the Local Board of that place, and a very serious thing for the pockets of the unfortunate ratepayers. The award is in favour of the contractors Messrs. Holme and King who are given a sum of £10,720 and their costs both in respect of their claim and of the counterclaim made by the Local Board which is rejected. The only crumb of comfort for the Board and ratepayers is to be found in the fact that the amount of the award is less than the claim of the contractors by about £3,000. The disaster therefore is not quite as bad as it might have been. It is however bad enough and the total cost to the ratepayer of Teddington will hardly be less than £20,000.*

The Local Board convened a Special Meeting to consider what to do next. They made three recommendations:

1. that the Board take no steps to upset the award of the arbitrator;
2. that the Clerk forthwith make application to the Local Government Board for sanction to the raising of a loan to defray the amount of the arbiters award and the legal costs;
3. that application be made to the London and Provincial Bank to provide the necessary funds to meet the amount of the award pending receipt of the Local Government Board sanction.

These recommendations were each put to the vote and carried unanimously. A copy of these resolutions was also ordered to be sent to the plaintiff's solicitors.

As the *Surrey Comet* leader concluded:

*“Such are the disasters which are in store for local authorities, striving to the best of their ability to do their duty on behalf of their constituents and, in the face of great physical difficulties, to provide a perfect system of drainage of their district! Such are the mistakes to which honest judgement is liable, and such the glorious uncertainty of the resort to arbitration – uncertainty as notorious as it is proverbial in the case of law.”<sup>11</sup>*

## THE SEWAGE WORKS SITE

**T**HE MAPS ON the previous two pages show the changes that have taken place on the Sewage Works site and its surrounds over a period of 140 years. The 1875 map shows how ideal the chosen site was - devoid of any immediate neighbours and located on the river for ease of delivering coal and removing sludge. In 1895 soon after the works were opened, the roads opposite were laid out and, by 1912, these had been fully developed. The 1933 map was the last to show the works which was about to be replaced by the Mogden Farm complex. It has completely disappeared by 1938, as has *Holmesdale* next door. Today, Teddington Academy School occupies the site.

## POSTSCRIPT

**A**FTER WORLD WAR I Teddington was one of the 26 sewage disposal works in West Middlesex that was increasingly struggling to maintain a viable system based on what was by now an outdated and expensive treatment technology. In 1928, the Middlesex County Council resolved to instruct their Consulting Engineers to make a comprehensive report on the whole question of sewerage and sewage disposal of the district. This report, dated January 1929, suggested that the existing sewage works should be abandoned and that intercepting sewers should be created,

focussed on the most suitable site available near the Thames for the purification of the sewage from the entire area. The Council's original intent was to locate this in Syon Park but public opinion forced them instead to purchase Mogden Farm in Isleworth which was already the location of the Heston and Isleworth sewage treatment works. The 150 acre site, opened in 1936 and continues to this day and treats the waste water of 1.9 million people in North and West London.

A new deep level intercepting sewer linked the Teddington sewer network directly to Mogden. The cutover from the local treatment works must have been immediate for there is no trace of the precipitation tanks or filter beds site in the 1938 OS map (see page 77). Gone too are the gravel pit and *Holmesdale* (which gave way to Trowlock Avenue and Melbourne Road). Most of the core building remained until the 1950's.

In 1962 Teddington Boys School opened. The school building itself was located on the site of the original filter beds and the rest of the sewage works plot was given over to playing fields. In 2010 under the Building Schools for the Future programme, a completely new set of buildings was built at the river end of the same site directly over the engine and pump rooms of the original sewage works. The 1960's building was demolished and the former filter beds have in turn become the site of the impressive sports facilities of what is now Teddington Academy. Meanwhile the other 15 acres of the original site (including the former gravel pit area) are devoted to the general public as the Broom Road Recreation Ground.

There is no doubt that when the Teddington Local Board Chairman Henry Page purchased the 25 acres for £10,000 in 1888 he secured an asset that was and has been of great and lasting value to his own - and all subsequent - local authorities.

## TEDDINGTON ENDNOTES

<sup>1</sup> The Thames Navigation Act 1866 required Teddington to prevent all sewage from being discharged through the storm water drains. Following its establishment in 1867, Teddington Local Board set to work and freed the storm water drains from sewage. They also, from time to time, extended the storm water drainage, until by 1894 the district had a system of storm water drainage almost equal in extent to the newly inaugurated system of soil sewers.

<sup>2</sup> Although Park himself had died the previous January, it would surely have been considered duplicitous if his executors were seen to be willingly selling land for a Sewage Works which would devalue his clients' earlier investments.

<sup>3</sup> The actual population in 2011 was 10,330.

<sup>4</sup> Each tank had the capacity to hold two day's input.

<sup>5</sup> John Langdon Down of *Normansfield*, the largest ratepayer in the parish, had withdrawn his opposition to the scheme.

<sup>6</sup> Cripps was later Leader of the House of Lords and father of prominent politician Stafford Cripps.

<sup>7</sup> Members of the Board tended to be either tradesmen - frequently builders - or professionals, including several solicitors and retired civil servants. The former were also active members of the local Liberal and Radical Club whilst the latter were prominent in the local Conservative Club. Board discussions therefore sometimes reflected the political and ideological differences between the two rather than the immediate needs of the parish. Some deep-rooted animosities festered beneath the surface and occasionally exploded in the open, to the delight of the newspaper reporters.

<sup>8</sup> The argument was that the value of their investment as owners would be enhanced by the sewerage and they should therefore pay for it.

<sup>9</sup> The Board had originally appointed Sir Richard Webster, sometime Attorney General, to lead their defence. Shortly before the hearing was due to start, Webster was called away on altogether bigger business: to represent Great Britain in the Bering Sea arbitration. This lasted from February to August 1893 and resulted in British sealers receiving compensation of nearly half a million dollars (\$10m now).

<sup>10</sup> Moulton was a brilliant mathematician and barrister who went on to become Lord Justice on the Court of Appeal.

<sup>11</sup> It seems that the ratepayers of Teddington agreed with the leader writer's conclusion: there were no irate letters in the Press nor any reports of any undue public concern.

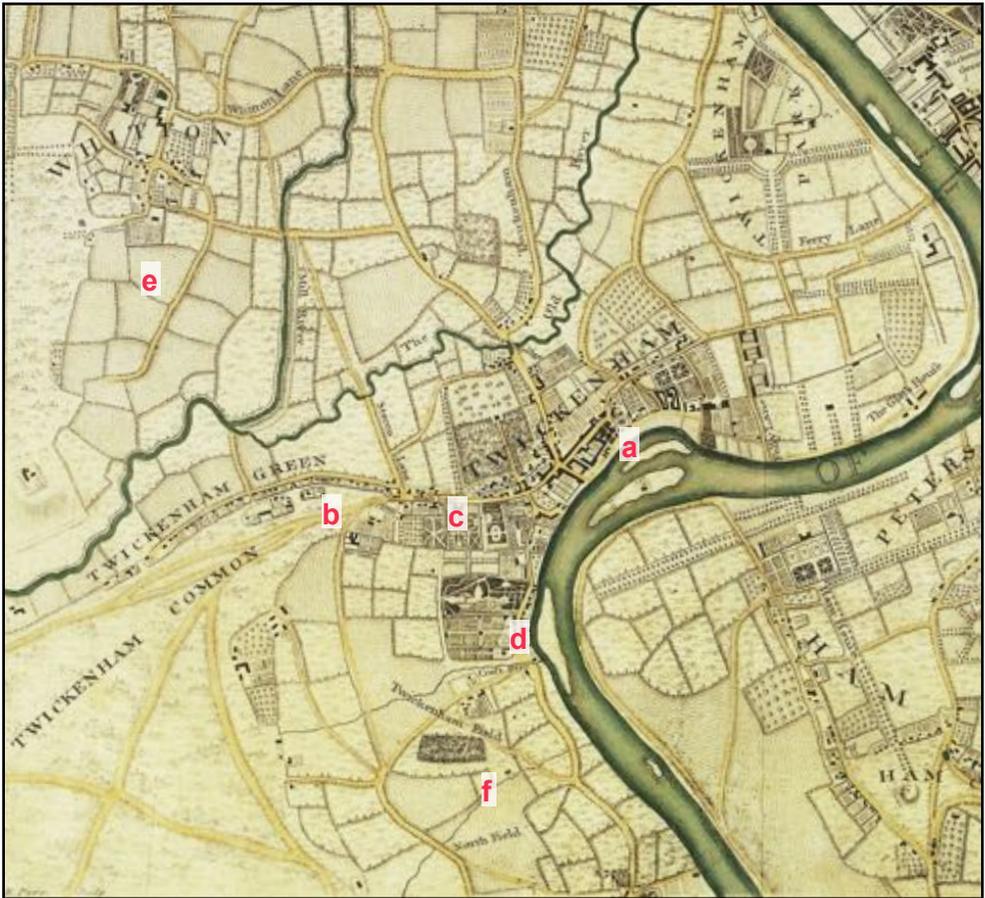


Figure 3.1 Twickenham in 1761

Most of the common housing is on the north bank of the river opposite Eel Pie Island **a** and on Twickenham Green **b**. The large properties with their formal garden layouts clearly shown are mainly located on Heath Lane **c** and Cross Deep **d**. Whitton - part of Twickenham Parish - lies in the north west and the map shows how fields had been created out of the heath land bordering on Hounslow Heath **e**. In the south of the parish, Twickenham Field **f** links into Teddington's north field.

### 3. TWICKENHAM PROLOGUE

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#### The Surrey Comet.

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KINGSTON, SATURDAY, JAN. 7, 1865.

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*An important public correspondence is taking place as to the Sanitary Condition of Twickenham. Mr. Freeman, a Baptist Minister, residing there, has recently suffered a heavy domestic affliction in the loss of three of his children within the brief period of a week. From the hour he entered his present abode, he says, his family began to suffer in health, and the almost instant judgment of the doctor called in was that it arose from "local poison." On examination, the drainage, though found to be imperfect, presented nothing to account for so extraordinary an affliction. The doctor at length suggested that the cause must be in the water, and the result of an analysis of it made at the Royal College of Chemistry is stated to be that a pint of it contained "enough decomposed organic matter to fully account for the calamities." Further search discovered a cesspool in the garden at a short distance from the well, the water of which had become impregnated by cesspool matter.*

*Feeling that his children have been poisoned, that other families in the neighbourhood may be similarly visited, and that this is not a private but a public matter, Mr. Freeman inveighs through the press against the "virtually self-elected parochial authorities," under whose rule a state of things so inimical to public health is suffered to exist. Within three years, he says, they have constructed a public sewer along the high road, emptying into the Thames, but instead of getting rid of these cesspools they have retained them, simply connecting them with the sewer by overflow drains.*

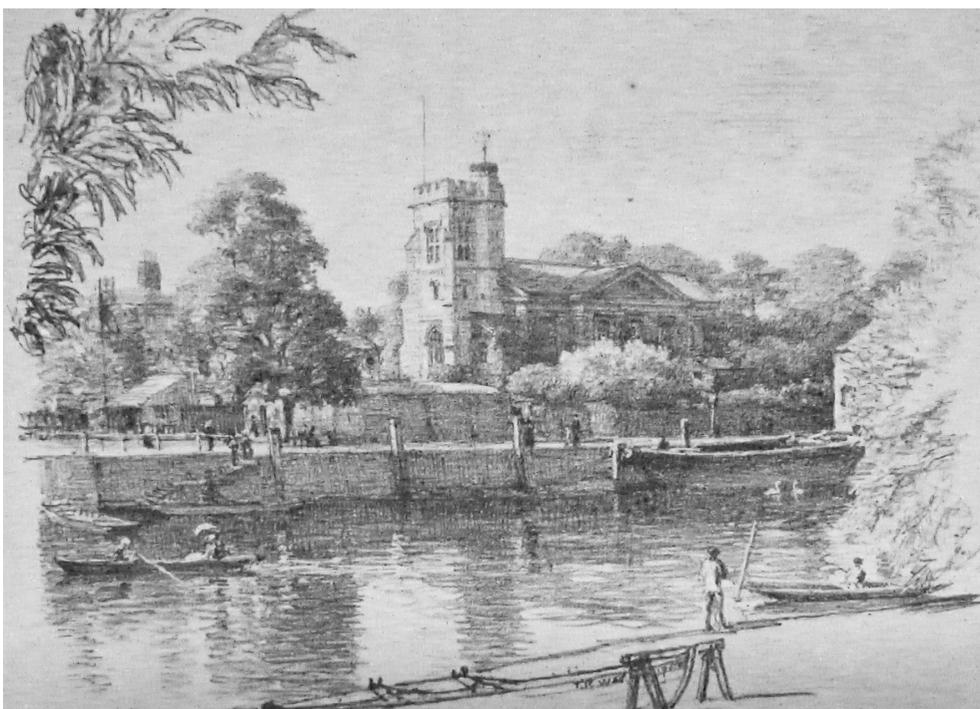


*Figure 3.2 Two views of the Twickenham river bank opposite Eel Pie Island.*

*(above) 1870s view showing the picturesque but noisome foreshore*

*(below) by 1900 a combination of the embankment - containing (and concealing) the new sewers - and the Richmond half-lock have transformed the view and rehabilitated this important part of the town.*

*Richmond Local Studies Collection*



## INTRODUCTION

**T**HE ANCIENT PARISH of Twickenham consists of 2,415 acres, forming a broad wedge stretching westward from the Thames to Hounslow Heath. In the west the ground rises to over 50 feet, but elsewhere it is lower and on the whole very flat. Except for a thin strip of alluvium along the river and two patches of brick-earth, the soil is all gravel lying over London clay which is typically found 15-18 feet below the surface. The river makes a double curve past Twickenham, with several islands in its length, the largest of which is Eel Pie Island. The oldest houses and streets - as well as the Parish Church - lay opposite the island on the north bank of the river. By the mid-1860's the population of Twickenham was over 8,000 with the more recent housing having been built around the railway station (opened in 1848) and on the Common towards the west of the parish (see Figure 3.2).

In December 1865, the Royal Commission on "*The Best Means of Preventing the Pollution of Rivers*" was collecting evidence on this part of the Thames. At this time the Twickenham stretch was tidal<sup>1</sup> and extensive areas of gravel bed were exposed except at the top of the tide. Many of those interviewed referred to the ever-increasing difficulty of navigating the river even in single skiffs. They chiefly attributed this deterioration in water-levels to the volume of water being extracted from the river above Teddington following the passing of the Metropolis Water Act 1852<sup>2</sup>.

*There is left upon the bank, a deposit of slime--an offensive blueish mixture, which you have to walk through if you go down to the water. Some of the persons living there who are more energetic and more attentive to health than the rest, and who have occasion to go from the bank to the boats daily, wash the bank and clear away the accumulation of sewage.*

## THE FORMATION OF A LOCAL BOARD

Twickenham was the last of the four parishes to debate the formation of a Local Board. This event was precipitated by the passing of the Thames Conservancy Act (1867), which prohibited the discharge of sewage into the River Thames by any town lying within three miles of its banks. The prohibition was due to come into force in January 1869 and from that date the penalty for not complying with it was up to £100 on conviction and £50 a day thereafter until the nuisance was abated. With this prospect ahead it was not difficult to find twenty ratepayers who were ready to sign a requisition for a meeting to consider the adoption of the Local Government Act 1858, which would enable the parish to establish a Local Board and borrow the money required to finance a sewerage and drainage scheme. The meeting was held in the Reading Room on Thursday afternoon, 31 October 1867.

Mr. William Ruston, a solicitor, explained the provisions of the Act and the solution it could offer to Twickenham's sewage disposal problem. The Rev. William Freeman, a Baptist minister, spoke with feeling about the need for improved sewage disposal, because four of his own children, three in one week, had succumbed to "the local poison" (typhoid fever). He expressed some concern about the sweeping powers conferred on Local Boards, reminding the meeting that the Parish Boards and Committees used to meet in private and the ratepayers knew little of what they did, whereas at least the Local Board proceedings would be published. Of the several parishioners who spoke, only one, Mr. Piggott, dissented, on the grounds that a Local Board would become involved in a lot of litigation. On a division, the motion to adopt the Act was carried by 42 votes to 26. Mr. Piggott, undaunted, then demanded a poll of the parish.

The next event was a special meeting on the requisition of twenty ratepayers who wished to have the question of adopting

the Act discussed. This meeting was held at the Arragon Road School on 14 November 1867. Dissatisfaction was expressed at the way in which the previous meeting had been conducted - it could hardly be claimed that a Vestry meeting held on a Thursday afternoon would be fully representative of all shades of opinion in the parish. Most of the arguments previously put forward were repeated and eventually a motion to adopt the Act was put before this meeting and defeated by a small majority. At that stage, however, the Rev. W. Freeman appeared and spoke in favour of adoption and then, contrary to all rules for the conduct of meetings, the motion was put to the vote again. This time there was so much confusion that it proved impossible to count the votes and the meeting was brought to a close.

Finally, the result of the poll demanded by Mr Piggott was declared and this showed 582 in favour and 242 against. It then only remained to decide the number of members, and this was done at a public meeting on 23 January 1868.

The first meeting of the Twickenham Local Board (which included Rev Freeman) was held in the Reading Room on 19 February 1868. Captain Edward Donnithorne was voted Chairman and it was resolved that members of the Board who had previously been members of the Highways Board and the Lighting Committee should carry on the duties of Surveyor for the time being. It was also agreed that representatives of the press should be admitted to all meetings of the Board at the discretion of the Board. At the third meeting, on 5 March 1868, the Board appointed as its Clerk Mr. William Ruston, a solicitor practising at Brentford, and at the fourth meeting on 19 March 1868 a seal designed by the Chairman was adopted.

At their meeting on 14<sup>th</sup> May 1868 The Board reviewed the 16 applications for the position of Surveyor which carried a salary of £150 (now £125,000) per year. They selected Henry Malcolm Ramsay, a 40-year old former house-builder who in 1861

employed 33 men and 4 boys. Ramsay was immediately asked to produce a drainage plan for the town. This was ready by September 1868 but, since the Thames Conservancy had deferred their deadline for banning the flow of sewage into the river until 29 September 1869, the Board also deferred their consideration of Ramsay's drainage plan on several occasions. It was not until their meeting of 6<sup>th</sup> May 1869 that it was discussed in detail. The majority of members were undecided what action to take and a resolution was passed 13 to 4:

*That a letter be written to the Conservancy Board telling them that we are not at present at all decided as to the scheme to be adopted to ask their extension of time or formal advice on the matter or else to receive a deputation from the Board to talk the question over.*

The canny reply was dated 3 June 1869:

*In reply to your letter I am directed by the Conservators of the River Thames to inform you that when the works of the Twickenham Local Board for the disposal of the sewage of the locality are in progress the Conservators will consider what extension should be granted for executing them.*

This was followed by a more direct letter dated 7 August 1869:

*I am directed by the Conservators of the River Thames to remind you that a considerable time has now elapsed since notice of conformity with the act was served upon the Board of Surveyors of Twickenham to eliminate the passage of sewage into the river and to state that though desirous of rendering the local authorities with the assistance in their process for the attainment of this object, the Conservators feel that immediate steps should be taken to increase the purity of the water of the Thames.*

*I am therefore to request that you will inform me whether any and if any what steps have been taken by the Board of Surveyors to divert the flow of sewage from the river.*

*I am your obedient servant*

*E Burstall  
Secretary*

The Board returned to their deliberations over the plan. The main stumbling block was the proposal to use irrigation<sup>3</sup> as the method for disposing of the sewage. Those who favoured the approach argued its simplicity and potential for gaining commercial returns on the improved agriculture. Those against irrigation protested that the Board would never be able to find - nor afford - sufficient land to operate the process. They urged instead that the Board should adopt a combination of precipitation and filtration which required a much smaller site for the disposal works. Perhaps hoping to have the decision made for them, the Board agreed to send their plans to a noted engineer John Lawson CE for an external opinion. However Lawson simply endorsed the plans as they stood so sending the ball back into their court.

At their meeting on 29<sup>th</sup> November 1869, a motion:

*That this Board having considered the reports of the Drainage Committee the Surveyor and the report of Mr Lawson are of the opinion that the system of irrigation proposed therein is most suitable for the disposal of the sewage of this Parish.*

was lost by 6 to 10 but the Board then resolved by the same margin:

*That a Public Meeting of the owners and occupiers of property ratepayers within the parish of Twickenham should be held to consider and take the opinion of the parishioners upon the*

*scheme of sewerage and disposal of sewage by irrigation upon land on the Common now before the Local Board.*

The meeting was held in the Parochial Schools on 2<sup>nd</sup> December 1869 and chaired by the Local Board's own Chairman. Rev Freeman explained the details of the scheme and proposed the motion:

*That this meeting having heard the details of the scheme of sewerage and disposal of sewage which has been under consideration of the Twickenham Local Board is of the opinion that sewage irrigation within the limits of the town is inexpedient and considering the value of land is impracticable.*

After much debate, which necessitated an adjournment and reconvening of the meeting on 6<sup>th</sup> December 1869, Freeman's original resolution was passed. At its own meeting a few days later, the Local Board voted to place the publicly adopted resolution upon their own Minutes so officially bringing to an end the first attempt to adopt a drainage scheme for Twickenham.

## RENEWED EFFORTS

**T**HE TWICKENHAM LOCAL Board began the new decade with a fresh determination. They first checked to see if anything had changed in what was being asked of them and whether they could expect any help from the government. Their attempt to arrange a meeting with the Home Office to ascertain the government's intentions and their disposition to give assistance was met with a response from the Secretary of State requesting that in the first instance the Local Board state their difficulty in writing for his consideration. They were also privately advised that such an approach would prove to be a blind alley.

Once again it was the Reverend William Freeman who took the lead in focussing the Board on its responsibilities. The *Middlesex*

Chronicle reported the proceedings at the Board meeting held on 24<sup>th</sup> February 1870:

*The rev. gentleman said the motion which had been standing for some time past on the Notice Paper in his name, was for the appointment of a committee, with definite instructions to enquire and to advise the Board as to the best, the quickest, and the cheapest method of complying with the requirements of the Thames Conservancy Board. He need hardly remind the Board what those requirements were. They said, in effect, to this parish and to all towns similarly situated--"You are casting into the river that which pollutes the stream, destroys the fish, and is dangerous to the health of the vast populations through which the stream flows. We, the Conservators of the Thames, are made responsible for the purity of the river and for the sanitary condition of its channels and banks; we are furnished by Parliament with certain powers to aid us in the discharge of these responsibilities, and we call upon you, the inhabitants of Twickenham, to abate a dangerous nuisance."*

*He (Mr. Freeman) was not disposed to say that all the time that had been given by the Board to the discussion of this question of disposal of sewage had been wasted; but he was of opinion that it was most desirable, after the long delay, that this Board ... should confine its attention within the limits of the Conservator's notice, and endeavour to comply with their requirements. The continued discussion and protracted unsettlement of this question, was not conducive to the prosperity of the parish, the improvement of property, or the interests of trade!*

The logic - and passion - of Freeman's arguments won the day and his resolution was carried unanimously as was his proposed list of members who should serve on the committee.

The selected members worked quickly but rigorously, completing their report within a month. This they presented it to the

Board meeting on 7<sup>th</sup> April 1870 explaining that, having first fully considered the requirements and restrictions placed on them by the Thames Conservators, they restricted their final deliberations to providing answers to a series of questions.

The committee recommended:

1. *The use of a separate system<sup>4</sup> with the existing sewers reserved for sewage, and new lines of pipe drains laid to separately handle surface water.*

2. *A new intercepting sewer will be laid from Orleans Road along Riverside and The Embankment to Wharf Lane whilst a second intercepting sewer, running along Cross Deep from the southern parish boundary will connect with this on King Street.*

3. *The combined flow from the two sewers will be taken to a piece of Parish land known as Ivy Close or Moor Mead Meadow. There, on a works site of around one and a half acres, the sewage would be received in underground tanks. Pumps would then lift the whole sewage into precipitation tanks. As it passes into the tanks it would be mixed with precipitant and deodorising mixture by which the whole of solid matter would be separated from the liquid and the deodorised water would pass through filtration beds either into the River Crane directly or, by flowing it through glazed pipes, into the Thames by the Iron Railway Bridge.*

*In the event of the Board accepting the general scheme now proposed, the committee had two further recommendations:*

*That the surveyor be instructed to prepare necessary plans and specifications and immediate steps be taken to secure the land*

*That they be authorised to pursue their enquiries as to the best means of separating sewage so as to render the solid portion most valuable for agricultural purposes and the effluent water as pure as possible.*

The Surveyor had produced his own detailed report on the scheme together with an initial estimate of cost which he put at £5,835.

The committee's report received a frigid response from the rest of the Board with many members complaining it contained nothing new and was simply a revamp of the Surveyor's original 1868 plan. After a lengthy and at times acrimonious discussion, further consideration was adjourned although the committee was sanctioned to continue its research into other methods of sewage treatment.

The committee returned to give a further report to the 26<sup>th</sup> May 1870 Board meeting. They were full of enthusiasm for what they had discovered concerning the so-called ABC process<sup>5</sup> as operated by the Native Guano Company. The committee had recently visited Hastings where the process was in use. The sewage for the population of 40,000 had previously been collected in large storage tanks from where it was discharged into the sea at high tide. In the committee's words:

*Then, the chairman of the Hastings Local Board together with several gentlemen of the town, believing that the sewage could be turned to profitable account, constructed at their own cost an experimental works for testing the Native Guano Company's process and the ABC [precipitating] mixture. The result appears to have been so far satisfactory that they formed a private company in conjunction with the Native Guano Company and constructed the large and permanent works which the committee visited.*

The report went on to describe the Hastings process in great detail and it was clear that the visit had made a great impression on the minds of the visitors. So full of information was their report that it was decided to adjourn the meeting to the following week to continue discussion of the proposed scheme.

At that adjourned meeting, the Clerk read an apparently unsolicited letter received from one Charles Edward Austin CE who had invented a system of sewage purification involving filtration chambers:

*7 Broad Sanctuary SW*

*1 June 1870*

*Sir*

*I beg to lay before the Board the following proposal for establishing a process of purification for the sewage of Twickenham.*

*I will at my own cost and risk undertake all the necessary works (exclusive of laying sewers) and establish and work my process in such manner as to satisfy the government; and will undertake to keep the Board clear of injunctions arising from the emanations from the sewers in my charge in consideration of an annual payment to me of 10d per head of the population inhabiting the houses drained.*

*When the process has been working satisfactorily and subject to no injunction during the space of one year I shall be entitled to receive from the Board £1600 for my capital outlay and a free discharge from further care of the works.*

*The sewage to belong to me during my management.*

*I beg you to make known to the Board this proposal and to favour me with an answer with regard to it at its earliest convenience as I would wish not to lock up the capital necessary to meet this outlay longer than is necessary.*

*I am Sir,*

*Yours truly*

*Charles E Austin*

The pragmatism of this approach found much favour within the Board and Charles Austin was invited to attend the next regular meeting (7<sup>th</sup> June 1870) to answer questions on his proposal. The Board then returned to considering their own scheme. The committee revealed that they had found an alternative five-acre site for the works at the end of a road called the Mereway:

*the owner of which was willing to sell the same to the Local Board on fair and reasonable terms.*

Reverend Freeman then announced that he too had received a letter, this one being from the Native Guano Company. He proceeded to read:

*Dear Sir,*

*We cannot get any decisive answer from Richmond, and as we are anxious that no further time should be lost in the erection of our model works near London, we cannot afford to lose any more time in making the necessary arrangements. I write therefore to you to ascertain whether your Local Board would accept for Twickenham the same terms we offer to Richmond, viz.*

*That they grant us a concession of the sewage for 29 years; that your corporation provide the land required, and erect the necessary works, machinery etc. required to carry on the ABC process ... such works to be the property of the Corporation at the termination of the concession;*

*That this Company will undertake the management of the works, and will pay the corporation a rent of 5% on their outlay for the works, machinery etc. Or if preferred by the corporation 15% of the net profits realised.*

*That this company shall guarantee the corporation from all further complaints of the Thames Conservancy and if the process does not satisfy the requirements of these Conservator's, this company will recoup to the corporation the outlay for works, land etc.*

*If you will accept these terms I will at once bring the matter before our directors and shall be glad of early answer.*

*Your obedient servant*

*C Rawson*

*General Manager*

With now not one but two proposals on the table, the Board agreed to hold an additional meeting the following week by which time both proposers had written further letters detailing their offers. It was therefore agreed that these letters should be printed and circulated prior to further discussion.

Not to be outdone, Malcolm Ramsay, the Board's Surveyor, announced that he too was working on his own alternative process for the utilisation of the sewage which he intended to patent. He explained that, without the protection of the patent, he was not yet at liberty to reveal his method in detail but, at his request, the Board agreed to advance him half the £30 cost (£50,000 now) of building a model plant to test what he called "Ramsay's Immediate and Economic Process of the Utilisation of Sewage". Once again the Board had been distracted from the detailed consideration of the two proposals already on the table. At a Special Meeting held the following week, Rev Freeman attempted to short-cut the process by proposing that negotiations should be opened with the Native Guano Company. This was deemed to be premature since the Thames Conservators had still not confirmed the acceptability of the effluent produced by the ABC process.

The Board continued to be pressed by the promoters of two proposed schemes both of whom made further significant improvements to their offers. Meanwhile, Surveyor Ramsay had successfully patented his

*improvements in the treatment of sewage or other liquids or solutions, and the production therefrom of Manurance precipitates or other solids, as also for raising sewage or other liquids or matters by floating tanks, or by the action of tidal waters*

and was promoting his own scheme for dealing with the sewage at the river-side using his combination of floating tanks and the power of the tide to dispense with the need for pumps.

Finally, the need for clarity and direction came to a head as the *Middlesex Chronicle* report of 25<sup>th</sup> August Board Meeting records:

*the Rev W Freeman said he should like to know whether they intended to discuss the scheme of Mr Ramsay; the scheme of Mr Austin, or the three letters from the ABC Company? He would remind them that the time granted them by the Thames Conservators would expire on 29 September. He hoped they would deal with one subject at a time, and finally dispose of it, either by adopting or rejecting it*

Once again Freeman's intervention was successful and the Board unanimously agreed that they should send a delegation of seven members to meet the NGC with a pre-prepared set of the questions to be covered. They also instructed the Surveyor to prepare his plans and cost estimates for the creation of an embankment containing an intercepting sewer along the bank opposite Eel Pie Island. Lastly the Works Committee was asked to pursue the purchase of land for the sewage treatment works. After weeks of indecision, it seemed the Board were on the verge of action at last.

The meeting with the Native Guano Company took place on 29<sup>th</sup> August 1870. It did not go well. From the record of the questions asked by the delegates and the written answers given the company, it seems the Parish had not fully understood that the responsibility for pumps and pumping operations was entirely upon them, the company being committed to the erection and operation of the treatment works only. This misunderstanding, together with a very aggressive timescale being set by the NGC for Twickenham to construct its sewers, led to the Board unanimously passing a resolution at their meeting two days later

*That the Terms of The Native Guano Company Limited be **not** entertained.*

## BACK TO BASICS

ON 12TH SEPTEMBER 1870, a delegation from the Twickenham Local Board, led by Rev W Freeman and accompanied by their Surveyor and their Clerk met with the Chairman of the Thames Conservators. They explained the various efforts they had made over the previous three years to comply with the law, all of which had proved unsuccessful. They were reduced to a scheme which would involve a simple process of precipitation and filtration on the banks of the river itself. They had prepared and produced a plan for the embankment of the river from Twickenham Church and for a considerable distance in the direction of Pope's Villa. This embankment would

*effect a great improvement on the banks of the river, which at this point were covered with foul mud.*

*They proposed to place within this embankment an intercepting sewer and precipitations and filtration works. The Local Board wished to know whether such [a scheme] would be sanctioned by the Conservancy Board. In response, the Chairman said that, provided the purity of the effluent met the required standards (which the Conservators would shortly publish) and that any treatment works were above the high-water mark, the Conservators were indifferent to the details of any proposed scheme since they remained the responsibility of the local authority. The Chairman said that in the event of granting permission for an embankment, the Conservators would assess the amount which the parish would have to pay for the land reclaimed from the riverbanks. Two thirds of such assessment went to defray the general charges and improvement of the river and one third to the Crown.*

Freeman closed the meeting by asking for an extension of time for completion of works to which the Chairman said they would hear from the Conservators in due course. The following day, a

letter was received from the Thames Conservators attaching the promised purity standards and offering an extension of the time limit provided Twickenham committed that the effluent from their eventual scheme would meet the newly-published standards.

Encouraged by this response, a committee was appointed to find some land on which to build a pumping station and treatment works. They returned to the next meeting with two options identified. Moor Mead and Ivy Close were both approximately 5-acre sites located on the River Crane in the north-east of the Parish. The committee preferred Ivy Close, which belonged to the Vestry (it having been granted to them as part of the 1818 Enclosure Awards). The Clerk was therefore instructed to approach the Vestry with regard to a lease or sale of the land whilst the Drainage Committee were asked to revise their plans based on the use of Ivy Close.

Although the initial reaction of the Twickenham Vestry was favourable to a lease or sale of Ivy Close they warned they would need the approval of the Charity Commissioners. The response from the latter body when it came was not at all encouraging and the Drainage Committee now recommended they switch their attention to the Mereway site first mentioned the previous May. This too was located on the banks of the River Crane but further west (upstream) and arguably in a more central location within the Parish. Once again the plans were updated to take account of the new site and presented to the Board who passed them almost unanimously. The contract for the land - which it turned out belonged to the Board's own chairman - was finally signed at the meeting on 12<sup>th</sup> January 1871. It seemed as though Twickenham Local Board had finally produced a drainage scheme for the parish, but everything was about to change ...

## RESIGNATION

2 Cromwell Villa  
Twickenham SW  
25<sup>th</sup> January 1871

To the Chairman and Members of the Local  
Board of the Parish of Twickenham

*Gentlemen.--It in my duty to place at your disposal my seat at the Local Board, and I now resign into your hands the trust committed to me by my fellow parishioners. I took an active part in the proceedings which led to the adoption by this Parish of the Local Government Acts. From that time I have shared with you the duties of the Local Board of Health. We have had differences of opinion and animated discussions when I have fearlessly and earnestly expressed my own sentiments, but I have done so with every respect for the opinions of my fellow members, and with a sincere desire not to offend anyone. I leave the Board grateful for the courteous attention I have always received and with feelings of hearty goodwill towards every member. I shall remove from the neighbourhood before long with great regret. I may have failed in my endeavours but I have earnestly striven to be useful to my neighbours. In bidding you farewell, I record my best wishes for the prosperity of the Parish and for the health and happiness of all its inhabitants. That you, Gentlemen, may bring to a speedy and satisfactory issue those questions of sanitary improvement in which we are all deeply interested.*

*I am, Gentlemen, your obedient servant.  
William Freeman*

Freeman's parting hope for speedy sanitary improvement in Twickenham was not to be fulfilled. With his departure - and without his influence - the Board seemed to lose all interest in the Drainage Question. The plans that Freeman had been so active in formulating simply lay on the table.

Six months after he left, a motion:

*That the plans for the sewage works and embankment be laid before the Board.*

was withdrawn through lack of support and although in September 1871 a motion:

*That having regard to the circumstances that this Board was formed for the purpose of carrying out in his Parish a system of drainage it to be resolved that directions be given by the Board for proceeding with some system of drainage forthwith.*

was debated and it was defeated by 10 votes to 5.

No further action was taken by the Board until, in August 1872, a letter was received from the solicitors to the Thames Conservancy which began:

*Gentlemen we beg to acquaint you that we are instructed by the Conservators of the River Thames to proceed against you for allowing the flow of sewage into the river Thames from sewers near the Middlesex shore to the north of Eel Pie Island after notice served on you by the Conservators to discontinue the same ...*

This provoked the Board into calling a Special Meeting to consider their response and it was eventually (November 1872) agreed to send the plans, originally prepared in January 1871, to an independent Engineer for his comments. The Engineer's report was received the following February but at their Board meeting on 10<sup>th</sup> April 1873, the members voted by 10 to 5 to shelve the entire Drainage Report *sine die*. In an expression of sheer exasperation, four Board members resigned immediately.

Since October 1872, the Board had come under increasing pressure from the newly-formed Twickenham Ratepayers Protection Association. The new group had originally objected to

what they saw as the Board's profligacy in applying asphalt surfaces to most of the footpaths in the Parish but they soon turned their attention to criticising 'Ramsay's extravagancy' with the drainage scheme. Two members of the Association came up with their own alternative schemes to avoid - they hoped - the large expenditure envisaged by the Board. One proposal was developed by William Webb, a cabinetmaker, whilst the other was simply known as the 'working man's scheme'. Both involved constructing communal cesspools for typically between three houses (Webb's scheme) and 20 houses (working man's scheme). These cesspools would retain the solid deposit for removal from time to time as necessary. The liquid element in both cases relied on the passage through the soil for its purification but with different arrangements for additional filtering before its final discharge into the river. Neither scheme was taken seriously by the Local Board but eventually they reluctantly asked the Surveyor to take a look. His report back to a Board meeting ended:

*"Having examined both proposals in a very careful manner and heard the explanations of the promoters, I regret that I cannot report favourably upon any one point in either scheme. I am satisfied that they would not be successful and most certainly would fail in realising Mr Webb's expectations and the Working Man's ideas".*

The Board had also been told about a scheme devised by one of their own members. Dr Alfred Clark, a surgeon and apothecary living on Cross Deep had been a founder member of the Board and was passionate (to the point of bigotry) about advocating the use of simple irrigation as the only acceptable treatment of sewage. His scheme called for the construction of an intercepting sewer running along the foreshore from Richmond Bridge to St Mary's Church (on Twickenham embankment) from where a brick outfall sewer would be constructed to Butts Farm Hanworth (about two and a quarter miles) arriving there about 70 feet under the surface.

100 acres would be taken to provide the necessary area to dispose of the sewage by irrigation. The Board, after a damning review of it from the Surveyor, rejected Clark's scheme and voted instead to implement a system of intermittent downward filtration on land to be obtained by compulsory purchase on Whitton Common. The Board applied to the Local Government Board for a loan of £25,000 and a Public Inquiry was organised to be held on 29th December 1873.

### ACTION AT LAST

**M**AJOR HECTOR TULLOCH a recently retired Royal Engineer was appointed<sup>6</sup> as the Inspector for the Inquiry which was held in the Board's offices on Queen Street (now Queen's Road). It was attended by eleven members of the Board and seven from the Ratepayers Protection Association, who presented the Inspector with a petition against the scheme signed by 270 ratepayers. Tulloch ran the Inquiry in a business-like but not over-bearing manner and the newspaper reports recount several moments of laughter and light-hearted banter during the day-long proceedings. He visited the proposed 25-acre filtration site on Whitton Common as well as land on the Mereway already purchased by the Board and gave his immediate reaction that both were too close to the village. He confirmed this opinion in his report delivered in March 1874:

*“The pumping station is too close to the town. I do not think that the health of the inhabitants would be in any way affected by its proposed position, but the value of the houses near it would be depreciated. In cases of this kind, it is the duty of the sanitary authority to consider the aspect of the sewage question, the mere fact of the existence of a sewage pumping station in any neighbourhood close to a town is of itself sufficient in many cases to destroy the value of the land near the station for building purposes. I, therefore, think that the sewage should be*

*pumped farther away from Twickenham. Then again the sewage should not be utilised so close to the town as is proposed, especially when the Board have a large tract of land in the neighbourhood of the Hounslow powder mill to choose a suitable plot from".*

The Board successfully appealed the ruling on the Mereway site for the pumping station and received permission to apply for a loan of £20,000 to cover the sewerage and pumping station only. It was agreed the decision on the method and location of sewage disposal would be deferred. By July 1874 final detailed plans and specifications were readied for inspection and tendering. The Board decided that the first contract should include all main and branch sewers along with house branches; it also included the tank works but the pumping house itself would be reserved for a later contract. They also decided that the embankment should be built by Board-employed workers under the direction of the Surveyor. It was designed to the same specification used on the recently-completed Thames Embankments in Central London - using Portland Cement and Staffordshire Blue bricks.

Invitations to Tender appeared in the 1<sup>st</sup> August 1874 edition of the *Middlesex Chronicle* and by the following Thursday the Board had received five tenders. They awarded the contract to the lowest. Work started the following month with the 26<sup>th</sup> September 1874 edition of the *Middlesex Chronicle* reporting:

*Commencement of Twickenham Drainage Works - On Tuesday last operations were commenced with these works. The Chairman attended by several members of the Local Board having assembled on the ground largely supported by a numerous company of ratepayers and other gentlemen interested in the progress of sanitary works. The proceedings were commenced by the Chairman addressing the company in congratulatory terms upon the satisfactory inauguration of the*

*scheme ... and expressed an opinion that the carrying out of the works would result in a most favourable residential increase in the district and that the Parish would attain through these works being done a high character as being in possession of a system of drainage tending to secure the sanitary welfare of the whole of the parishioners - the Board in the scheme having carefully provided for the small as well as the larger dwellings. Upon the conclusion of this address which was much cheered by the company, the Chairman proceeded to turn the first turf and each of the Board members present following his example and the first barrow having been duly filled was "run out to tip" by the Surveyor and the ceremony of starting the works was then successfully concluded. The company then adjourned to a very enjoyable champagne lunch provided by the contractor which was done justice to. We have heard that sundry other sports were subsequently indulged in but as these do not form part of the ceremony of the day we make no notice of the successful competitors with the exception that everything came off most successfully ...*

The first phase of construction covered the Richmond Road section of sewerage at the east of the parish along with creating the giant underground holding tanks at the Mereway outfall works. The Surveyor reported steady progress throughout the winter and spring period. Inevitably some problems were encountered which required extra unplanned work to be undertaken. The largest and most dramatic example of such problems required the calling of an Extraordinary Meeting of the Board on 28<sup>th</sup> June 1875. In the course of creating a 60ft tunnel in the clay directly underneath the railway line, the construction gang had found the works suddenly flooded. They discovered that the level of the top of the clay bed abruptly and unexpectedly dipped below the arch level of the sewer and it was impossible to proceed without creating a brick- or concrete-lined tunnel underneath the railway track within

which to build the sewer. This new work was completed by August but added nearly £4,000 (nearly £6m) to the overall costs.

Meanwhile the Thames Conservators had agreed in principle to sell a portion of the foreshore facing Eel Pie Island to enable construction of the embankment.

However the question of sewage disposal was still unresolved. The Board had still not found an owner ready and willing to sell his land to them and they recognised that their preference for the irrigation method would result in very significant legal - as well as acquisition - costs to implement. They were drawn back to considering whether they could make do with just the Mereway site and were investigating a chemical precipitation and filtration scheme that was in use at Worthing.

The Board voted to apply for a further loan of £15,000 and a Public Inquiry to be run by Major Tulloch was set for 1<sup>st</sup> December 1875. However, when Tulloch learnt at the Inquiry that they were considering a filtration scheme in place of irrigation, he warned that he could not recommend the Local Government Board grant the new loan and advised them to halt operations until the Local Government Board's response had been received. It arrived in time for the Board meeting of 10<sup>th</sup> February 1876 and was read by the Clerk:

*I'm directed by the Local Government Board to state that they have had under their consideration the report of their Inspector Major Tulloch made after his enquiry at Twickenham with reference to the application for sanction to borrow £15,000 for works of sewerage.*

*The Board learn from Major Tulloch that since they sanctioned the borrowing of £20,000 the Local Board have abandoned their original scheme by which the sewage would have been utilised on land and that the system which they now proposed to adopt*

*is one of artificial filtration, the effluent being discharged into the River Thames.*

*The Board however do not find that they have been furnished with detailed plans and a full description of the process of filtration and under the circumstances they will reserve their consideration of the present application until the particulars are supplied.*

The Local Government Board went on to demand a complete reconciliation of how the previous £20,000 has been spent including an explanation of what elements of the original scheme have not been completed and why the costs to date are in excess of estimates.

To make matters worse, the Clerk also read a letter from his counterpart at Tunbridge Wells stating:

*we have made an experiment which I am bound to say has not yet answered the expectations formed of it by my Board after visiting the Worthing works.*

As a result of Tulloch's advice at the Inquiry, all work on the contract had ceased and the contractor started proceedings for breach of contract and was demanding £2,000 on account. As if to mark this as the low-point of their fortunes, the Board narrowly voted to oust Edward Donnithorne as their chairman - a position he had held almost since their formation. He was replaced by Frank Ashton JP, a retired merchant<sup>7</sup>.

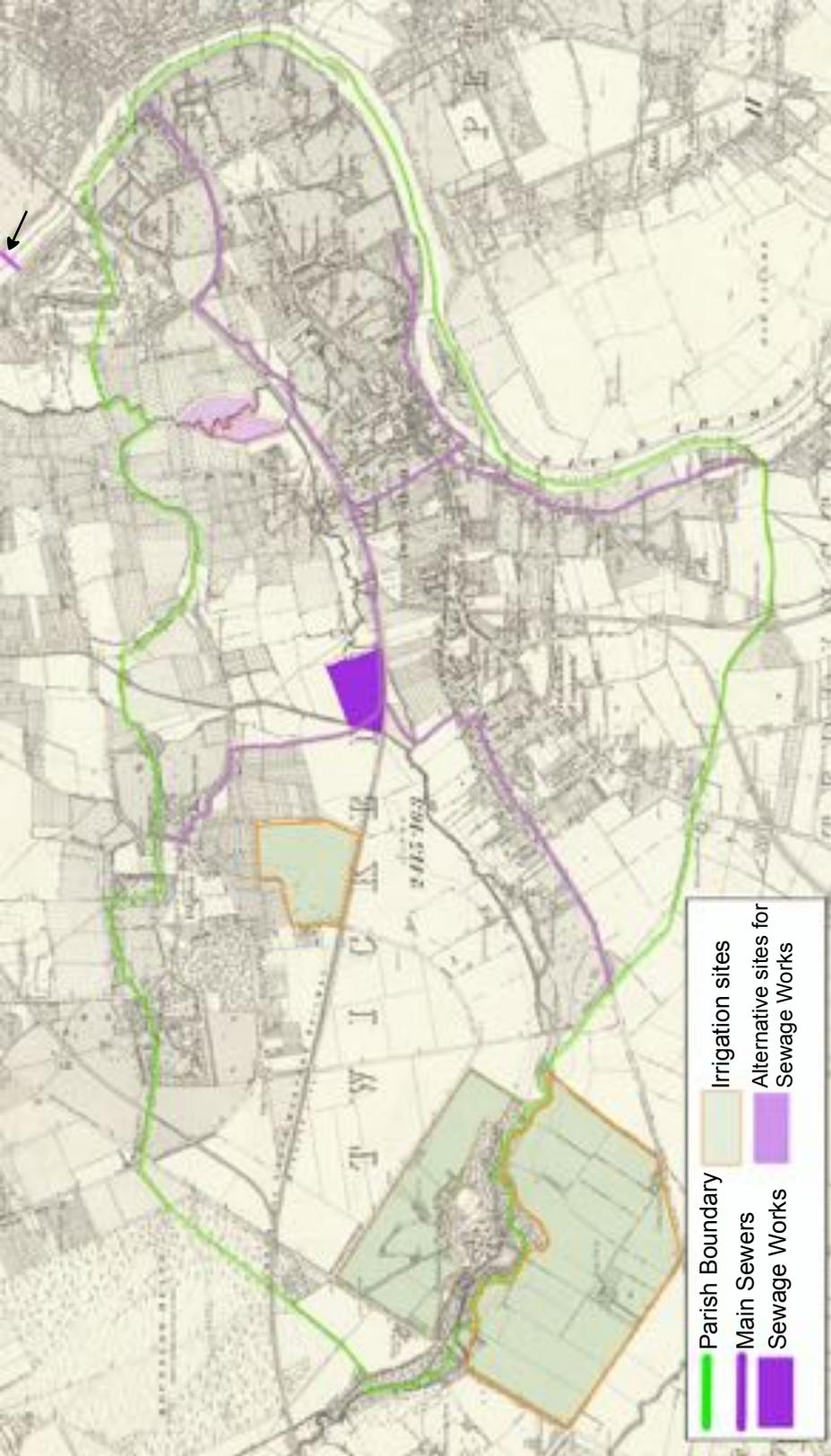


Figure 3.3 The Twickenham Sewage Scheme 1874 - 1879 showing the network of the main sewers leading to the disposal works at the Mereway as well as the sites considered as possible alternative for the works and land considered for sewage irrigation.

## THE NEW DISPOSAL SYSTEM

THE BOARD now asked their Surveyor, Malcolm Ramsay, to devise a scheme for sewage disposal that could be completely accommodated within the Mereway site. His response - which involved a progression of screening, settlement, precipitation, filtering and aeration stages before the effluent is finally discharged into the Thames - was unanimously accepted. His detailed plans were submitted to the Local Government Board, who now relented on their previous decision and approved a further loan of £13,000 with a warning that the Local Board:

*need to assure themselves that the means proposed for the purification of the sewage will be sufficient to protect them against proceedings under the Thames Conservancy and The Rivers Pollution Prevention Acts and the [Local Government] Board may say that they are informed by their Inspector Major Tulloch that the efficiency of the scheme of purification will largely depend on the manner in which the process is conducted.*

Twickenham were now in a position to complete the remainder of their original Contract. However a new storm cloud was about to loom over their horizon.

In November 1875, the Surbiton Improvement Commissioners had approached the Local Government Board with a proposal for the formation of a joint sewage board comprising more than 25 authorities on both sides of the river from Windsor to Brentford and Barnes to devise a combined solution to The Drainage Question. A preliminary hearing was held in February 1876 under their Inspector Lt Col William Cox but the outcome announced in April 1876 was that the Local Government Board deemed such a large combination 'too heroic'. Significantly, with reference to the 16 places between Hampton and the western boundary of the metropolitan district, Col. Cox considered that

*below the intakes of the water companies sewage may be sufficiently purified by precipitation before admission into the river.<sup>8</sup>*

The timing of such a statement from a Local Government Board Inspector was perfect for Twickenham's purpose and their Surveyor had immediately seized on it to justify his own scheme - which was to be based on precipitation.

In July 1876, whilst under extreme pressure from the Thames Conservators to remove their sewage from the river (see page 26), Hampton Wick Local Board made a fresh approach to the Local Government Board for the formation of a joint sewage board this time to consist of exactly the 16 authorities named by Col. Cox - which included Twickenham. To add credibility to their proposal, Hampton Wick had also given notice of their intent to obtain by compulsory order an area of land near the Hounslow Powder Mill (within the boundary of Twickenham) where they were proposing the sewage of the joint board should be sent. Thus Twickenham would be facing the prospect not only of losing control of the disposal of their own sewage but also acting as unwilling host to that of 60,000 others. When the Local Government Board gave them formal notification of the Hampton Wick application in October 1876 the Board resolved:

*That we decline to concur in any combination scheme and it will be our duty to oppose any scheme to bring the sewage of any other authority into their District*

The Local Government Board informed them in May 1877 that they were indeed included in the Provisional Order to be placed before Parliament for the formation of a joint board. Thus alerted, the Local Board and many of the prominent Twickenham landowners swung into top gear and through their lobbying efforts succeeded in having Twickenham removed from the legislation. No one involved could have foreseen that this last-minute escape meant that Twickenham - by not being involved in the ill-fated joint board - thereby got its scheme completed at least seven years sooner than would otherwise have been the case.

## THE FINAL STAGES

**T**HE RICHMOND AND Twickenham Times of 15 September 1877 records that The Works Committee [in an extraordinary outburst of Victorian wordiness] reported that:

*having had their attention directed to the continuous applications and serious complaints with reference to the urgent drainage requirements of several important localities within the parish, and being deeply impressed with the importance of relieving the existing sanitary arrangements and removing all cause for complaint, they advised that the sewage works be at once proceeded with and completed at the earliest possible period.*

They were as good as their flowery word and, over the course of the next two years they finally completed the scheme.

The new drainage system began where the old one ended: on the foreshore opposite Eel Pie Island. The old drains which had rendered the area so unpleasant (especially at low tide on a hot summer day) were now enclosed in a handsome new embankment which contained an intercepting sewer (see illustration on page 84). The Embankment remains today as the most visible evidence of the town's 1870s-built sanitary system. The whole installation was modelled on the Thames Embankments created by Joseph Bazalgette in Central London. However, his intercepting sewers were then able to follow the line of the river as it gently descended to the sea. The Twickenham sewers on the other hand had to pass in a direction contrary to the fall and contour levels of the parish on their way to the outfall works situated at a higher level than the embankment. To obtain a sufficient gradient to allow gravitational flow along their whole length, the sewers were sunk deeper and deeper below the surface, finally arriving at their destination at a depth of 35 feet<sup>9</sup>. There were two main intercepting sewers. The first ran from Orleans Road along Riverside to The Embankment whilst the second came

from the southern parish boundary on Strawberry Vale and along Cross Deep. The two met at Wharf Lane and the combined line then ran along Queen's Road to Station Yard. Here it met a third intercepting sewer coming from Richmond Road via St Margarets Road and thence via Amyand Park Road and Marys Terrace to Station Road. Thus far the sewers were constructed out of Royal Doulton glazed stoneware pipes ranging from nine to eighteen inches in diameter. The remaining run of 3,000 feet from the Station Yard to the Outfall Works at the Mereway was constructed in the form of a three-foot brick barrel placed within a tunnel bored through the London blue-clay bed. Two further intercepting sewers connecting the Common and the Whitton districts were laid direct to the Mereway.

The combined output from the five main sewers were received into huge tanks sunk 43 feet below the surface and capable of holding the parish's night flow. The engines and pumping machinery lifted the sewage 63 feet into a mixing well where milk of lime was added to cause the solid matter to precipitate in another set of underground tanks. The supernatant liquid was then drawn off into filtration chambers before being aerated over specially prepared surfaces. Finally the purified effluent discharged into the river.

## EPILOGUE

From the *Middlesex Chronicle* 3<sup>rd</sup> January 1880:

*The members of the Local Board paid an official visit to the new sewage works on Boxing Day when the whole system was seen in operation and explained by the surveyor Mr Ramsay. So far as could be seen the scheme appears to be finally successful and the visitors seemed perfectly satisfied with all they saw. The inhabitants, although they have had to pay is something like £60,000 for their system of drainage, may be congratulated on*

*having conquered what is admitted to being one of the greatest difficulties of the age; neighbouring parishes having already expended thousands of pounds with no result whatever. A quiet little dinner was given at Albany in the afternoon when about 20 sat down to an excellent spread. The customary list of toasts was gone through and the chairman was warmly congratulated on the success which had attended the years of painstaking attention he has devoted to procure an efficient system of drainage for the Parish of Twickenham. A very agreeable evening was passed and the company broke up at an early hour.*

**Figure 3.4** The population of Twickenham had grown from 10,000 in 1876 when the first sewage works were completed to 27,000 by the time these replacement works were opened in 1908. Pumping capacity was increased from half a million to three million gallons per day and the boilers were heated by the household refuse destructor built alongside the pumping station. Sewage treatment used the now well-established combination of bacteriology and aeration.





## TWICKENHAM ENDNOTES

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<sup>1</sup> A new lock and weir were built in 1894 at Richmond between Ranelagh Gardens and the Old Deer Park. Its position just downstream of Richmond Railway Bridge is shown arrowed in the map on page 108. The sluice gates in the weir ensure that the water level between Richmond Lock and Teddington Lock is maintained at or above half-tide level whilst for around two hours each side of high tide, the sluice gates are raised to allow free passage for river traffic.

<sup>2</sup> This legislation forbade the taking of water for domestic use from the tidal reaches of the Thames i.e. below Teddington Weir. This led to five London water companies which had previously operated from the tideway moving their undertakings upstream - two to Kingston and three to Hampton. In return for an annual payment of £1,000 (later increased to £2,500) to the Thames Conservators, each company was permitted to extract 20 million gallons of water daily.

<sup>3</sup> As the term implies, irrigation uses sewage as a liquid manure applied to sections of a sewage farm in rotation. However it was generally advised that an acre of land would be required to treat the sewage of 50 - 100 persons per annum so cost and availability of sufficient land was a major issue with this method of sewage disposal.

<sup>4</sup> Keeping sewage separate from rainwater was fundamental to Twickenham's calculations since it meant that very little of the treatment works' capacity was wasted on water that did not actually need treatment. Instead, the rainwater was carried away by surface water drains running directly into the river.

<sup>5</sup> ABC stood for Animal Charcoal, Blood and Clay - the three

ingredients added to the sewage to begin processing it. Initially the additives turn the sewage black and turbid but as soon as alum (sulphate of alumina) is added, the mixture commences to precipitate producing clear odour-free liquid and leaving a sludge with a fertilizing value with which to supposedly generate a profit. The method was invented in 1868 by William Sillar. The Native Guano Company was incorporated in 1869 to put Sillar's process to work.

<sup>6</sup> Tulloch was one of four Inspectors recruited in by the Local Government Board to handle a serious backlog of inquiries and reports caused by the passing of the 1872 Public Health Act. He was appointed in 1873 so the Twickenham Inquiry would have been one of his first assignments.

<sup>7</sup> Donnithorne continued to serve on the Board and was re-elected every three years until his death in 1885.

<sup>8</sup> Cox's statement was crucial since it was the first time someone in authority had both acknowledged the special difficulties faced by these authorities and simultaneously endorsed chemical precipitation as being a viable (though not necessarily commercial) process for sewage disposal.

<sup>9</sup> More than twice the height of a double-decker bus.

## 4. HAMPTON

### INTRODUCTION

**H**AMPTON PARISH LIES ON the banks of the Thames, which forms its southern and western boundaries and divides it from the neighbouring county of Surrey. It is a low-lying district of just over 2,000 acres with soil that is light and gravelly. The Ordnance Survey map of the 1860s shows the majority of the population were living on or near the central triangle of roads formed by Thames Street, Church Street and High Street. There were outlying groups of houses around Hampton Court Green at the east of the parish and at New Hampton (now Hampton Hill) near the northern boundary with Teddington. The map also showed that almost 40 per cent of the total land area was occupied either by Bushy Park which, together with Hampton Court Palace, belonged to the Crown, or by three of the central London water companies who from the early 1850s had their intakes and works at Hampton. Not only was this land therefore not available for housing development nor for river access, but also the short remaining stretch of river frontage coincided with the most densely populated area of the parish. As we shall see later, these effectively “no-go areas” would impose major constraints on future drainage schemes for the parish.

### HAMPTON DEBATES THE FORMATION OF A LOCAL BOARD

**O**N 9 MARCH 1865 a public meeting was convened by the churchwardens to discuss the formation of a Local Board; the meeting started in the Vestry, but so many parishioners wished to attend that a move had to be made to the School Room. The adoption of the *Local Government Act 1858* was proposed by Mr F O Martin, a former barrister. He explained in detail both its workings and the benefit to Hampton of having a "Parliament of its

own". As an example of what a Local Board could do he chose improvement of the roads, the bad state of which was one of the burning issues of the day. Another supporter quoted the example of neighbouring Hampton Wick where the Local Board had, in less than two years, improved the roads, provided better lighting, and cleared out old cesspools. William Austin, the principal spokesman for the opposition, also pointed to an action of the Hampton Wick Local Board, but as an example of what he felt to be intolerable interference with the liberty of the subject that could result from the adoption of the Act. On being put to the vote, the motion was declared lost by 27 votes to 39 amid tremendous cheering. In anticipation of the poll which had been demanded at the end of the meeting, the struggle intensified in the editorial and correspondence columns of the *Surrey Comet* and the contending factions aimed to strengthen their positions by forming action committees.

The Editor of the *Surrey Comet* castigated the inhabitants of Hampton for their foolishness in not adopting the Act and observed that

*it seemed that those whose business was away from Hampton were in favour and those whose business was in Hampton were against.*

A week later a correspondent supported the Editor's contention and spoke of the narrow-minded and antiquated notions of a great number of tradespeople and middle-class inhabitants of Hampton. Meanwhile, opponents wrote of the probability that members of the Board would act as a clique and form themselves into a permanent body to the exclusion of fresh blood.

The opponents of the Local Board held a meeting

*to take into consideration the best means of putting the highways into good repair, thus obviating the necessity of a Local Board.*

The committee formed to carry out this intention decided to appoint two surveyors in place of just one and passed a motion that

*such a Board is unnecessary for the requirements of the place and the plan proposed would be unadvisable, if not un-English.*

Shortly afterwards a parish meeting was held at the *Red Lion* where it was decided to form an Association to promote the adoption of the Local Government Act in Hampton. This was followed a day or two later by a Vestry meeting of a most stormy and tumultuous character. On this occasion the main argument against the formation of a Local Board was that the power to make by-laws

*might be abused by crotchety members in a tyrannous manner.*

The discussions took place amid uproar and cries of "No Local" and great disorder prevailed throughout. Eventually a public poll was held and the result was declared to be: for adoption, 128; against, 254. On the announcement of the result there was tremendous cheering and placards were issued proclaiming "Glorious Victory". Considerable bitterness was created in the parish.

When the result of the polling showed that there was little chance of Hampton's adopting the Act in the foreseeable future, residents of Hampton Court explored the possibility of joining with Hampton Wick, where the Local Board had been observed to work satisfactorily. But when the parish of Hampton Wick was constituted in 1831, its boundary with Hampton was clearly defined and the greater part of Hampton Court had remained in Hampton.

Having firmly set its compass in 1865, Hampton steered clear of a Local Board until 1890, despite the complaints about the state of the roads, lack of proper drainage, contamination of wells by sewage, and so on. In September 1867 the Thames Conservancy served notice to all riparian local authorities in the lower Thames Valley that any communication between drains and the river must cease within 13 months. The response of the Hampton Vestry was simply to order that anyone to whom this notice applied should desist.

## LIFE UNDER THE KINGSTON RURAL SANITARY AUTHORITY

WITH THE COMING into force of the *Public Health Act 1875* Hampton became subject to the Kingston Rural Sanitary Authority. The area covered by the new authority was based on the jurisdiction of the Kingston Board of Guardians [of the Poor] and its brief was to administer the provisions of the Act in any community which had not yet formed its own local board of health under the *Local Government Act 1858* (or similar). Thus Hampton found itself in company with the parishes of Southborough, Tolworth, Hook, Thames Ditton, Long Ditton, West Molesey and Esher all of whom were on the opposite (Surrey) side of the river. It was represented by three Guardians who sat on the Rural Sanitary Authority board together with ten Guardians (representing the other parishes) and five Executive Members including the Chairman, Sir William Orfeur Cavenagh a retired Indian Empire civil servant who lived in Long Ditton. Hampton represented around 40% of the rateable value of the new body.

Although drainage was one its responsibilities, the topic would have been unlikely to have received much initial attention whilst the Rural Sanitary Authority was establishing itself. Certainly the Hampton representatives would not have encouraged any consideration of the matter - their own Vestry remained convinced the current drainage arrangements (i.e. using cesspools) were perfectly adequate for the foreseeable future. At the Public Inquiry held in February 1877 to review Hampton Wick's proposal (see page 26) for the formation of a single joint authority to deal with the sewage of the whole of the Lower Thames Valley, Hampton employed a local solicitor to attend the Inquiry and argue their individual case against inclusion in any such scheme, even though Kingston Rural Sanitary Authority as a whole were completely opposed to the proposal. In support his parochial interests, the Vicar of Hampton firmly told the Inquiry:

*[The parish] does not require a system of drainage at present; the neighbourhood is a very healthy one, and the cesspool system works very well.*

Nevertheless the proposal for a joint scheme won the day and in May 1877 the Kingston Rural Sanitary Authority's responsibility for drainage - together with that of ten other authorities - was subsumed into the new Lower Thames Valley Main Sewerage District. It is beyond the scope of the present paper to detail the efforts made by this latter body in trying - and ultimately failing - to formulate a workable joint scheme except to record that it became so unpopular that it was finally dissolved in July 1885 and Kingston Rural Sanitary Authority reassumed responsibility for the drainage of the parishes in their jurisdiction, including Hampton.

Much had changed in the intervening eight years. Populations had grown and many new houses had been built (not always of a good standard). The link between hygiene and health was now better understood and public opinion generally was turning against the use of rivers and streams for drainage purposes. In 1879 Twickenham had become the first of the local communities to complete a comprehensive system of sewerage and sewage treatment.

At the January 1886 meeting of the Kingston Rural Sanitary Authority, the various parishes in the district were asked to report their views on how best to resolve their sewage treatment. Only one parish thought nothing needed to be done whereas most favoured solutions based on groupings with immediate neighbours. Hampton was the sole exception and argued that, because of the the presence of the intervening River Thames, they should not be joined to any other parish. They were subsequently set up as a Special Drainage District, constituting them as a tax raising body able to finance for their own works.

John Charles Melliss was the sanitary engineer who had latterly advised the Lower Thames Valley Main Sewerage District and therefore knew the area well. He offered to

*advise the Authority as to the best method of draining and purifying the sewage of the whole district for a fee of 100 guineas or if the district be divided into two, three or four groups any single group or separate district for the fee of 30 guineas.*

Hampton parochial committee took up his offer and commissioned Melliss to produce a scheme for them. His first report was dated 23 December 1888 in which he detailed the exceptional difficulties which the Hampton parish presented:

*the least expensive and without doubt the best way of dealing with the sewage would be to collect it at the lowest part of the district and treat it at some point there near to the Thames, but this was not practicable for several reasons. The river front from east to west is occupied by the water companies, the thickly populated part of the parish, and the park and it was practically impossible to obtain a site anywhere adjacent to the riverside. The eastern portion of the parish is fully occupied by the park and the population of New Hampton so that there is no land available in that direction for sewage purposes, and the central parts of the parish is so taken up with building estates and building operations that it is exceedingly improbable any suitable site can be obtained there. Any site in the north or north-western portion of the district would involve not only the greatest amount of pumping [because of its greater altitude], but also mean that some of the sewage would travel nearly three miles for treatment, and an independent pipe of about the same length ... [would be needed] for the return of the effluent water to the river. The western portion of the parish seemed under all circumstances to afford the most suitable locality for pumping station and precipitation works.*

However the parochial committee disagreed with his proposed site for the treatment works on the Sunbury boundary and instructed him to adopt another location in the north of the parish. In his second report dated 17 May 1889 Melliss stated that:

*he did not consider that the site which the committee had instructed him to adopt was either as suitable or as economical as the one which he recommended in his previous report, but he had altered and adapted his plans to it according to their instructions.*

Melliss attended the July meeting of the Kingston Rural Sanitary Authority board to present his revised plan. Here it emerged that the parochial committee's principal objection to his original choice of site was that the water companies would oppose it - at least according to one committee member who was himself a manager at one of the companies' waterworks. However, Melliss told the Board:

*I have seen a good many of the officials, and they told me just the contrary.*

From the lively exchange that took place between various of the Hampton representatives on the Kingston Rural Sanitary Authority, the Hampton parochial committee themselves were at odds on the issue, especially as one of them - William Austin - was advocating yet another site in the north of the parish ... which he just happened to own but was nevertheless willing to sell! The matter was referred back to the parochial committee

*with a request that the [Rural Sanitary Authority] Board might be placed in a position to obtain a provisional agreement for sale and purchase of the site recommended by Mr Melliss*

That request was never fulfilled. For some time the parishioners of Hampton had been actively seeking to rid themselves of what they increasingly saw as the tyranny of the Rural Sanitary Authority and their efforts were about to come to fruition.

## A LOCAL BOARD IS FORMED

**B**ACK IN 1875 some parishioners had proposed that the Local Government Board should be asked to grant Hampton urban status so that the the Kingston Rural Sanitary Authority would have the power to improve the lighting of the parish and provide road watering, but the proposal was rejected at an open Vestry meeting. It seemed that Hampton's toleration of government from Kingston was limited to the Board of Guardians, which had been established in 1835. Although there was much resentment at Hampton's affairs being controlled by people not living in the area, there was still no enthusiasm for a Local Board. In 1880 a Ratepayers' Association was formed to voice dissatisfaction with the way in which the overseers and surveyors were handling parish affairs, but the issue of local government was again avoided. However, as time went on, the yoke of the Kingston Rural Sanitary Authority chafed more and more and on 30 May 1884 a Vestry meeting requisitioned by 47 ratepayers debated a motion to adopt the Local Government Act. This was once again rejected, but this time by "only" 40 votes to 33. During the meeting the provision of sewerage had been an important issue, and by 1886, the situation had become so much more acute that, a public meeting was once again called to consider the possibility of setting up a parochial committee under the Kingston RSA to deal with sewerage, drainage, street watering and refuse collection. During the meeting, the discussion eventually generated a motion that Hampton should, after all, have a Local Board, and this was passed with only five dissentients. To comply with the terms of the 1858 Act another meeting had to be held after proper notice had been given; on this occasion the motion to adopt the Act scraped through by 38 votes to 33. Supporters of the proposal then had another setback when the Local Government Board ruled that the meeting was invalid because of the informality with which it had been called. Another

year passed before, at a Vestry meeting in March 1887, a motion to press for a Local Board was carried unanimously. This time, after months of deliberation, the Local Government Board decided that no just reasons had been given for the formation of a Local Board and that the population was in any case too small.

The boot was now firmly on the other foot and the parishioners resorted to asking their Member of Parliament to intercede with the Local Government Board on their behalf. However no further progress was made until the *Local Government Act 1888*, which brought the Middlesex County Council into being and opened up the prospect of success at last. At the request of a group of parishioners, the Middlesex County Council held a formal Inquiry into Hampton's need for local government on 9 December 1889. As a result, the County Council made an Order for the conversion of Hampton into an Urban District. This Order was eventually confirmed by the Local Government Board on 2 June 1890 and the number of members was set at nine. An election was held and the Local Board for which Hampton had waited so long held its first meeting on 7 August 1890, more than twenty-five years after the first step had been taken.

## EARLY YEARS OF HAMPTON LOCAL BOARD

**T**HE EARLY YEARS of the Board were focused on establishing itself and catching up on those areas most neglected by the previous administration. In its annual Review of the Year for 1892, the *Surrey Comet's* entry for Hampton reported:

*The chief interest of the year centres around the doings of the Local Board, which may fairly be congratulated upon having had a year of hard and useful work. Many needful improvements have been carried out. The roads and paths have been put into a decent state of repair; the lighting of the district has been sensibly improved; the handsome recreation ground in the Hampton Court-road has been nearly completed; an eligible*

*site has been secured for sewage disposal works at a cost of £2,000, so that ere long we may expect to see the parish well drained; and generally speaking the work of the Local Board has given satisfaction to the ratepayers.*

John Kemp, the Board's Surveyor, had completed his plans for the long-awaited drainage scheme by April 1893 and these were sent to the Local Government Board with a request for permission to borrow the £38,000 (£48m today) required to implement the scheme. The Local Government Board wrote back setting 16 May 1893 as the date for the Local Inquiry but pointing out their standard requirement for earth filtration of the effluent before discharge - in addition to any proposed purification - to the extent of one acre for every 2,000 inhabitants. This addition to the scheme - if insisted upon - would occupy an appreciable proportion of the chosen 10 acre site and significantly reduce capacity for future growth. The Board were thus already on the back foot but worse was soon to follow.

The scheme they had put forward was essentially a rework of that originally produced by Melliss in 1889 and still retained Melliss' preferred sewage disposal works site on the Sunbury boundary. This proved to be the scheme's fatal flaw.

## THE FIRST PUBLIC INQUIRY

**A**T THE VERY outset of the Inquiry, the counsel for Hampton Local Board was forced to announce that:

*the Local Board entered into an agreement for the purchase of land some time ago, and it has since come to their knowledge, quite recently, that the Grand Junction Water Company has purchased a piece of land comparatively close to that on which the Local Board proposed to erect the sewage disposal works. He did not admit that the proximity of their works to the land of the*

*Grand Junction Water Company would be an insuperable obstacle ... but he thought it was right that they should adjourn until tomorrow to carefully consider the matter.*

This admission of lack of careful preparation seriously weakened the Local Board's case and, although the Local Government Board Inspector, after hearing a headline account of the scheme, agreed to adjourn the hearing to the following day, it was clear that the Board had a fight on their hands. Overnight they drafted in a more senior and experienced lawyer to handle their case. In his opening address on the second day, Mr Pembroke Stephens QC informed the Inspector that:

*Having had an opportunity of fully considering the matter, the Board did not propose to put before the Inspector any alternative site ... [since] they hoped and believed that, assuming that both parties to be reasonably desirous of meeting each other's difficulties, the objections of the water companies could be met in a satisfactory manner. He felt that they had a claim upon the consideration of the water companies, who must be sensible of the fact that a great deal of the difficulty of the drainage of Hampton arose from the presence of their works in the place.*

Stephens called a series of both local and expert witnesses to testify to the extreme care that had been taken by the Board in preparing its plans and ensuring the viability of the approach. Nevertheless he was unable to overcome the fundamental weakness of their case which was fully seized upon by the Counsel for the water companies in introducing his clients' case against the scheme:

*The Local Board were proposing to put a sewage disposal works nearer to the works of the water companies than had ever been suggested before in any part of the country. This was a proposal against the law of gravitation, to carry the whole of the sewage to a point above the intakes of the water companies.*

*Consequently if any of it by accident escaped it must find its way into the river above the intakes. It was quite sufficient for his purpose if he could show the possibility of an accident occurring, which, if not remedied even for one hour, might result in the poisoning of a very large district in London.*

There would surely have been few members of the Hampton Local Board who entertained much hope that their scheme would prevail but it was not until mid-July that their worst fears were confirmed in a letter dated 19 July 1893 from the assistant secretary to the Local Government Board stating

*that they have had under their consideration the report made by their inspector, General Carey, after the inquiry made by him with reference to the application of the Hampton Local Board for sanction to borrow £38,000 for works of sewerage and sewage disposal. The Board are advised that the proximity to the works of several water companies presents serious objections to the scheme under consideration, owing to the difficulty of ensuring water-tightness in the tanks, filter beds, and sewers, even if the process of filtration through land were not made use of. Under these circumstances I am to state that the Board are not prepared to sanction the loan for the execution of the present scheme, and to request that the Local Board will re-consider the whole question. They should at once attempt to acquire some other area, say about five acres, for the treatment of the sewage in another water-shed within their own district; or failing this, they should enter into negotiation with the Teddington Local Board with a view of coming to an agreement under Section 28 of the Public Health Act of 1875 for the communication of their sewers with those of the latter Board. The [Local Government] Board are advised that this proposal is not open to any very serious engineering difficulties and that it would have the further advantage of avoiding an increase in the number of sewage farms in the locality.*

## A REVISED SCHEME IS APPROVED

**T**HE RECOMMENDATION THAT Hampton should try to enter into an arrangement with Teddington for a joint scheme would have come from the Local Government Board Inspector himself. General Phipps Carey had been the Inspector associated with the Teddington sewage scheme from the first Local Government Board-run Public Inquiry there in January 1888. He was therefore fully aware of the capabilities and capacity of the Teddington system and the feasibility of interlinking the two sewerage networks. He would also have known that there was already a precedent - albeit limited - for such cooperation. In early 1890 Kingston Rural Sanitary Authority had negotiated an agreement on behalf of the Hampton parochial committee under which Teddington Local Board agreed to receive and process the sewage of a small enclave of houses situated on Park Road and Queen's Road belonging to Hampton parish. In return Hampton would make a contribution towards the capital cost of installing the sewers. They also agreed that the Teddington Board could levy a sewerage rate on these Hampton parishioners to cover a share of the running costs. On receiving the Inspector's recommendation the Hampton Local Board wrote immediately to the Teddington Local Board asking whether, and on what conditions, they would allow the Hampton sewage to be treated at their works. The response was almost immediate and totally negative<sup>1</sup>.

The Hampton Board was more successful in pursuing the Inspector's other recommendation that they should try to find a new treatment site in another water-shed. The Surveyor suggested several alternatives and by the end of October 1893 the Board had received four firm offers of land for sale. They settled on a 20 acre site in the extreme north west of the parish close to its borders with Hanworth and Teddington. The price agreed was £3,000 and

although the acreage was more than necessary for the Board's immediate requirement, there would be plenty of room for future expansion. The site was bounded on the north by the Longford River and on the south by Hanworth Road, with nursery grounds on the west and the playing fields of Hampton Grammar School to the east. At the time of acquisition, there were few properties built in the immediate area, which was known as the Buckingham Estate and being marketed by John Embleton who was an Estate Agent and a member of the Hampton Local Board.

With the site agreed, the Hampton Surveyor next wrote to the Engineers of the three London water companies to get their reaction to the proposed site. Whilst the engineer of the Grand Junction water works company stated that he did not anticipate any damage to that company's water if the proposed sewage works should be located at New Hampton, the other two companies were not as helpful and merely reserved their positions. The Surveyor also entered into discussion with the Office of Works, the Central Government agency responsible for the maintenance of Hampton Court Palace. In this he was aided by various Board members and especially by Auguste de Wette, a wealthy Swiss banker who lived in Hampton Court House just across The Green from the palace. De Wette was both urbane and well-connected and thus fully qualified to handle the delicate negotiations needed<sup>2</sup>. The Office of Works were prepared to allow pipes to be laid through the edge of Bushy Park to avoid the congestion of the water companies' pipes which already lay under all the major roads in Hampton. They also accepted the requirement for the effluent pipe to run through both parks on its way to an outfall into the Thames but were anxious to position that outfall far away from the palace and therefore beyond the parish boundary.

The change in location for the disposal works had a major effect on the scale - and therefore cost - of the sewerage scheme. The new site was both higher and more remote than the previously-chosen

area resulting in more equipment and pipes being needed to lift and transport the sewage to the works. Two and a half miles of extra sewers were required and the effluent pipe connecting the works with the Thames near Hampton Court Palace was now over three miles long. The Surveyor completed his revised plans and estimates which, having had them endorsed by the Board's appointed Consulting Engineer Isaac Shone, he presented to the Board at their meeting on 9 October 1894. The Board accepted the proposals and voted almost unanimously<sup>3</sup> to apply to the Local Government Board for permission borrow the £54,980 7s 6d (£65m) which the new scheme would cost.

The Public Inquiry opened on 12 December 1894 and was conducted by Rienzi Giesman Walton a Local Government Board Inspector with considerable engineering experience in India including a complete scheme for the sewerage of the City of Bombay. The *Surrey Comet* reported that there were a large number of persons present. The Local Board was represented by Mr Basset Hopkins QC whilst another barrister was present representing several ratepayers and property owners of Hampton - mainly from the Buckingham Estate - who were in opposition to the scheme. The opposition lawyer immediately complained of the shortage of notice they had been given to prepare for the Inquiry asked for it to be adjourned for a few days after the case of the Board had been presented. The Inspector took a note of the complaint and Mr Hopkins proceeded to outline the scheme.

The proposal was to divide the district into eight divisions, each of which would be supplied with an ejector station, where there would be two of Shone's ejectors (see the Appendix on page 148), which would propel the sewage to the disposal works by the force of compressed air. Having reached the works the raw sewage would be treated with chemicals which assisted precipitation and also acted as deodorizer. It would then flow into tanks where the solid part is allowed to subside. Then by means of a floating arm

the liquid part would run off onto filter beds composed of sand, gravel and broken stone - the total thickness of them being 3ft. 2in. By the time the sewage got to the land it was practically pure water. But it was then subjected to further treatment on the land (as required by the Local Government Board), before being passed along a conduit over three miles long to the river. It would come out below Hampton Court, a long way downstream of the intakes of the water companies.

The opposition attacked the scheme on the grounds of cost and impracticality and, although their lengthy arguments and copious cross-examinations had anyway caused the proceedings to be adjourned until 19 December - giving them the extra time they had originally requested - they were still making little progress. This caused the Inspector to remark that

*it appeared ... that the opposing parties had not opposed the scheme on its merits, but opposed it in comparison with some other scheme of which he had not had the privilege of seeing the plans or the estimate. He remarked that adjournments added immensely to the cost of the enquiry, and some regard ought to be had to the saving of public time. It did not seem to be fair that the enquiry should be adjourned simply because the opposition came improperly prepared, and in regard to the allegation that they could not get information, he would say that it was not customary for the promoters to give information in detail to the opposition.*

In response, the oppositions' counsel, displaying remarkable ingenuity, now advanced a completely different argument for a further adjournment. He pointed out that the existing Hampton Local Board would cease to exist in a matter of days and, from 1 January 1896, would be replaced by Hampton Urban District Council. There was a possibility that the new Councillors would

decide not to proceed with their predecessor's scheme. The Board's QC exploded at the suggestion and claimed that he had

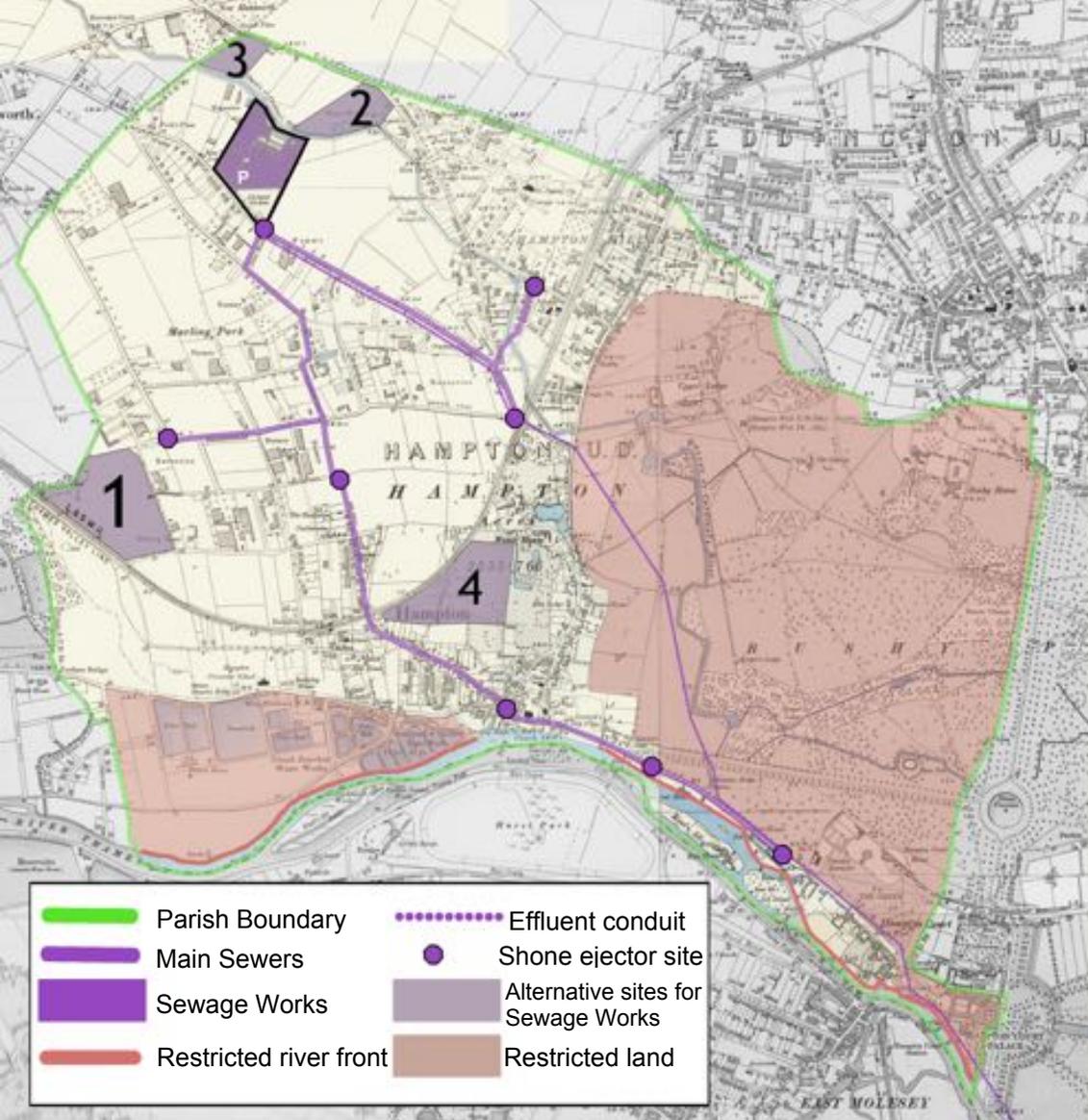
*no hesitation in saying that the real object of the opposition was to canvass the new Board in the hope of getting them by hook or by crook to raise some objection to this scheme. There has been no real attempt to show that the scheme was not sufficient or that the estimates are wrong. The adjournment would simply afford an opportunity to make further attempts to stir up opposition to the scheme in the District.*

Nevertheless the hearing went into a third day and the parties met for a final time on 9 January 1895. At the outset, the Inspector was informed that

*the new Hampton Urban District Council has held a meeting and passed a resolution, with but two dissentients approving the scheme which had been formulated by their predecessors.*

This was probably not what the opposition wanted to hear but they had anyway prepared a new line of attack. They produced a young Engineer as an expert witness who testified that:

*he had been that morning to see the site of the disposal works and he found that three feet below the surface there was running water. That showed that the land was waterlogged ... He had also been to see an alternative site which formed part of the Manor-house Farm. There was there a deep ditch perfectly dry, and also a railway cutting which was 17'6" below the surface level. That was perfectly dry and it showed that the land was not waterlogged, but on the contrary perfectly dry. In his opinion that would prove a most suitable site. If the works were placed there it would tend to decrease the expenses very much. Three of the lifts might be dispensed with and the effluent drain alone would be shortened by three quarters of a mile.*



4.1 Hampton Sewerage Scheme 1896 - 1899 showing the route taken by mains sewer network from its furthest point at Hampton Court Palace to the Disposal Works (marked P) at Dean Road together with the course of the return effluent conduit. The positions of the eight Shone Ejectors used to lift the sewage at intervals on its transit to the works are also shown along with some of the alternative sites considered for the sewage works. No.1 is the original location chosen in 1889 which was later successfully challenged by the three Hampton-based London Water Companies, No. 2 was the Ringwood site owned by William Austin, No. 3 was considered too small whilst No. 4 was the surprise counter-suggestion put forward by desperate opponents of the chosen site.

However the credibility and value of this seemingly superior scheme was greatly diminished when, under cross-examination, the Engineer admitted that he only had a quarter of an hour to make the inspection of both sites that morning. This last-ditch attempt to derail the Inquiry cut no ice with the Inspector and in a letter dated 12 March 1895 the Local Government Board sanctioned the first of the requested loans in order that the purchase of the land could go ahead<sup>4</sup>.

### IMPLEMENTING THE DRAINAGE SCHEME

**W**ITH THE DRAINAGE scheme now approved, both the Surveyor and the Clerk were anxious to negotiate their bonus payments for its successful execution. Having consulted with neighbouring authorities, the Council agreed that the Surveyor John Kemp should now formally be appointed Engineer for the project, to be paid a total of £950 (£400k) at the rate of £100 pa starting on Christmas Day 1895 with the final payment to be made when the Consulting Engineer and the Council are satisfied the work is complete. The Clerk was to receive standard solicitor's fees (in place of the lower Clerk's stipend) for all legal work associated with the drainage scheme.

In finalising the detailed plans for the scheme, the Hampton Urban District Council made two strategic decisions which seem to have been directly intended to avoid some of the problems experienced by their neighbours in Teddington. Firstly they decided that the whole of the construction (with the exception of the supply and installation of machinery) would be carried out by the Council's own workforce thereby avoiding the use of contractors<sup>5</sup>. Secondly they agreed to implement a complete surface water drainage scheme in conjunction with the construction of the sewers.

Work was commenced on 9 March 1896 and the first house was connected on 8 December 1898. The formal opening of the sewage

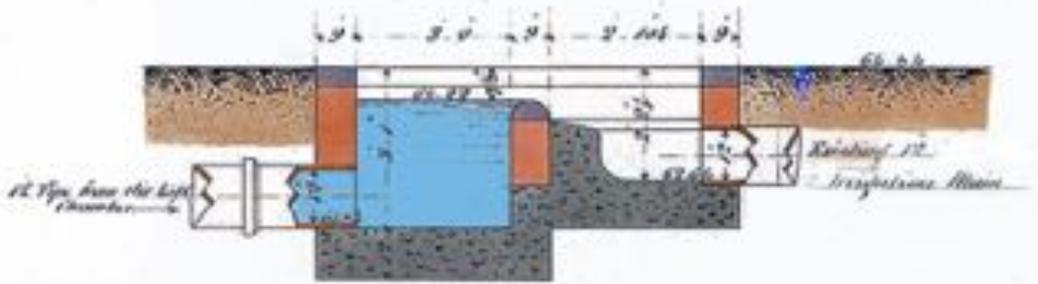
works took place on Saturday 14 October 1899. That day's edition of the *Surrey Comet* contained a very full account of the scheme:

*The district is one presenting exceptional difficulties as regards drainage, firstly on account of its geographical configuration, secondly on account of being waterlogged, thirdly on account of the presence in the principal streets of over 12 miles of water mains varying in diameter from 30 to 42 inches, and fourthly on account of the objection to either pumping station or outfall works being situate in the lowest part of the district near the river. In order to procure in so flat and extensive a district, those hydraulic conditions essential to the efficient and sanitary working of a system of sewers viz., sewers laid at such an inclination as to render them self-cleansing by the velocity of the flow of the sewage, the Council on the recommendation of the surveyor decided to adopt the Shone Hydro-Pneumatic System in its entirety (see the Appendix page 148) Under this system the district is divided into eight areas, in each of which at the lowest point is constructed beneath the roadway an ejector station or underground watertight chamber at such a depth as will secure the aforementioned hydraulic conditions in all sewers gravitating to such station. In each of these stations are placed two spherical iron-vessels called ejectors, each capable of discharging the maximum flow of sewage of the contributing area when fully built upon. The sewage flows into these vessels, which are hermetically sealed and have no contact whatever with the chambers in which the ejectors are fixed ... By an ingenious arrangement the ejectors discharge their contents when full automatically. The motive power actuating the ejectors is air compressed at the outfall works to about 30 lbs. per square inch and distributed in cast iron mains to each ejector, to which it is automatically admitted as soon as full of sewage. The sewage is discharged through cast iron mains to the outfall works. There are seven miles of air and sewage mains,*

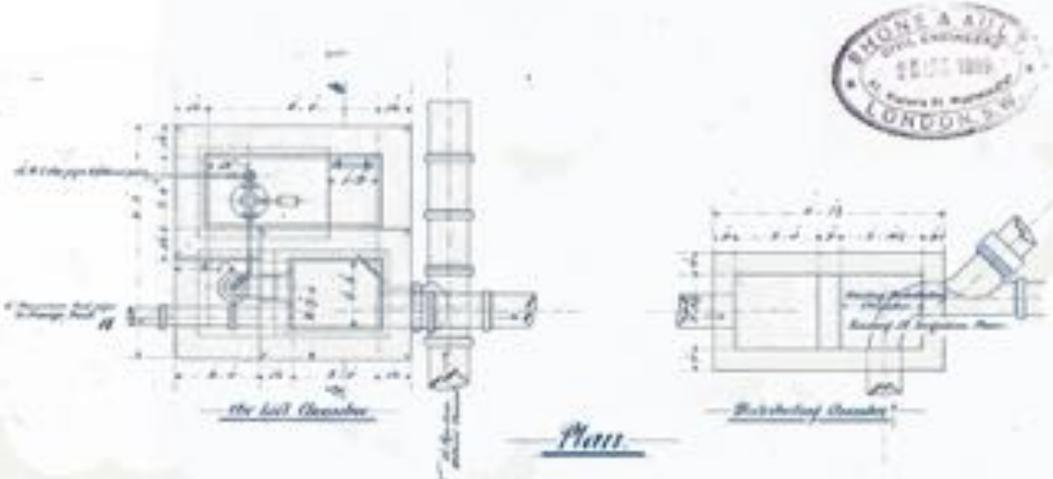
*the former varying in size from three to seven inches, and the latter from 7 to 16 inches. The total length of sewers is over 16 miles, varying in diameter from 7 in. to 12 in. ... The whole of the sewers are laid on concrete<sup>6</sup>, beneath which is constructed a subsoil drain of agricultural pipes filled up level with the top with clean screened stone. The concrete practically forms an arch over these sub-pipes. By this arrangement the sewers were laid on a dry even bed of concrete, and when tested by hydraulic pressure were further haunched up with concrete to a little above the centre. At three of the drainage areas, outlets for these subsoil pipes were procured, two into the railway cutting, by permission, and one into the Thames at the Lower Sunbury road, so that pumping was dispensed with entirely in those three cases ... By introducing the subsoil pipes and by the construction of new surface-water drains, the water of the other three areas was taken off at a depth of 8 ft. below the surface. The sub-soil water was thus lowered from about 18 in. or 2 ft. below the surface to a minimum of 8 ft. This lowering will be permanent, and consequently of immense benefit to the community. The sewers are practically water tight, the leakage being so small that the subsoil water has been tapped to dilute the sewage. Rain water from roofs and yards is not allowed to be connected to the sewers, as by constructing a sump in the gravel, this water can be easily got rid of, and all house connections are tested by hydraulic pressure before being covered up, and afterwards by the smoke test, so as to insure that they likewise be watertight.*

*The sewage on arriving at the outfall works passes directly through a screen into the bacteria beds<sup>7</sup>. These beds are fifteen in number: five coarse, five medium, and five of fine material ... The sewage is passed first into the coarse beds, which when full to within 6 in. of the surface is shut off and allowed to remain for at least two hours, when it is slowly drained off and passed*



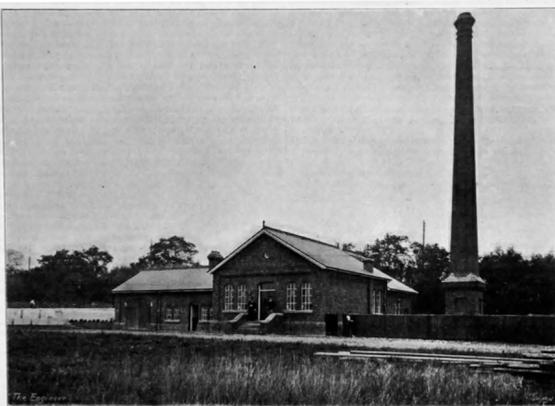
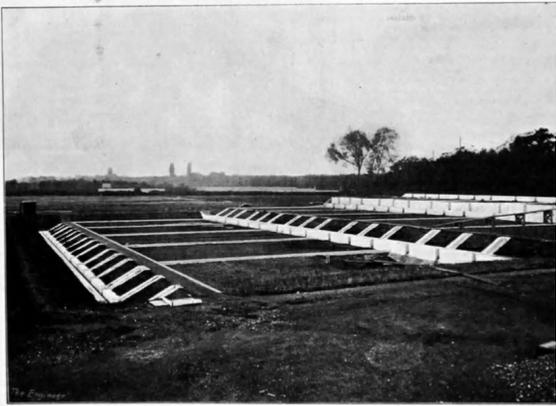


**h** Distributing Chamber.



4.2 The **Effluent Aerator Lift** (shown opposite) consisted of three concentric tubes: the inner core **a** delivered the compressed air used to both aerate and blow the liquid up through the middle core **b** whilst the outer sleeve **c** was the pump well. The effluent from the lowest level of settling tanks entered the large chamber **d** by gravity. At a predetermined height a valve **e** was opened which admitted air under pressure through a nozzle **f** at the bottom of the inner core. The air mixed with the effluent contained in the outer sleeve caused it to rise almost 70 feet and overflow into the upper chamber **g** whilst becoming thoroughly aerated, with the oxygen in the air acting as a purifying agent. Initially, the effluent was then discharged, being of sufficient purity to satisfy the Thames Conservators. However the Local Government Board insisted the effluent was further purified by land irrigation before it was discharged. Therefore a Distributing Chamber **h** (above) was used to divert the aerated effluent through one of a bank of filter beds before it finally found its way through sub-drains into the 15-inch effluent pipe **i** which carried it over three miles to the River Thames at a discharge point opposite Queens Drive, Thames Ditton.

*on to the medium beds, and treated in a similar manner, and the same process is also carried out in the fine beds. Each bed after having discharged its contents is allowed a period of rest of not less than one hour. The effluent on being discharged from the fine beds is as clear as drinking water, and without smell, and has been uniformly so since the beds have been in operation now ten months. It has been constantly under the observation of the Thames Conservancy during that time, and no complaints have been made. To comply with the requirements of the Local Government Board with regard to the final passing of the effluent over the land, a very ingenious contrivance for the lifting and aerating the effluent has been installed at the works, and the effluent is now passed over the land. The contrivance is known as the "effluent aerator lift." By its operation immense volumes of air are forced into and intermingled with the effluent, thus effecting further purification ... The works have been visited by deputations from various parts of the country, and from St. Petersburg, Berlin and other places, and are looked upon as unique of their kind, as it is believed to be the most complete system of treatment on the biological method in the country.*



4.2 Hampton Sewage Treatment Works

*Above: these two images from **The Engineer** magazine of 20 October 1899 illustrated the most significant features of the Hampton scheme: the 5 x 3 matrix of aerated bacteria contact tanks which, using the Dibdin method, transformed raw sewage into a colourless, odourless liquid in three steps and the Compressor Station which supplied compressed air at 30lbs per sq. in. to the eight (x2) Shone Ejectors.*

*Left: The works in 1978 shortly before demolition having ceased operation in 1940 when replaced by the Mogden Treatment Works.*



## POSTSCRIPT

**A** NEW COMPRESSOR STATION was constructed in 1928 to house three diesel-powered air compressors for the Shone Ejectors. Some of the ejectors continued in operation until the late 1970s when the last remaining units were replaced by electric pumps. The Sewage Works have completely disappeared and the site is now occupied by Bishops Grove and Chapter Way. However, the sewer network remains in operation but now delivering the raw sewage to Mogden Treatment Works, Isleworth. Today, visible links to the original 1896 scheme are still provided by the tall vent stacks which are to be seen at the sites of some of the original Shone Ejector chambers. There are two of these on Hampton Court Road and one each on School Road Avenue and opposite the junction of Broad Lane/Oak Avenue.

## HAMPTON ENDNOTES

<sup>1</sup> The timing of the request was somewhat unfortunate since Teddington Local Board were about to enter into a heavy - and ultimately very costly - court action against their former contractor. Hampton repeated their request the following February but this time it was received a day or so before Teddington learned they had lost their case.

<sup>2</sup> The palace and its large population of Grace and Favour residents lay firmly within the boundary of Hampton Local Board. However the relationship was not an easy one. The palace authorities refused to pay local rates (although the Crown made an annual "contribution") and even, on one occasion, denied right of entry to Hampton's Medical Officer of Health who was attempting to investigate a case of infectious disease.

<sup>3</sup> The sole dissenter was William Austin, the former Hampton Hill printer who had since become a Land and Estate Agent and who harboured hopes that he could persuade the Board to purchase his alternative nearby site.

<sup>4</sup> In a magnanimous gesture, the formal Council motion to approve this transaction was proposed by William Austin himself, thereby finally relinquishing his long-held ambition of selling his own land for the treatment works.

<sup>5</sup> The drainage schemes of all three neighbouring authorities had ended up with law suits being brought against their contractors with Teddington suffering a particularly expensive defeat in the courts.

<sup>6</sup> It was alleged that the failure to use adequate concrete beds to support the sewage pipes was the primary cause of the leakage difficulties encountered at Teddington.

<sup>7</sup> The treatment method described here represented a major departure from that proposed at the time of the December 1894 LGB Inquiry. It had originally been intended to employ the then-usual chemical precipitation and filtration approach but Hampton, with the LGB's approval, were able to take advantage of the recent rapid advances that had made by the chemist William Dibdin whose system replaced chemicals/filtration by biological treatment in a series of aerated contact beds.

## 5. CONCLUSION

**T**HIS PAPER HAS described the process of creating public drainage schemes in each of the four communities within the former Borough of Twickenham from the prerequisite formation of a Local Board to the eventual inauguration of the completed sewage systems. Collectively these projects covered a 36-year period from June 1863 (the first meeting of Hampton Wick Local Board) to October 1899 (the opening of Hampton Sewage Treatment Works). Whilst much changed in the intervening period there were nevertheless three ramifications faced by all four Local Boards. These are discussed in this final section along with the single most significant change that took place over the period.

Firstly the construction of a sewerage network and (except in the case of Hampton Wick) sewage treatment works was by far the largest project ever undertaken during the lifetime of each Board: nothing before or after could match it for cost, scale or disruption to the local community (see Figure 5.1). Inevitably each Board went through a period of both questioning and challenging the increasingly prescriptive legislation emanating from central government that demanded implementation of local drainage schemes. Procrastination was endemic. There were members within each of the individual Boards who remained convinced that central government would either relent in their demands or step in with financial aid. Others refused to believe the Thames Conservators would actually impose their swingeing fines.

Secondly all four authorities were challenged by groups of their own ratepayers who formed themselves into action groups. Public Meetings were held to remonstrate with the proposals of the various Boards and several Board members and even chairmen were voted out of office in retaliation for taking what were considered to be unpopular decisions. Animosity in Board meetings, public assemblies and the local press was often fuelled by rivalry based on national party political allegiances and this further intensified with the introduction of the County Council tier of local government.



*5.1 Laying the Main Sewer in Hampton Wick High Street 1890*

Thirdly all four schemes had to contend with the physical problems caused by the flat terrain and porous soil encountered in this part of the Lower Thames Valley. Sewerage pipes need to be laid at a sufficient gradient for an adequate flow of their contents to be maintained by gravity alone. The longer the run, the further below its starting point the pipe becomes. In the absence of any natural hills in their parish Twickenham had no option but to undertake some very deep excavations in order to complete their scheme. However the invention in 1880 of the Shone Ejector (see the Appendix on page 148) provided the three other ventures with an ingenious and simpler means to achieve the required flow even if uphill. The other physical problem was caused by the porosity of the sand and ballast that makes up most of the local soil. Surface water could readily percolate down and accumulate in the subsoil especially during periods of heavy rain. Unless the joints between the sewage pipes were fully watertight, the accumulated water could enter the sewer system and thereby significantly increase the pumping capacity needed at the treatment works. Both Twickenham and Hampton avoided this problem by

installing a completely separate surface water drainage system alongside the sewers thus effectively removing the water in the subsoil. The other two authorities did not follow this approach and both were faced with re-laying sections of their sewer network to achieve watertight joints. Teddington's rework was especially extensive and added significantly to the cost and duration of their construction programme.

The most significant change over the period was in what was considered acceptable practice for sewage treatment. In its final report published in 1865, the *Royal Commission on the Sewage of Towns* had declared that the best method for treating sewage was to apply it to land ("sewage farming"). This recommendation mirrored the previous practice of using human waste as fertiliser but replaced the night soil men by a network of sewage pipes. It was also accompanied by extravagant claims that the value of the fertiliser could offset the cost of the pipes. Each acre was expected to treat the sewage of 50 - 100 persons per annum. However with a combined 1861 population of over 17,000 persons and a land area (excluding the royal parks) of around 5,000 acres, it was unlikely that the four authorities covered by this paper would be able to acquire sufficient land (up to 340 acres were needed) at affordable prices - even if the local populace would tolerate sewage farms as their noisome neighbours. Finally in 1876 the Local Government Board accepted that the separation of sewage by precipitation - allowing the solid and liquid elements to be treated independently - was a satisfactory alternative to land application of the combined effluent. This change came just in time to rescue Twickenham from their long and fruitless search for a site for their planned sewage farm. Precipitation also became the treatment method to be adopted by the other three authorities. In the event, by the time Hampton opened their works in 1899 they were amongst the first authorities globally to bypass the precipitation stage altogether and adopt a purely biological treatment method. Over 100 years later this still remains the standard approach throughout the world.

## SOURCES AND ACKNOWLEDGEMENTS

I AM KEEN TO acknowledge the three principal sources used in preparing this paper and to thank those who have made them so readily available.

Firstly, the late Gerald Heath's BOTLHS Paper 10 "*The Formation of the Local Boards of Twickenham, Teddington, Hampton and Hampton Wick*" was originally published in December 1967. It was another of his meticulously researched and eloquently written pieces of local history. It has been an invaluable aid in the preparation of the current paper and I have quoted from it extensively.

Secondly the Minute Books of the four Local Boards together with a wealth of related papers/drawings/photographs are held in the London Borough of Richmond upon Thames Local Studies Library where Jane Baxter and her team are always very helpful. (This collection has benefitted greatly from the ongoing efforts of a large number of enthusiastic volunteers including several members of BOTLHS Publications Sub-Committee.)

Whilst the above sources have helped to ensure factual accuracy of the paper, a third source has been crucial to its completion. The real meat of the story - the excitement, emotion and controversy - has been derived from the reports, articles, correspondence and editorial comment carried in the pages of the *Surrey Comet* over the period 1863-99. In the course of my research I have collected nearly 900 separate cuttings from this publication which, from its continued (and much regretted) omission from the online British Newspaper Archive, has necessitated countless visits to the Kingston Local Studies Room where their collection includes a full set of the *Surrey Comet* in both microfilm and hard-bound copies. Amy Graham and her colleagues have continued to provide an excellent service at the new home in The Guildhall. I have also used

the Newspaper Room at the British Library with much enjoyment and success.

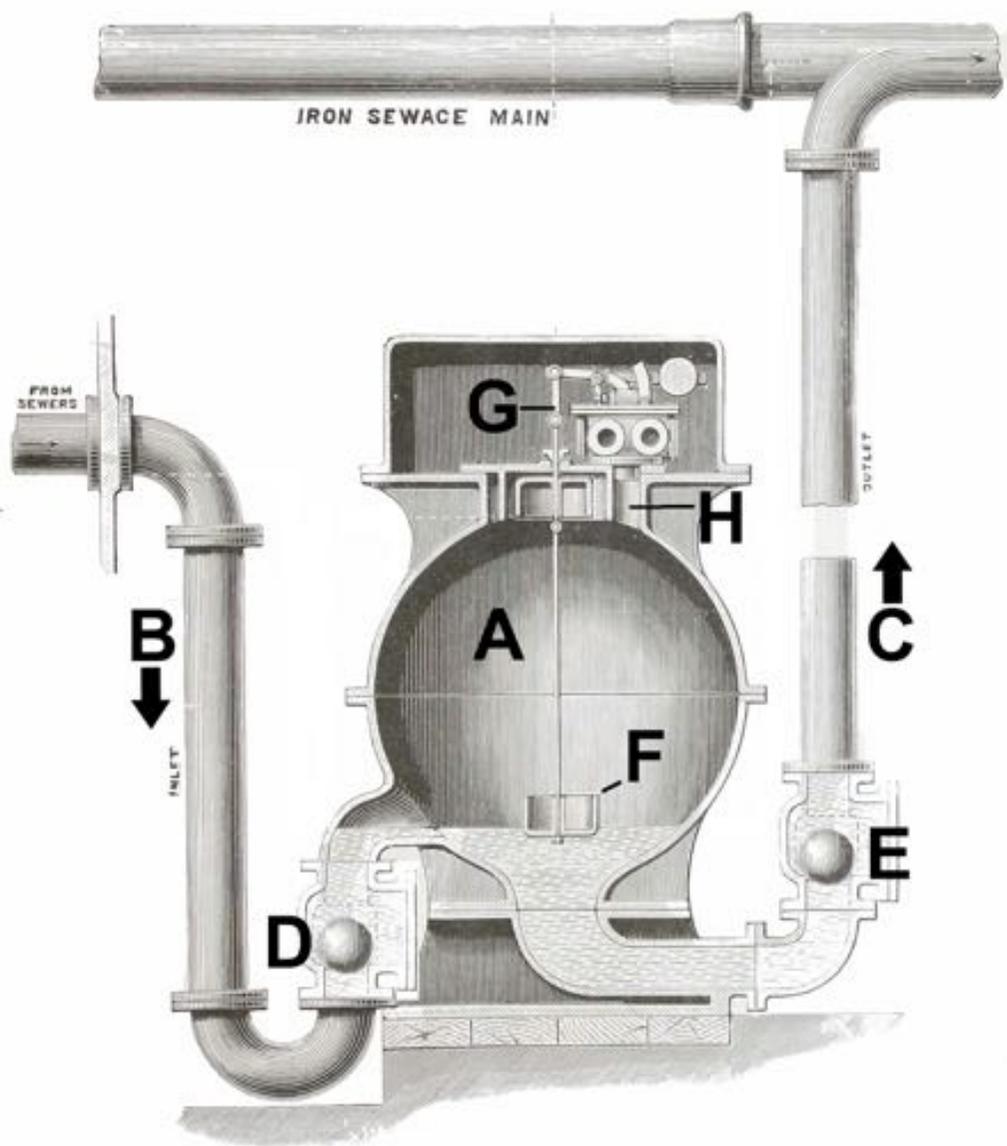
John Sheaf and Ken Howe both provided me with some very useful additional material for which I am grateful.. Mickle Coker, a very good old friend based in Wiltshire, used his well-attuned sense of curiosity - together with his total lack of any local (i.e. Twickenham) knowledge - to critique the draft, question my opinions and assumptions and thereby hopefully help me produce the story more effectively. Any residual failures from this process are mine alone.

Last but certainly not least, I am as ever greatly indebted to my wife Vicky who has been so helpful, supportive and encouraging during the production of this paper.

## APPENDIX - THE SHONE EJECTOR

**T**HIS INGENIOUS DEVICE was used in three of the four drainage schemes described in this paper - the exception being Twickenham which pre-dated it - and its inventor was the appointed Consulting Engineer in two of these schemes. This section briefly explains the purpose and operation of the Shone Pneumatic Ejector which was patented by Isaac Shone in 1878.

A well-designed sewer using the gravitational system of transportation needs to be laid at a gradient that will allow the raw sewage to flow at sufficient velocity (around 2 - 2.5 feet per second or equivalent to a slow walking-pace) to scour the pipe as it goes - when the system is said to be "self-cleansing". At lesser speeds the sewer is liable to get blocked and - even if still flowing - the sewage starts to putrefy en route to its collection point producing an offensive odour (known as "sewer gas"). The minimum gradient required for self-cleansing sewers is around 1 in 200 so, as an example, the end of a 1,000 ft sewer run must be 5ft below its start level. Similarly a one mile long sewer needs to be at least 26 feet lower at its downhill end - or nearly twice the height of a double-decker bus! In the ideal case, the natural contours of the land would allow this minimum gradient to be achieved without the need for excessive excavation. However the almost flat ground prevailing on the banks of the river locally meant that, even though Hampton Wick and Teddington were both able to site their sewage collection point at the lowest part of their respective parishes, the length of the sewer runs would have required deep excavations to achieve the required gradients. At Hampton the situation was even worse since the collection point was of



necessity sited some 50 feet higher than the lowest point of the parish. This made all three schemes perfect candidates for employing the Shone Pneumatic Ejector which was specifically designed to lift sewage from a low collection point into a main sewer at a higher level.

The diagram opposite shows the construction and operation of an ejector. A spherical chamber **A** is provided with an inlet pipe **B** and outlet pipe **C** through which the flow of sewage can be controlled by wooden ball valves **D** and **E**. As the chamber fills with sewage it raises the bucket float **F** until it reaches a certain level, when by means of the rod **G** it opens valve **H**, thus admitting compressed air to chamber **A**. The pressure of air closes the ball valve **D** through which sewage entered the chamber and opens ball valve **E** through which the pressure now forces the contents of the sump into the sewage main. As the level in the sump falls, the bucket float **F**, which remains full of sewage, lowers with the contents until it reaches a point near the bottom of the chamber when it closes the air valve, thus shutting off the supply of compressed air, and at the same time opening a tall vent through which the confined air can escape to a vent stack.

Ejectors were installed (usually in pairs for redundancy) in underground brick chambers and were directly connected to the incoming pipe sewer to which they were hermetically sealed. The ejectors received their supply of compressed air through a cast iron pipe laid in a trench alongside the outgoing iron sewage main, with both being onwardly connected to the sewage treatment works. The simplicity of design providing automatic and virtually noiseless operation and yet requiring so few moving parts made these devices astonishingly reliable and units using the same basic design are still in current production and supplied with a 25-year guarantee.