

**Institute of Historical Research
School of Advanced Study
University of London**

**Dissertation
submitted for the degree of
MA in Metropolitan & Regional History**

**The Engineering Inspectorate:
policemen, midwives or mere functionaries
in the development of
London's outer suburban infrastructure, 1858-1878?**

**John Clifford
30 September 2008**

The Engineering Inspectorate: policemen, midwives or mere functionaries in the development of London's outer suburban infrastructure, 1858-1878?

Contents	Page
Introduction	1
The Engineering Inspectorate:	
• its place in government and the law 1858-1878	4
• tasks	12
• resources	18
• relationships	22
Outer London and its development 1858-1878	24
The role in execution: illustrations from 'Outer London'	28
(i) Attempts to gain an acceptable sewage outfall:	
Silvertown and West Ham (1865-1871)	28
(ii) Arnold Taylor draws a line in the sand: Croydon (1868)	32
(iii) Compulsory purchase denied: Kingston (1869-1870)	35
(iv) Loan sanction denied: Richmond (1871)	38
(v) Settlement of boundaries:	
Heston, Isleworth & Hounslow (1874-1875)	40
Thematic discussion:	
(i) The Engineering Inspectorate: and active or passive institution?	42
(ii) Changing perceptions and practice of the Inspectorate's role	44
(iii) Obstacles to sanitary development:	
socio-economic, scientific and technical	46
(iv) Political philosophy	49
(v) Professionalism and personal motivation	51
Conclusion	56
Appendix:	
• Engineering Inspectorate activities in Outer London 1858-1878:	
Part A: Local Government Act Office 1858-1871	59
Part B: Local Government Board 1871-1878	61

Contents (continued) **Page**

Bibliography:

I	Unpublished and official sources:		
	A	Administrative records in the National Archives	63
	B	Personal and private papers	63
	C	Other records and series	63
II	Parliamentary papers and returns		64
III	Published and literary works:		
	A	Books	65
	B	Articles	66
IV	Unpublished dissertation		67

Tables

1	Engineering Inspectors 1858-1878	20
2	Population growth: based on census data 1851, 1861, 1871 & 1881	26

The Engineering Inspectorate: policemen, midwives or mere functionaries in the development of London's outer suburban infrastructure, 1858-1878?

Introduction

In March 1869, Florence Nightingale received a letter which recorded that:

Sanitary enquiries are being opened up in many places, and as usual there is much of selfishness in them; honest men cannot help seeing through the spectacles of self-interest ... Sewerage, sewage irrigation, pollution of rivers, wet systems, dry earth systems, and other systems make a nice jumble to investigate at this Kingston enquiry. I have to listen to the pleadings of no less than 6 barristers – 2 for and 4 against – do you not pity me?¹

Her correspondent was Robert Rawlinson² the civil engineer who, fourteen years earlier, had come as part of an army sanitary commission to Miss Nightingale's aid by improving the drainage at Barrack Hospital, Scutari, and who remained a lifelong friend. Up to 1854 Rawlinson had worked as an engineering inspector for the fated General Board of Health (GBH) during its period of dominance by Edwin Chadwick. In 1861 he had returned from private practice to become a full-time salaried inspector in the Local Government Act Office (LGAO) and from 1871 to 1888 would serve as Chief Engineering Inspector to the Local Government Board (LGB). The circumstances surrounding this short extract are discussed later in this paper, but Rawlinson's letter gives a hint of the novelty of the process for each locality, and of the scientific and technical uncertainty, the pecuniary and local political implications,

¹ BL: Add MS 45769, 12/3/1869, Nightingale papers

² Robert Rawlinson (1810-1898), CE, Knight Bachelor 1883, KCB 1888, President of ICE 1894-5. His entry in the ODNB is inadequate and in places misleading.

and the obstacles posed by legal defence of private property rights, that characterised attempts to use adoptive legislation to improve an increasingly polluted environment.

The last two decades of the twentieth century saw the historical record well supplied with texts dealing with public health medicine, the aetiology of communicable diseases, the quality of water supply, technical debates in sanitary engineering and sewage disposal, and the pollution of rivers.³ Royston Lambert's⁴ long article on the LGAO and Christine Bellamy's book on the LGB remain, for their respective periods, unchallenged as examinations of central-local relations in the second half of the nineteenth century.⁵ The Engineering Inspectorate occupies an important place in each of these two texts although, in the authors' attempts to achieve a synoptic view of the influence of their respective subjects, they reasonably give weight to the high politics of central-local relations and, in Bellamy's case, the macroeconomic issues surrounding grants and loans. However, there is no publication focussing wholly on the inspectorate in relation to a circumscribed territory, though it plays a part in Prest's study of the Isle of Wight and Huddersfield.⁶

Prima facie, the inspectorate occupied a critical position between localities and central government in the conduct of major transactions upon which the development of local

³ The work of Hamlin, Hardy, Pelling, Luckin and Wohl, some of which is included in the bibliography, is indispensable for the scientific, technical and medico-cultural contexts within which the Engineering Inspectorate functioned. Wohl, though strong in other respects, persists in erroneously associating John Simon's medical department with the loan sanction role of the LGAO and LGB (A.S. Wohl, *Endangered lives: public health in Victorian Britain* (London, 1983), 154, 162-3), a surprising mistake given the earlier publication of Lambert's article in *Victorian Studies*.

⁴ For the avoidance of confusion, Royston Lambert, historian, is hereafter referred to as 'Lambert' while John Lambert (1815-1892), Permanent Secretary to the Local Government Board 1871-1882, KCB 1879, is referred to throughout as 'John Lambert'.

⁵ R. Lambert, 'Central and local relations in mid-Victorian England: the Local Government Act Office, 1858-71', *Victorian Studies*, 6:2 (1962); C. Bellamy, *Administering central-local relations, 1871-1919: the Local Government Board in its fiscal and cultural context* (Manchester, 1988)

⁶ J. Prest, *Liberty and locality: Parliament, permissive legislation and ratepayers' democracies in the nineteenth century* (Oxford, 1990)

sanitary infrastructure depended. Given the vital importance of the role, enshrined in legislation, it is a question of some significance as to how it was fulfilled. Did the individuals concerned, or indeed the inspectorate as an institution, operate in a manner that might be considered restrictive, or alternatively constructive, or possibly neutral and minimalist? In order to approach some conclusions on this question, this study examines the inspectorate's activities over two decades in a territory described as Outer London, though such a construct would have not have been recognised by contemporaries.

Sanitary law provided that the duties of the Engineering Inspectorate be performed throughout England and Wales except in the Metropolis.⁷ That exclusion debarred its involvement in the sanitary responsibilities of the Corporation of the City of London and the thirty-eight Vestries and District Boards of Works represented on the overarching Metropolitan Board of Works (MBW). The area chosen for study is a ring comprising the parts of Middlesex, Essex, Kent and Surrey lying immediately beyond the Metropolitan boundary, its outer limit being set at the boundary of post-1965 Greater London. These outer London suburbs are distinguished from other burgeoning urban localities in England and Wales precisely because of the boundary issues thrown up by their proximity to the Metropolis.

The study traces first the legislative and administrative context in which the Engineering Inspectorate functioned, demonstrating the particular relevance of the chosen period as it tracks their mutation from 'political invisibility' to a plateau of maturity. It then moves to a closer examination of the inspectorate's tasks, resources

⁷ As defined by the Metropolis Local Management Act 1855

and relationships. Information about Outer London at this period then precedes a number of illustrative cases, while a table displaying the extent of the inspectorate's main activities in the chosen area is provided as an appendix. Finally, thematic discussion of the inspectors' work leads towards a conclusion.

The Engineering Inspectorate: its place in government and the law 1858-1878

We do not know whether Miss Nightingale pitied Rawlinson or not. What is certain is that, as a lifelong adherent to the pythogenic/miasmatic theory of disease transmission, she was a passionate supporter of Chadwick's Benthamic enterprise of systematic sanitary engineering, sometimes called arterial drainage.⁸ The removal of cesspools was to be the starting point of a virtuous circle that concluded with the profitable utilization of sewage in agriculture. Chadwick was quoted, in *The Times* of 4 October 1849, as advocating 'the complete drainage and purification of the dwelling house, next of the street and lastly of the river'. Lambert, in his ultra-sympathetic life of Sir John Simon,⁹ caricatures Chadwick and Nightingale as co-conspirators, 'aetiological bigots', out of power but tireless lobbyists, denigrating Simon's commitment to painstaking evidence-based epidemiology as a distraction from the urgent task of forcibly removing 'filth' from people's living space. Each of the antagonists, convinced of the righteousness of their cause, sought the public health, simply defined by Flinn as 'the elimination of the causes of preventable mortality.'¹⁰

⁸ E. Chadwick, *Report on the Sanitary Condition of the Labouring Population of Great Britain* [1842], ed. M.W. Flinn (Edinburgh, 1965), 110

⁹ John Simon, KCB 1887, was Medical Officer successively to the City of London sewers commission (1848-1855), General Board of Health (1855-1858), Privy Council (1858-1871) and Local Government Board (1871-1876).

¹⁰ R. Lambert, *Sir John Simon, 1816-1904, and English social administration* (London, 1963), 264-269; M.W. Flinn, 'Introduction', in A.P. Stewart and E. Jenkins, *The medical and legal aspects of sanitary reform* [1867] (Leicester, 1969), (vii); P.L. Cottrell, 'Resolving the sewage question: Metropolis Sewage & Essex Reclamation Company, 1865-81', in R. Colls and R. Rodger (eds.), *Cities*

The Engineering Inspectorate had been established as a key instrument of the Chadwickian GBH, a feature of what Hennock describes as the mid-nineteenth-century ‘centralization of knowledge.’¹¹ It undertook inspections using powers conferred by Section 121 of the 1848 Public Health Act (PHA) and, in Hamlin’s view, its chief rationale was ‘to assure ratepayers (and lenders) that their investments were safe from sanitary charlatans and incompetent elected officials.’¹² Since statutory functions remained to be performed, it had necessarily survived the fall of the first board (Shaftesbury, Chadwick and Southwood Smith) in 1854. Sir Benjamin Hall and his successor as President of the reconstructed GBH, William Cowper, brought a surprising level of knowledge and commitment to the role in the circumstances, though the shift from a prescriptive to a permissive regime was palpable.¹³ Revisionist legislation was inevitable and two bills creating machinery to place initiative with the localities were introduced in the spring of 1858 by Charles Adderley, final President of the moribund GBH. Adderley is said to have coined the phrase ‘local government’ and the measures were enacted as the Local Government Act (LGA) 1858 and the PHA 1858 respectively.¹⁴ Coming into force on 1 September 1858, these laws set the framework for sanitary administration, including the Engineering Inspectorate, over the next thirteen years.¹⁵

of ideas: civil society and urban governance in Britain, 1800-2000: essays in honour of David Reeder (Aldershot, 2004), 68

¹¹ E.P. Hennock, ‘Central/local government relations in England: an outline, 1800-1950’, *Urban History Yearbook* (1982), 40

¹² C. Hamlin, *Public health and social justice in the age of Chadwick* (Cambridge, 1998), 292

¹³ R.M. Gutchen, ‘Local improvements and centralization in nineteenth-century England’, *The Historical Journal*, 4:1 (1961), 88; Lambert, *Simon*, 222-223

¹⁴ Adderley’s Public Health Bill was amended, limiting its force to one year to placate anti-sanitarians; Robert Lowe made it permanent by the Public Health Act 1859 when Palmerston returned to office (W.L. Burn, *The age of equipoise: a study of the mid-Victorian generation* (London, 1964), 218)

¹⁵ Local boards of health were described by Tom Taylor in 1859 as having powers: for sewerage, drainage, lighting and water supply, scavenging, and cleansing; for the regulation of new streets and buildings, the repair of streets and roads, the laying out of new streets, and widening and improving old

The broad narrative of the new administrative arrangements, in which by virtue of the PHA John Simon moved to the Privy Council Office and progressively built up the Medical Department for which he became celebrated, whilst in accordance with the LGA the remainder of the GBH staff transferred to a sub-department (the LGAO) of the Home Office, has been extensively described by Lambert and others.¹⁶ Whilst acknowledging that some measure of ‘decentralisation’ occurred, in the sense that localities no longer had to petition the centre in order to establish a local board of health, Lambert assessed that the radical nature of the LGA had been overstated for political effect, most particularly with respect to the repeals of interventionist powers that had in practice long since fallen out of use.¹⁷ On the other hand, no publicity was given to the eighteen new discretions granted to the Home Secretary for, *inter alia*, determining boundaries, approving division of districts into wards, and approving compulsory purchase of land.¹⁸

The paradoxical character of the LGA, in which the anti-centralists believed that they had achieved a victory for local initiative while the sanitary lobby saw a silver lining in the streamlining of procedures, can be divined from two short extracts from the

ones; powers given by the Towns Police Clauses Act with respect to obstructions and nuisances in streets; to fires; to places of public resort, hackney carriages, and bathing; powers given by the Towns Improvement Clauses Act with respect to naming streets and numbering houses, improving the line of streets, and removing obstructions; to dangerous and ruinous buildings; to precautions during the construction and repair of sewers, streets, and houses; to the supply of water; to the prevention of smoke, subject to qualifications in the case of certain enumerated processes; to slaughterhouses and clocks; for the provision and management of public pleasure grounds (PP 1859 [2585], 5).

¹⁶ Gutchen, ‘Local improvements and centralization’, 89-90; Lambert, ‘Central and local relations’, *passim*; Lambert, *Simon*, Chs. 12 & 14; O. MacDonagh, *Early Victorian government, 1830-1870* (London, 1977), Ch. 8

¹⁷ Lambert, ‘Central and local relations’, 123-124

¹⁸ Lambert, ‘Central and local relations’, 125; Lambert, *Simon*, 271

preface to Tom Taylor's¹⁹ best-selling commentary on the Act, in which he stated that:

[it had] been framed on the voluntary principle. Towns are free to adopt it or not, at the will of their local, representative bodies, or their owners and ratepayers.

and

no town in England – no aggregate of houses even, not yet having acquired the name and legal character of a town – can plead the cost of a Local Act as a reason for remaining without powers for its own government and improvement.²⁰

The absence from the LGAO's constitution of what Herman Finer described as 'tutelary power' distinguished it from the Medical Department, in respect of which Parliament had – almost unwittingly in the ambiguous clauses of the PHA 1859 - provided the Privy Council with a general power of inquiry into and report on the health of the nation.²¹

Charles Adderley's success in pushing the LGA through the House of Commons owed much to the impression gained by MPs that a large proportion of the GBH establishment would be excised.²² The fate of two of the three engineering inspectors hung in the balance for some time. Tom Taylor, as the LGAO's Secretary, was to play a key role, not only during the 1858 transition, but through the entire span of the Office's existence. However, his paper to the National Association for the Promotion

¹⁹ Tom Taylor (1817-1880), barrister, dramatist and *Punch* contributor, Asst. Secretary, General Board of Health (1850-1854), Secretary (1854-1858), Secretary, Local Government Act Office (1858-1871)

²⁰ T. Taylor, *The Local Government Act, 1858, and the Acts incorporated therewith; together with the Public Health Act, 1858* (London, 1858), xii

²¹ J.S. Harris, *British Government inspection: the local services and the central departments* (London, 1955), 4; Gutchen, 'Local improvements and centralization', 90-91; MacDonagh, *Early Victorian government*, 154-155

²² *The Times*, 15/7/1858, p.6, col.2; Lambert, 'Central and local relations', 126

of Social Science in 1857 may have done little to relieve the alarm of his colleagues, concluding as it did with the words:

... unless it is found that central action is required to make local action efficient, there is no reason for keeping up its machinery and employing its functionaries.²³

Matters looked no better for Inspectors Ranger and Dickens in early August 1858 when, in providing estimates for the new office to Home Secretary Spencer Walpole, Taylor listed himself, two clerks, a draughtsman, copyist, office-keeper, housekeeper, and two messengers, but initially just one full-time inspector, the experienced Chief, Henry Austin. He did enter a caveat that further inspectorial assistance, either on a salaried or daily basis, would be needed if the local response to the LGA were in line with his expectations.²⁴ By December, Permanent Secretary Waddington was writing to the Treasury for renewal of the inspectors' temporary employment, but stating that 'Mr Walpole is by no means satisfied that the services of the gentlemen will be required permanently.'²⁵ It was not until January 1859 that Taylor was able to furnish the Home Secretary with the ammunition that would justify the retention of all three experienced inspectors, providing a report of every detail of work generated by the new legislation over the preceding four months, and suggesting that there was unlikely to be any diminution in activity as localities realise 'the facility and cheapness with which powers for local government may be acquired under it.'²⁶ Waddington endorsed the report en route to Walpole with the comment: 'It looks very formidable upon paper.'²⁶

²³ T. Taylor, 'On central and local action in relation to town improvement', *Trans. Nat. Assocn. for the Promotion of Social Science*, 1 (1857), 480

²⁴ MH19/85, 10/8/1858

²⁵ T1/1858/20834, 18/12/1858

²⁶ HO45/6655, 12/1/1859

Taylor was not in error. Local demands, both constructive and combative, ensured that his meagre resources, often reduced by the secondment of Robert Rawlinson to tasks of national importance, would be stretched to the limit. The scope, complexity and enforceability of the laws administered by the office were progressively enhanced by the legislative maelstrom that began with the Sewage Utilization Act 1865 and the Sanitary Act 1866 and culminated in the Sanitary Loans Act 1869, the measure that finally rendered effective – albeit in burdensome fashion - the coercive clauses of the 1866 Act.²⁷ These clauses, in particular Section 49, to which we shall return, ‘conferred on the central executive a coercive, interfering and even superseding power the like of which Chadwick had never possessed even in the pristine years of the Act of 1848.’²⁸

By the late 1860s, pressure on politicians from the medical and social science lobbies led to the appointment of a Royal Sanitary Commission (1868-1871) (RSC) charged with rationalising the multiplicity of bodies with sanitary powers and duties, and removing ‘the anomalies and absurdities of the whole rickety structure – “that enormous mass of insensibility which may be termed Bumbledom” as the campaigning lawyer Edward Jenkins described it.’²⁹ The commission envisaged an explicit tutelary role for central government when it reported that ‘the new department will have to keep all local authorities and their officers in the active exercise of their own legally imposed and responsible functions.’³⁰

²⁷ Gutchin, ‘Local improvements and centralization’, 92; Lambert, ‘Central and local relations’, 126, 138-139

²⁸ Lambert, *Simon*, 390

²⁹ Task of the RSC summarised at Lambert, *Simon*, 501-504; Flinn, ‘Introduction’, (xviii) quotes E. Jenkins, *Trans. Nat. Assoc. for the Promotion of Social Science* (1867), 545

³⁰ PP 1871 [C.281], 35-36, quoted in Harris, *British Government inspection*, 46

The resultant Local Government Board Act 1871 launched the implementation of the first stage of the commission's recommended reorganisation, that involving central government. The Poor Law Board, the Medical Department of the Privy Council, the Registrar-General's Office and the LGAO were brought together as one department of state, the LGB. The 'Board' was a fiction in practice, its President and his Parliamentary Secretary alone being accountable to Parliament. The welding together of the LGB's constituent parts was skilfully and ruthlessly managed by the joint Permanent Secretary, John Lambert, with the encouragement of the inaugural President, the Liberal James Stansfeld.³¹

The second stage of reorganisation, achieved by implementation of the PHA 1872, replaced 'Bumbledom' with a patchwork of urban and rural sanitary authorities that covered the entire country. By making the Boards of Guardians the rural sanitary authorities (RSA) for every acre of land in their Poor Law Union that was not defined as part of an urban sanitary district (USD), the LGB could be sure that for every situation there was always one and only one responsible authority.³²

The LGAO was, in Royston Lambert's phrase, 'soon digested by the secretariat' of the LGB. Tom Taylor stayed until October 1872 as nominal head of the department, but well before that John Lambert had been able to get to grips with the sanitary brief and had become the effective manager of the inspectorate.³³ A greater emphasis was laid on office procedures, and in May of that year Taylor and the inspectorate lost

³¹ R.M. MacLeod, *Treasury control and social administration: a study of establishment growth at the Local Government Board, 1871-1905* (London School of Economics Occasional Papers on Social Administration, 23; London, 1968), 10-11

³² MacDonagh, *Early Victorian government*, 158

³³ Lambert, *Simon*, 527-528

their last vestige of autonomy when a rule was introduced that inquiries should only be instigated by direction of the President.³⁴

The new regime on occasion went beyond procedural changes, trespassing on matters of professional judgment. In the autumn of 1872, an exchange of minutes, bordering on pantomime, arose from a routine report by Robert Morgan on an inquiry into an application from Teddington Local Board for a loan sanction of £1,500 for kerbing and asphaltting footways. John Lambert sows a small seed of doubt and the worthy Stansfeld does the rest:

JL to RM: Is not the period of 15 years a long time for asphalt to last?

RM to JL: 15 years would be too long a period to give for the repayment of money expended on asphaltting carriageways – but for footways, if the work is well done, it ought to last for that period.

JL to Pres: I have great hesitation in recommending 15 years for asphaltting.

Pres to RM: What guarantee can we have that the work will be well done?

RM to JL: We have no guarantee that the work will be well done, but every sanction is recommended on that assumption.

JL to Pres [without comment]

Pres to JL: I should like at any rate an opinion from Mr Morgan as to the probability of the asphaltting being well done.

RM to JL: Mr Goodchild, the gentleman appointed by the Local Board to superintend the works of asphaltting the footways, is an architect of some name and practice, and I have no doubt but that the works will be thoroughly well done.

JL to Pres [without comment]

Pres to JL: The kerbing is nearly half the money. I think therefore that we may now sanction. It would be well, at the same time, to direct attention, through the Senior Inspector, to the importance of not overestimating the durability of works. I should, in this case, have preferred a recommendation in favour of 12 years.³⁵

³⁴ MH12/12403, 9/5/1872

³⁵ MH12/12404, 1/10/1872

Nor did the episode end there. Rawlinson wrote a minute to John Lambert noting that, since half of the requested loan was for stone kerbing with a life of 20 years, had the estimate been divided, the asphalt would only have needed to last 10 years to support Morgan's recommendation. More importantly, Rawlinson's suggestion, that the standard form of estimate be amended to show separate amounts for each main type of material, met with John Lambert's strong approval.³⁶

The enactment of the PHA 1875 completed the reform programme envisaged by the RSC. Disraeli's new LGB President, George Sclater-Booth, described it as reconciling, refining and rearranging the terms of twenty-nine existing pieces of legislation.³⁷ The remainder of the 1870s, particularly after John Simon's resignation in 1876, saw a period of relative stability from the standpoint of both legislation and procedure, though tension between the LGB and the Treasury over the availability to local authorities of cheap loans for public works continued beyond Sir John Lambert's retirement in 1882.³⁸

The engineering inspectorate: tasks

The bulk of the recorded work of the inspectorate followed the process of **'inquiry and report.'** This entailed the prior display of formal notices in the locality giving details of the statutory basis for the inquiry, its scope and purpose, the name of the inspector, and the date, time and venue at which it would open. The GBH inspectors had been invested with a range of powers of inquiry by Section 121 of the 1848 PHA, including the summoning of witnesses, their examination on oath, and the requisition

³⁶ MH12/12404, 30/11/1872

³⁷ *Hansard*, ccxxii, col. 232 paraphrased in Lambert, *Simon*, 560-561

³⁸ J.F. Wilson, 'The finance of municipal capital expenditure in England and Wales, 1870-1914', *Financial History Review*, 4 (1997), 35-38

of parochial books and records, and these provisions were affirmed for their LGAO successors by Section 80 of the LGA.³⁹ Having heard such testimony as the inspector deemed relevant to the matter under inquiry, he would compile a report and address it, with his recommendation, to the Home Secretary or, from August 1871, the President of the LGB. This document would be routed via a generalist civil servant, Tom Taylor up to his retirement, John Lambert or one of his Assistant Secretaries thereafter, who would summarise the salient issue for ministerial decision. It was not normal practice to publish reports, but the inspectors themselves would sometimes recommend that all or part of their report should be provided to an applicant or petitioner by way of explanation. After 1871 such recommendations were considered with great caution, John Lambert wielding a particularly heavy editorial pencil.

In the LGAO era, the inspectorate's activity was so remote from the Home Secretary's primary political concerns that the officials could fairly be said to be the decision-makers, an ironic sequel to the movement aimed at enforcing ministerial responsibility that had led to Chadwick's downfall.⁴⁰ Spencer Walpole had a reputation for being swayed by vested interests during his time at the Home Office, but for the most part ministerial initialling became a formality, sometimes, as Lambert observes, with 'a note of assent or of awed praise.'⁴¹ This was certainly not the case in the early years of the LGB as, throughout the 1870s, the Permanent Secretary exerted great influence over Stansfeld and Sclater-Booth, customarily putting his own gloss on the report summaries. Yet the caricature repeated in successive histories that the LGB was the Poor Law Board reincarnate, whilst arguably true at the level of form design and office systems, is an unhelpful generalisation. Bellamy rightly observes

³⁹ Taylor, *LGA 1858*, S.80

⁴⁰ Lambert, 'Central and local relations', 138

⁴¹ Lambert, 'Central and local relations', 137

that ‘the local government, sanitary and public health business remained largely untouched by officials with roots in the Poor Law’ and ‘the Board was never organised for the integration of public health and poor law policy.’ John Lambert, despite having been a Poor Law inspector early in his career, made a crucial contribution to the development of sanitary administration in the face of arrogant and uncomprehending Treasury officials. He chose his battles carefully, whether in encouraging his ministers to introduce legislation or in taking on the Treasury over establishments and salary levels, but once chosen, they received what MacLeod has described as ‘the calculating drive of his genius.’⁴²

A task that would have significant and lasting impact on the shape of government in Outer London was the **settlement of boundaries**. At first, this would be for the purpose of adopting the LGA 1858 in locations where the proposed district did not comprise the whole of an existing parish, borough or improvement district, each of which would have already been ‘known to the law.’⁴³ It was not unusual, especially on the fringes of urban development in the 1860s, for only the more populous part of a large parish to seek to adopt the LGA, a phenomenon which led to the invention of South Hornsey. From 1872, the task would normally have been to carve a USD out of the wider territory of a RSA, possibly going on to determine the suitability and boundaries of wards within the resultant district (see case (v) *infra*).

Where some other aspects of their work underwent some form of change in the light of legislation over this period, applications for **sanction to borrow** on the security of the rates provided the inspectors with a sustained workload that invariably involved

⁴² R.M. MacLeod, ‘The Alkali Acts administration, 1863-1884: the emergence of the civil scientist’, *Victorian Studies*, 9 (1965), 97, 99, 105; Bellamy, *Administering central-local relations*, 127

⁴³ Lambert, ‘Central and local relations’, 129

the examination of plans and estimates and, in the vast majority of cases, a local inquiry. Tom Taylor set out the criteria in his section of the First Report of the LGB to Parliament, which was also his report on the final year of the LGAO:

The central authority has to authorise the borrowing of money, after inquiry to show that the money is required for a proper purpose; that the works are, *prima facie*, sufficient for their object; that the estimates are fair and reasonable, and that the work is so far permanent as to justify the borrowing for the term of years allowed for its repayment.⁴⁴

The ratchet effect of infrastructural investment on the local tax base could hardly be better described than by Rawlinson in his completion report as consulting engineer to the West Ham Local Board's main drainage scheme prior to his full-time appointment to the LGAO:

The system of main drainage, as carried out, provides for a large increase of house and other rate-paying property, and population. The new property will, of course, add a proportionate share of rateable value. The outlay on sewerage-works may be regarded as an addition to the value of existing property, and as a premium on building-land, and property to be erected.⁴⁵

From 1872, loans became available to sanitary authorities for permanent works on favourable terms from the Public Works Loan Commission, the loans being contingent on LGB recommendation. For the smaller authorities, this source of finance was of crucial importance, imposing strong moral pressure on the relevant inspector.⁴⁶

⁴⁴ PP 1872 [C.516], xlvi-xlvii

⁴⁵ R. Rawlinson, *Report on the completion of the public sewerage works for the district of West Ham* (1862), 10

⁴⁶ Wohl, *Endangered lives*, 113-114; Bellamy, *Administering central-local relations*, 82-84; Wilson, 'The finance of municipal capital expenditure', 35-36; M.J. Daunton, *Trusting Leviathan: the politics of taxation in Britain, 1799-1914* (New York, 2001), 277-278

The Home Secretary was empowered by the LGA 1858 to make or deny petitions for **Provisional Orders (POs)**. The most important of these, in relation to the work of the Engineering Inspectorate, were for the **taking of land otherwise than by agreement**, but they also covered such matters as approval for a local authority to borrow more than one year's assessable value of its district, the alteration or repeal of Local Acts, and the extension or contraction of local government districts (after the PHA 1872, defining or redefining urban sanitary districts). Although these orders could be opposed before a Select Committee when they went to Parliament as part of a Provisional Orders Confirmation Bill, the mechanism offered local authorities a huge cost saving as against promoting a Local Act. The true price lay in the requirement to submit to public inquiry and, although this might force an authority to amend or even abandon a plan, it had the beneficial effect of flushing out opposition at an early stage, with the result that relatively few POs were attacked in the course of Parliamentary confirmation.⁴⁷

The invocation of **Section 49** of the Sanitary Act 1866 (as amended to render it effective) was the circumstance most likely to strain relations between the inspectorate and local authorities. The clause was remarkable in the breadth of its reach, in that:

...any person might make a complaint to the Home Secretary against any local board, nuisance authority, or sewer authority for failing to perform *any* of its statutory duties.⁴⁸

An inquiry would be scheduled, the inspector would report and, if the authority had been found in default, an Order would be made by the Home Secretary for it to

⁴⁷ Lambert, 'Central and local relations', 132-133; Bellamy, *Administering central-local relations*, 213

⁴⁸ Gutchen, 'Local improvements and centralization', 91

remedy the defect within a specified time. Wilful failure to comply with the Order could lead to the authority being superseded by the Home Secretary. He would then appoint a contractor to fulfil the role of sanitary authority and remedy the defects, all costs being recovered from the ratepayers. Supersession was not only politically sensitive; the monitoring of each case was administratively burdensome for the thinly-staffed LGAO, not helped by the disinclination on principle of its Chief Inspector to become involved with the process. Lambert has calculated that about 115 Section 49 inquiries were made by the inspectorate over the period 1866-1871, seven of which led to the Home Secretary superseding the local authority and draining and watering the locality concerned. None of the authorities in the Outer London area were superseded, but the notorious cases of Epping and Brentwood stood not far distant.⁴⁹

Lambert draws attention to Tom Taylor's evidence to the RSC that, although the 'voluntary principle' required that matters should be set in motion by local initiative, 'sometimes [the LGAO] may suggest such a petition being sent up, so that practically we become the initiatory powers.'⁵⁰ This is precisely what happened when, in July 1871, the LGAO received a complaint that the Hornsey Local Board had failed to provide proper sewerage between Green Lanes and the railway station. The indefatigable Arnold Taylor made an informal visit to the locality, noting that he 'saw in another direction a similar nuisance just as serious, if not more so,' and suggested that the complainants should be encouraged to present a formal memorial to the Secretary of State under Section 49 of the Sanitary Act, 1866, complaining of the absence of proper main sewerage and sewage outfall in the district.⁵¹

⁴⁹ Gutchin, 'Local improvements and centralization', 94; Lambert, 'Central and local relations', 138-144; Lambert, *Simon*, 396

⁵⁰ PP 1868-69 [4218], Q.97, quoted in Lambert, 'Central and local relations', 130

⁵¹ MH13/94, 8/7/1871

From 1871, the LGB secretariat shared Rawlinson's distaste for coercion of local authorities, and John Lambert would not countenance 'collusion' within the LGB such as had become routine between the Privy Council Medical Department and the LGAO. Even where the complaint came from without, on no occasion was an authority superseded by the President of the LGB. Coercive powers were extended by Section 299 of the 1875 PHA, but were used sparingly and only in cases of 'wilful intransigence', enforcement of the LGB's Order relying on a writ of Mandamus from the Court of Queen's Bench.⁵²

'Inquiry and report' represented the visible activity of the inspectorate, but it also entailed a substantial amount of invisible work. Thus, an application for a loan sanction would entail the scrutiny of the material submitted in advance by the applicant board: a standard dataset for the locality, plans and sections of the projected works, and project estimates showing quantities and costs. It is clear from references in formal reports, correspondence and internal file notes that inspectors made informal site visits, and held discussions with local board clerks, surveyors and consulting engineers, particularly in relation to problematic situations.

The engineering inspectorate: resources

As we saw above, in 1858 the LGAO inherited Tom Taylor as Secretary, three inspectors and a handful of clerks. When Alfred Dickens died in 1860, Home Secretary Cornwall Lewis rammed home the message that the office should be

⁵² Lambert, *Simon*, 540-541; Bellamy, *Administering central-local relations*, 217-218; C. Hamlin, 'Muddling in Bumbledom: on the enormity of large sanitary improvements in four British towns, 1855-1885', *Victorian Studies*, 32 (1988), 57

politically invisible by forbidding a replacement. However, on the death in 1861 of Austin, the chief inspector who was a well-known figure in the civil engineering world, the extent of work generated by the LGA forced an appointment. The inspectorate that Rawlinson joined a fortnight later was therefore a shoestring operation, soon exacerbated by his attachment, starting in 1863, to manage, on behalf of the Poor Law Board, a huge programme of public infrastructure works in areas of north-west England afflicted by the Cotton Famine.⁵³ Robert Morgan was employed as temporary cover, whereupon Ranger, the last of the GBH inspectors, also succumbed. Taylor had to fight to achieve permanent status for Morgan and, with Rawlinson regularly in Lancashire as well as investigating the Dale Dyke dam failure (March 1864), he secured Treasury approval to employ his brother, Arnold Taylor, as a temporary inspector.

Despite the additional work thrown onto the LGAO by the legislation of the mid-1860s, no establishment increase was sanctioned until early 1871. Rawlinson's availability had been affected, first by his membership of the first Rivers Pollution Commission (1865-1868) and then by a special investigation into allegations from the Vicar and inhabitants of Barking that the Thames was being polluted by the discharge of sewage from the MBW's northern outfall sewer.⁵⁴ John Thornhill Harrison, having been brought in to conduct a number of inquiries on an emergency basis, was appointed, but only on a limited contract. Thus, at August 1871, four inspectors entered life under the LGB.

⁵³ J.A. Charles, 'Sir Robert Rawlinson (1810-98)', *Dams & Reservoirs* (July 2005), 8

⁵⁴ PP 1870 [C.7]; Cottrell, 'Resolving the sewage question', 89

The further workload imposed by the 1872 PHA led to a serious backlog of inquiries and reports in 1873. A further permanent post was justified, to be filled by Major Hector Tulloch of the Royal Engineers, while Lieutenant-Colonel Ponsonby Cox, also a Royal Engineer, was employed for a series of short-term appointments, culminating in Treasury agreement to an 8-year contract. A seventh inspector's post was added in 1875, the last increase during the period under review, though there were to be further major workload and staffing problems in the 1880s.⁵⁵

1858	H Austin	A Dickens	W Ranger		
1859					
1860		dies			
1861	dies				
1862	R Rawlinson				
1863			dies		
1864			R Morgan		
1865		A Taylor			
1866					
1867					
1868					
1869					
1870					
1871				JT Harrison	
1872					
1873					Maj Tulloch
1874					
1875					Lt Col Cox
1876					
1877					
1878					S J Smith

Table 1 Engineering Inspectors 1858-1878

‘I do not know who is to check the assertions of experts when the government has once undertaken a class of duties which none but such persons understand.’ These perceptive comments of the condescending Permanent Secretary to the Treasury Ralph Lingen were directed at what he regarded as the outrageously extravagant demands of John Simon early in 1871, but they were applicable wherever government

⁵⁵ MH78/44, Dec 1884; MH32/95, 5/1/1885

employed professional skills outside the well-trodden paths of the army, the navy and the law.⁵⁶ John Lambert pursued a diplomatic path, using his heavyweight political connections, including Gladstone, sparingly in his relations with penny-pinching Treasury officials. Although he achieved modest growth in staffing levels to cope with the demands of new legislation, the LGB as a whole, and the Engineering Inspectorate in particular, worked under strains that far exceeded those in most departments of state.⁵⁷ Daunton reminds us that between 1850 and 1890 total government expenditure grew by substantially less than GNP, whilst the social and environmental services for which local government was responsible grew faster than GNP, placing a disproportionate burden on the inspectorial ranks and their meagre support staff.⁵⁸

Scanning the annual reports to Parliament, first those of the Home Secretary on the execution of the LGA 1858, and, after 1871, those of the President of the LGB in respect of the legislation then in force, one can only be astonished at the extent and geographical spread of the inspectors' workload, the amount of travelling involved, and the difficulty that they must have faced in apportioning their energies between the concurrent tasks of preparing, conducting and reporting a rolling portfolio of inquiries.

An example of the impact of widespread travelling on the workflow is given by Harrison who, cognisant of the urgency of reporting his recommendation from the Blagdon Lodge inquiry (case (iv) *infra*) which lasted from 6 to 11 February 1871, put in a brief preliminary report on February 13 for, as he wrote to the Home Secretary, 'I

⁵⁶ Lambert, *Simon*, 452

⁵⁷ MacLeod, *Treasury control and social administration*, 19

⁵⁸ Daunton, *Trusting Leviathan*, 24

am under engagements at Todmorden and Skipton which will take me from London for the whole of this week.’ He was finally able to submit a full 15-page report setting out his review of the evidence on March 6, some three weeks after the applicant local authority would have had to complete its purchase, if approved.⁵⁹

The engineering inspectorate: relationships

There is evidence in the records of the LGAO, though it is not abundant, of the Engineering Inspectorate working constructively with Simon’s Medical Department at the Privy Council, especially in crisis situations. In 1861, Simon agreed to reimburse the expenses of an engineer enlisted to help the Medical Department with an inquiry, and during the 1866 cholera visitation, the two available engineering inspectors worked alongside Simon’s four medical inspectors in the severe outbreak in the East End of London.⁶⁰ Tom Taylor and John Simon, still occupying the offices in 8 Richmond Terrace despite their organisational separation since 1858, maintained a cordial relationship and were, according to Taylor, ‘in constant communication.’⁶¹ In 1866 they had collaborated to bring their complementary skills to the drafting of the Sanitary Bill, though political constraints prevented the resultant Act from achieving their hoped-for consolidation and simplification of sanitary law.⁶² Nonetheless Simon, in evidence to the Royal Sanitary Commission, denied that there was any functional similarity between the two offices, and accented the difference between the medical and engineering contributions to sanitary improvement.⁶³ The departments were further distinguished by the fact that the former could investigate public health

⁵⁹ MH13/234, 13/2/1871 to 6/3/1871

⁶⁰ MH13/252, 2/8/1861; Lambert, *Simon*, 353, 378

⁶¹ MH13/250, 25/6/1869, quoted in Lambert, ‘Central and local relations’, 126

⁶² Lambert, *Simon*, 382-384

⁶³ PP 1868-69 [4218], Q.1855, quoted in Lambert, *Simon*, 423

problems and risks on its own initiative whilst the latter, though the only one armed with coercive powers, was constrained by legislation that placed the trigger for action in the hands of others.⁶⁴ From 1871, with both as constituent parts of the LGB, Simon's team lost much of this independence as its communication channels to both ministers and the outside world came under the scrutiny, and ultimately the control, of the LGB Secretariat, leading to Simon's resignation in 1876.

The General Inspectorate of the LGB, modelled on its Poor Law Board predecessors, maintained a resident presence in the regions of England and Wales, having right of regular attendance at meetings of Guardians and urban authorities, whereas the Engineering Inspectors visited on a case by case basis. The evidence for collaboration between the two inspectorates is very scarce in relation to the environs of London, though John Lambert occasionally minutes his General Inspector on a query arising from an inquiry.

The relationship with top management in the LGB comes over from written records as respectful. Certainly none of the inspectors could fault John Lambert for hard work, or for failing to read every word of their reports. James Stansfeld, when President, had the sensitivity to speak to Arnold Taylor personally when, in the wake of the inspector's crusade to impose financial discipline on the Croydon Local Board's capital account (see case (ii) below), he felt obliged, on John Lambert's advice, to reject one of his recommendations and to approve – on the Board's third application - the borrowing of £500 for an additional pumping engine for the waterworks.⁶⁵

⁶⁴ Lambert, *Simon*, 426

⁶⁵ MH12/12178, 17/1/1872

It is instructive too that, in 1874, when Robert Morgan recommended that the Special Drainage District (SDD)⁶⁶ of Child's Hill in Hendon parish should be dissolved, a dissenting minute from W.G. Lumley, the Assistant Secretary with an encyclopaedic knowledge of the law, led John Lambert to write Lumley a pacifying minute, inferring support on an intellectual level. However, he declined to overturn Morgan's strongly held opinion when the decision to issue a PO went before the LGB President. John Lambert clearly recognised that the standing of the inspectors in the field was vital to the working of the system, and was only to be risked in cases of overriding political necessity.⁶⁷

'Outer London' and its development 1858-1878

Coppock traces no dramatic development in Outer London at the beginning of the railway age, notably because of the railway companies' initial lack of interest in local traffic. The period between 1858 and 1878, however, saw extensive, but not uniform, urban development beyond the Metropolitan boundary, especially along the main lines of radial communication, both road and rail. As rail companies came to understand the potential for profit from suburban traffic, new stations were opened at intermediate points on the existing main lines. Development took two main forms, villa suburbs for the complex social gradations of the middle-class, and working-class suburbs that relieved some of the pressure arising in the inner city from population increase and from displacement due to road widening, dock construction and general rebuilding. The introduction of workmen's fares acted as a direct stimulus to the

⁶⁶ Under the PHA 1872, SDDs could be formed by rural sanitary authorities with LGB consent so as to limit the cost of sewerage and water supply works to the localities that would benefit from them; prior to that Act, rural parish vestries could constitute SDDs without government agreement, some instances of which were found to have been inequitable (PP 1876 [C.1585], xlv)

⁶⁷ MH12/7230, 26/9/1874 and MH12/7231, 1/1/1875

growth of Tottenham, Edmonton, Leyton and Walthamstow.⁶⁸ In addition to influencing the growth of suburbs that were contiguous with pre-existing London, transport links nourished centres of population around detached villages and hamlets in Middlesex, North-West Surrey, North-West Kent and South-West Essex, as well as accelerating the expansion of established centres (Croydon, Kingston) and smaller market towns (Romford, Bromley), all of which would eventually be absorbed into Greater London.⁶⁹

Speculative purchasers and lessees of building land in marginal Acton and rural Ealing fell victim from the 1850s onwards to successive false dawns as the hoped-for middle-class influx failed to materialise. The inadequacy of early railway communications with the City, and intractable drainage problems in Acton in the absence of the MBW's cooperation, were mostly to blame. Acton did not adopt the LGA until 1866, after which it at least possessed a structure for addressing its drainage and development control problems.⁷⁰ The extension of the Metropolitan and Metropolitan District railways beyond the Metropolitan boundary was soon to bring parts of Middlesex within easy commuting reach of the City: Willesden Green (1879), Harrow (1880), Acton and Ealing (1879), and Hounslow (1884).

Analysis of 'Outer London' throws up three main types of locality when viewed from the perspective of sanitary administration: (1) places adjacent to the Metropolis with an overall level of urbanisation barely distinguishable from that immediately within

⁶⁸ J.T. Coppock, 'A general view of London and its environs', in J.T. Coppock and H.C. Prince (eds.), *Greater London* (London, 1964), 28-29; P. Hall, 'The development of communications', in J.T. Coppock and H.C. Prince (eds.), *Greater London* (London, 1964), 63-65

⁶⁹ J.H. Johnson, 'The suburban expansion of housing in London, 1918-39', in J.T. Coppock and H.C. Prince (eds.), *Greater London* (London, 1964), 144-145

⁷⁰ M. Jahn, 'Suburban development in outer west London, 1850-1900', in F.M.L. Thompson (ed.), *The rise of suburbia* (Leicester, 1982), 102, 106-107, 120-121, 126

the metropolitan boundary; (2) places – usually large ancient parishes like Willesden – where the level of urbanisation at extremities of the parish adjacent to the Metropolis differed markedly from its other neighbourhoods; and (3) outer areas such as Uxbridge and Bromley where urbanisation was taking place but had more to do with commerce or commuting than being an extension of the metropolitan sprawl.

	1851	1861	1871	1881
	'000	'000	'000	'000
Metropolis	2,363	2,809	3,267	3,834
<i>decennial % incr.</i>		19%	16%	17%
Outer London	287	384	584	899
<i>decennial % incr.</i>		34%	52%	54%
comprising:				
in Essex		47%	49%	83%
West Ham PLU	34	60	99	201
Romford PLU	24	26	30	36
Epping PLU (part)	1	1	1	1
in Kent		22%	55%	41%
Bromley PLU	17	20	31	48
Dartford PLU (part)	10	13	20	24
in Middlesex		27%	44%	48%
Edmonton PLU (part)	35	48	72	126
Brentford PLU	41	51	72	102
Hendon PLU	16	19	37	55
Uxbridge PLU	19	23	26	28
Barnet PLU (part)	10	14	19	28
Kingston PLU (part)	6	7	10	14
Staines PLU (part)	6	7	8	9
in Surrey		40%	67%	43%
Croydon PLU	32	46	84	119
Kingston PLU (part)	15	23	37	53
Richmond PLU	16	19	26	34
Epsom PLU (part)	5	7	12	21

Table 2 Population growth based on census data 1851, 1861, 1871 & 1881

The territory was notable for the almost complete absence of municipal corporations, a reflection of the age-old difficulty of asserting independence so near to the capital.

Only Kingston was a municipal borough throughout our period, the much more populous Croydon becoming incorporated in 1883 with West Ham following in 1886.

Young and Garside found that ‘the outward movement of Londoners, far from depleting the metropolis, simply extended its scope, thereby subverting the standard definition of London’s boundaries.’⁷¹ Political reluctance to adjust the 1855 boundary created special problems at the margins in dealing with drainage and sanitary engineering.⁷² These problems became a recurring feature of the inspectorate’s work and they highlight the impotence of central government in the absence of specific legal powers of enforcement.

As an example, in July 1870 the LGAO received a nuisance complaint regarding the drainage of the ‘Beckenham Wedge’. The wedge was an area of Beckenham parish lying between Penge and Lewisham and which drained naturally into the latter. Lewisham District Board of Works, being within the Metropolis, was not a Sewer Authority within the meaning of the Sanitary or Sewage Utilization Acts, and hence was not subject to compulsion by order of the Home Secretary. Arnold Taylor reported that the LGAO could ‘do little more than make friendly suggestions.’ The parties concerned could all see that the solution was for Beckenham to designate the wedge a SDD and for Lewisham to obtain the MBW’s permission (and the price to be paid by the SDD ratepayers) for its sewage to enter the Metropolitan system, especially since the Penge main sewer already crossed the land concerned in order to reach Lewisham! Yet Beckenham would not form the SDD until Lewisham had

⁷¹ K. Young and P. Garside, *Metropolitan London: politics and urban change, 1837-1981* (London, 1982), 15

⁷² J. Davis, ‘London government 1850-1920: the Metropolitan Board of Works and the London County Council’, *London Journal*, 26:1 (2001), 51

obtained provisional consent from the MBW, while Lewisham would not approach the MBW until the SDD had been formed. The legal stalemate was only resolved by Act of Parliament, the Beckenham Sewerage Act receiving Royal Assent on 5 August 1873.⁷³

The role in execution: illustrations from ‘Outer London’

A small sample of inspectorial activities over the period 1865 to 1875 is presented in chronological order in the following pages, giving coverage of most of the principal tasks, a broad geographical spread, and the work of five different inspectors. While the sample is biased by the exclusion of straightforward and non-controversial examples, the selection is designed to illuminate fundamental and recurrent issues. At the other extreme, the study excludes extra-ordinary tasks such as the extensive and complex inquiries conducted by Ponsonby Cox and John Thornhill Harrison in connection with the formation, continuation and eventual extinction of the Lower Thames Valley Main Sewerage Board.⁷⁴

- (i) Attempts to gain an acceptable sewage outfall: Silvertown and West Ham (1865-71)

In November 1865 a memorial was submitted to the Home Secretary by the inhabitants of Silvertown complaining that, despite levying rates on local occupiers, West Ham Local Board had provided no proper drainage in the district, such that dwellings and factories drained into old open marsh ditches that could only empty to the Thames at low tide. These ditches were described as ‘very impure and deleterious

⁷³ MH13/37, 14/7/1870; MH12/4863, 11/10/1871 to 6/1/1873; 36&37 Vict. c. ccxviii

⁷⁴ J.A. Clifford, ‘The quest to divert sewage from the river in the Lower Thames Valley, 1858-1891’ (unpublished B.A. dissertation, University of Surrey, 2006)

and injurious to health', one of them, nearly a mile long, containing water 'as black as ink' and solid deposits of which 30%, according to the renowned Dr Lethaby, was decomposing organic matter giving off hydrogen sulphide and marsh gas (methane).⁷⁵

Silvertown had developed along the north shore of the Thames in the 1850s on the strip of land between the Victoria Dock (1855) and the river. Much of it lay below high-water mark and the community was isolated from the remainder of the parish of West Ham by the huge enclosed dock. The local board, on the strength of its rapidly growing rateable value, had already borrowed nearly £120,000 for sanitary purposes by the end of 1864, and its investment included considerable lengths of so-called 'unproductive sewer' to connect the widely spaced urban concentrations of Forest Gate, Stratford, West Ham and Plaistow to the temporary outfall in the tidal part of the Lea at Canning Town. This largesse had not, however, extended to Silvertown.

Almost immediately the local board applied to the LGAO for sanction to borrow £5,000 to address the problem. Since the application was unopposed and the territory well-known to the inspectorate – Rawlinson had, until 1860, been West Ham's consulting engineer and had designed its system of main sewerage - Robert Morgan produced a report that was brief, even by his standards, stating that the plans and estimate were satisfactory and recommending approval of the loan. The alacrity with which these formalities were completed belied the true nature of the situation which lay in Morgan's *obiter scripta*. He noted that, due to its isolation, the scheme required a separate outfall into the Thames. This would be subject to approval by the Thames Conservators and might necessitate collaboration with the MBW. Such obstacles

⁷⁵ MH13/202, 13/11/1865

being far from a formality, the sanction could be regarded as no more than provisional.⁷⁶

These concerns were well justified. The local board tried to procure satisfactory sewage outfalls, but failed to persuade the Commissioners of the Havering and Dagenham Levels, responsible for the marshes and waterways of south-west Essex, in relation to Silvertown, and similarly were unable to divert the majority of the district's sewage from Canning Town to the MBW's Northern Outfall Sewer, despite that fact that, since 1864, it had crossed the parish in order to reach its destination at Beckton.

In July 1867, under renewed pressure from the Silvertown residents, the local board sought an interview with the Home Secretary. Rawlinson, then on duty with the Rivers Pollution Commission, replied that, while he agreed that the best solution for West Ham would be to enter the MBW Northern Outfall, the achievement of that outcome was a matter for the two boards concerned. He observed that the Thames Conservancy would prevent any direct outfall into the Thames, that the use of nearby marshland for sewage irrigation was impracticable, so quickly was land between the Lea and the Roding being acquired for building, and that an independent outlet further afield would be ruled out on grounds of cost. 'How the Secretary of State is to interfere, I cannot see', he continued, putting West Ham's situation in the context of outfall problems being experienced by Tottenham and the rest of the Lea Valley, and by Kingston, Richmond and their environs. All required some form of collaborative solution, yet he could only echo the opinion given by the Rivers Pollution Commission, when consulted in relation to Kingston, that 'Government should not

⁷⁶ MH13/202, 14/11/1865 to 24/11/1865; Rawlinson, *West Ham*, 9-10

promise to do more than it would do for any other district or town situate on any other river in Great Britain.’⁷⁷

Despite a petition in November 1867 from the inhabitants of Silvertown for the Secretary of State to institute proceedings under Section 49, it was not until the autumn of 1869 that the local board used the £5,000 loan sanction obtained four years (and three Home Secretaries) earlier, and even then without resolving the outfall problem. An attempt to secure land at Little Ilford at an acceptable price for sewage irrigation failed in March 1871, ending the possibility of independent action. Two months later, Rawlinson recommended approval of a further loan sanction for £8,000 to enable the Local Board to install settling and clarification tanks at their Canning Town outfall works. This was merely an expedient, providing the board with a defence against charges of contravening the Lea Conservancy Act 1868 whilst it waited for the opportunity to utilize its sewage in partnership with either the MBW or the Metropolis Sewage & Essex Reclamation Co.⁷⁸ Five years later, West Ham Local Board were still lobbying government (by now, the LGB) to help them gain access to the MBW system, quoting the precedents of Hornsey, South Hornsey and Beckenham.⁷⁹

In 1889, Rawlinson, in his eightieth year though with less than two years of retirement behind him, gave a paper at the Society of Arts. In the discussion, he and other surviving protagonists of the sanitary revolution played out their battles for the last time; even Chadwick, ten years his senior, was there! Rawlinson could assault the MBW with impunity, its crumbling reputation having led to its accelerated

⁷⁷ MH13/202, 1/10/1866 to 12/8/1867

⁷⁸ MH13/202, 6/11/1867 to 24/5/1871

⁷⁹ MH12/3781, 12/10/1874

replacement by the London County Council. He regretted how the MBW had spoiled its great work of main drainage through appalling decisions about outfall and sewage treatment, and he made a telling point regarding the suburban area where he had worked as the consulting engineer nearly forty years earlier:

London ‘over the border’,⁸⁰ which now ... , if standing separate, would be a third-rate town of great importance, ought not any longer to be treated by the Metropolis as an outcast foundling. West Ham, Silvertown, Barking and the adjacent populations, can well afford to pay their equitable share of municipal rating, if they receive in future the consideration which was denied them in the past by the old Metropolitan Board.⁸¹

(ii) Arnold Taylor draws a line in the sand: Croydon (1868)

Croydon had been one of the first places south of the Thames to be connected to London by railway (1837) and in 1849 it was also one of the first places in the country to establish a local board of health.⁸² By 1859 it ‘could claim to be a model town because it had succeeded in reducing its mortality rate despite the efforts of economising ratepayers, litigious millowners, and a grievous [typhoid] epidemic.’⁸³ The cumulative investment of the local board in loan-financed works exceeded £190,000 by 1868. Such was the workload created for the LGAO by the growth in Croydon’s population and built environment that Austin, Rawlinson, Morgan and Arnold Taylor had all been involved in inquiries there since 1858. Taylor had gained close familiarity with the waterworks, the Beddington sewage farm, and the local politics of sewerage Croydon’s burgeoning suburbs, and the next application

⁸⁰ The border in question being that at the River Lea between the Metropolis (from 1889 the County of London) and Essex

⁸¹ R. Rawlinson, ‘London sewerage and sewage’, *Journal of Society of Arts*, 38 (1889-90), 67

⁸² R.C.W. Cox, ‘The old centre of Croydon: Victorian decay and redevelopment’, in A. Everitt (ed.), *Perspectives in English urban history* (London, 1973), 186; B. Lancaster, ‘The ‘Croydon case’: Chadwick’s model town under siege’, *The Local Historian*, 34:1 (2004), 18

⁸³ Lancaster, ‘The “Croydon case”’, 26

requesting sanction to borrow £20,000 on security of the rates was directed to him. A memorial had already been received from the Croydon Ratepayers' Protection Association (CRPA) expressing concern at the extent of recent borrowing and asking that no more sanctions should be given without formal inquiry. There was no denying that the equally rapid increase in Croydon's Rateable Value (from £82,000 at end-1857 to £215,500 at the end-1867) had allowed the value of outstanding debt (now £172,000) to be held below 'one year's assessable value', the limit to the powers of sanction delegated by Parliament to the Home Secretary. However the CRPA felt strongly that this borrowing headroom had led the local board to incur expenditure too freely, with inadequate controls over specifications, estimates and contract supervision. Arnold Taylor had some sympathy with this view and obtained direction to inquire not only into the specifics of this application but also into the general financial position of the local board.

His report on the inquiry drew attention to the fact that, while the application included £4,500 to fund cost overruns on previous projects, this by no means represented the total of such variances, earlier sanctions having been granted to cover estimating errors in relation to public baths, a water tower, engines and an engine-house. Taylor was at pains not 'to infer that the Local Board have spent their money on unproductive and unnecessary work' but, in order to impose some discipline on Croydon's management of capital expenditure, he recommended that sanction should be conditional on the closure of all project accounts for which plans and estimates had hitherto been produced to the LGAO. Tom Taylor endorsed the recommendation and Gathorne Hardy, the Home Secretary, signed off the sanction on this basis, recording his horror at Croydon's rate poundage of 3s 8d.

On being advised of the decision, the local board accepted the ruling-off of the long-standing capital accounts, but attempted to negotiate some flexibility with respect to current schemes, such as the Norwood outfall sewer, where the board would be at the mercy of the tendering process. Angry and exasperated, Arnold persuaded his brother to insist on the local board's unqualified acceptance of the Secretary of State's terms. The clerk finally produced an acceptable form of words and the sanction was issued. Tom Taylor recorded that 'this was an important case' in which the inspectorate showed that constructive dialogue with sanitary authorities was not to be mistaken for a cosy relationship, nor were loan sanctions to be treated as formalities, even in districts like Croydon with proud records of achievement.⁸⁴

Given the profile of this 1868 inquiry which, unlike much of the LGAO's work, clearly attracted the Home Secretary's personal attention, Bellamy's findings that there was 'little effective regulation of capital accounting until 1875' are surprising, the more so as John Lambert's issue of *Instructions to Engineering Inspectors*, requiring them to take account of scheme durability and total debt structure in recommending loan sanctions, was dated March 1873.⁸⁵

A postscript to this case involves Arnold's second rejection in September 1870 of a bid to borrow £500 for an additional pumping engine for the waterworks, eliciting a furious response from some local board members. However, a leading article in the *Croydon Chronicle* showed that the Taylors stood high in the estimation of some

⁸⁴ MH13/57, 27/2/1868 to 17/6/1868

⁸⁵ Bellamy, *Administering central-local relations*, 81

sections of local opinion and gives the lie to the notion that inspectors were ‘anonymous and humdrum’⁸⁶:

[The Local Board of Health] keep on applying to Mr TOM TAYLOR for money to lay out on water-works, when that gentleman, or his brother, has told them repeatedly that they have already considerably encroached on their borrowing powers, and consequently ought to retrench. The ratepayers of Croydon should purchase a bust of Mr TOM TAYLOR to place on the top of the Town Hall, as the angel who sits up aloft to keep watch over poor little JACK.⁸⁷

(iii) Compulsory purchase denied: Kingston (1869-1870)

The episode in March 1869, during which Rawlinson had invited Miss Nightingale’s pity, concerned the application by Kingston Corporation for a PO to purchase land compulsorily at nearby Ham Fields for sewage irrigation. Kingston, in common with most of the riparian local authorities in the Thames valley, had been served with a notice under the Thames Conservancy Act 1867 to cease polluting the river, and urgently required an alternative outfall for their extensive network of sewers and rapidly growing population. Land for irrigation was unavailable within the borough’s boundaries, but the 1867 Sewage Utilization Act had legalised the export of sewage, subject to the usual arrangements for public inquiry. The land at Ham was superficially attractive. The neighbourhood was not heavily populated, the soil was alleged to be suitable for irrigation, and it lay just beyond the borough boundary. Disadvantages included its encumbrance with Lammas rights, the opposition of powerful landowners and other influential local residents, including the trustees of the Earl of Dysart, George Gilbert Scott and the Duc de Chartres, and opposing

⁸⁶ Lambert, ‘Central and local relations’, 122, and see page 42 *infra*

⁸⁷ *Croydon Chronicle*, 1/10/1870

memorials from the adjacent local boards of Ham Common, Twickenham and Teddington, and even from a ratepayer pressure group in Kingston itself.

At the inquiry, the inspector received conflicting evidence as to the value of the land, ranging from the Corporation's agricultural estimate of £166 per acre to 'building land' values ranging from £500 to £1,200 per acre. His own experience told him that, under arbitration for a forced sale, the Corporation would have to pay 'building land' prices, given the rate at which villas were being built in neighbouring Thameside localities. Even at £500 an acre, the cost of the land and the essential works would produce a project cost of £106,500 before buying out the Lammas rights. The loan required would far exceed one year's assessable value of the borough, and accordingly, even if recommended, would require to be ratified by Parliament.

Rawlinson was particularly impressed by the arguments regarding loss of amenity. It was represented that Ham Fields abutted the towpath 'on one of the most frequented parts of the River Thames', that they were crossed by five footpaths, and that, notwithstanding the medical evidence from Croydon that proximity to sewage farming was not injurious to health, 'the operation of sewage-irrigation would not be conducive to the comfort or to the pleasure of the public traversing the towing-path and the footwalks, or of the local residents.'

Faced with the combined effect of the price, the loss of amenity, and the degree of opposition, Rawlinson sent a message to Whitehall to check that H.A. Bruce, the Home Secretary, would be content for him to call a halt to the inquiry forthwith, saving the parties substantial time and legal fees, as he had already made up his mind

to recommend dismissal of the petition. Bruce agreed without hesitation and Rawlinson notified the opponents and the Corporation that the proceedings were at an end. He also wrote an emollient private letter to a very angry Walter Wilkinson, the Kingston Town Clerk, stressing that his presentation of the case was not in any way at fault, but that the Corporation should never have been advised to choose that site.

Kingston would not let the matter drop, spending nearly a year in trying to obtain the text of the inspector's report, eventually enlisting one of the Surrey county MPs to secure a copy. In January 1870 Kingston declared the report a 'misrepresentation of the evidence.' Rawlinson produced a beautifully crafted report for Bruce, standing by his recommendation, dealing with the Corporation's nit-picking criticism, and exposing contradictions between Wilkinson's evidence and earlier statements made to the Rivers Pollution Commission in 1865, retribution for the Town Clerk's refusal of the olive branch. Rawlinson stressed that, had he recommended the compulsory purchase, and had the Home Secretary granted the PO, the opposition forces would have ensured the destruction of the Confirmation Bill in the Select Committee. This would not only have been a bad outcome for the councillors and ratepayers of Kingston; the defeat of any PO Confirmation Bill represented a political and administrative embarrassment for the sponsoring department and a practical disaster for the beneficiaries of any other POs bundled in the same Bill.⁸⁸

⁸⁸ MH13/105, 8/3/1869 to 29/3/1869, and HO45/8429, 28/1/1870 to 18/2/1870; Kingston Archives: KB5/6/11, 14/4/1869 to 5/1/1870

(iv) Loan sanction denied: Richmond (1871)

The Select Vestry of the parish of Richmond exercised powers of town government and rating under a local Act of Parliament.⁸⁹ It had also been served with a notice by the Thames Conservators, requiring it to prevent its sewage from entering the river no later than October 1870. Richmond had been frustrated in its search for a site for sewage irrigation within the parish boundaries, partly because of the presence of a very high proportion of Crown land and partly because of rapid housing development on the remainder. The vestry asked the LGAO for special consideration, whereupon Rawlinson drafted a totally unsympathetic minute for Tom Taylor to the effect that:

The questions of river pollution prevention and of the disposal of sewage cannot be answered in the case of ... Richmond in this office. The Conservators ... have power to give notice that, after a date fixed in such notice, pollution of the river by sewage must cease. The mode and means rest with the parish authorities. The Home Secretary, on appeal, may order a local inquiry and ...can prolong the time ... It will be open to the parish either to remove the solids of sewage and clarify the water, as at Luton, or to clarify the sewage by irrigation as at Croydon and other places. The general question of preventing river pollutions rests with Parliament which, I presume, waits for the completion of the Rivers Pollution Commissioners' report and final recommendations, and the Bill to be prepared on the subject by the Home Office.⁹⁰

Richmond failed to meet the Conservators' deadline and their desperation led them in January 1871 to apply for a loan sanction of £30,000 to finance an agreed purchase of a farm for sewage irrigation six miles from Richmond at Blagdon Lodge near New Malden. Opposition to the scheme was strong: from the MBW, because it might contaminate the Beverley Brook, a tributary of the Thames that, in its lower reaches, formed the boundary of its jurisdiction; from the Duke of Cambridge, a major local

⁸⁹ 25 Geo. III, c. xli

⁹⁰ MH13/234, 11/8/1870

landowner, concerned at exacerbation of existing flood problems; from other neighbouring owners, some of whom had laid out thousands of pounds on roads in preparation for building; from New Malden Local Board who feared that the suburb's rising property values, boosted by access to fifty-five trains per day, would be prejudiced; and from Kingston Corporation who considered that, if the land was good for the purpose, then by virtue of its location it might be more suitable for them. It was even opposed by a number of Richmond ratepayers on grounds of cost and efficacy, since the sewage would need to be pumped a considerable distance and the stiff clay soil of the farm was alleged not to be ideal for irrigation.

In recommending that the Home Secretary refuse the application, the inspector, John Thornhill Harrison, stated that his principal grounds were that the site was surrounded by land either already built on or laid out for building, that the developers had made contributions to the London & South-Western Railway to build a station, and that a sewage farm would have a negative impact on property values. He was also critical of Richmond's attitude that, in planning to reduce the flood risk on the proposed site by clearing obstructions in the Beverley Brook and deepening its channel, they were unconcerned about the consequential likelihood of worse flooding downstream. 'This view of the subject,' Harrison reported,

makes it, I think, the more incumbent upon the Home Secretary to protect the owners of property who may be seriously injured and left without redress except by means of an expensive and doubtful lawsuit.

Furthermore, whilst Richmond's sewage disposal problems were notorious, 'before they proposed to form a sewage farm in the midst of a growing population', the Vestry should have made a serious attempt to take advantage of the extraordinary

powers of compulsory purchase granted by Parliament to the Thames Purification Company in 1866.⁹¹

(v) Settlement of boundaries: Heston, Isleworth & Hounslow (1874-5)

All aspects of the task of boundary settlement could be seen at work in Heston and Isleworth, adjacent ancient parishes in West Middlesex, each of which harboured about half of the busy town of Hounslow, a place with an ecclesiastical vestry but no independent local government. The inhabitants of Hounslow had petitioned as long ago as 1862 for the settlement of its boundaries, its population then numbering about 6,750. Rawlinson conducted the inquiry and found that there was no public sewerage and ‘many nuisances such as cesspools, foul privies, and foul open ditches bordering public highways.’ Judging that the proposed boundaries were ‘proper and convenient’, he recommended them as a basis for adopting the LGA which, he said, ‘would be most useful if properly carried out.’⁹²

The Hounslow sanitarian activists did not, however, achieve adoption of the Act during the 1860s. With the passing of the PHA 1872, both parishes, having failed to claim urban status, were by default governed by the Brentford Board of Guardians as RSA. The entire area stumbled on until 1874, by which time the RSA, served with an enforcement notice by the Thames Conservators requiring it not to pollute the river, decided that the task of combating nuisances in an area of fast-growing population was beyond its competence. It petitioned the LGB to declare each of Heston and Isleworth parishes a USD, such that responsibility for the inevitable expenditure on

⁹¹ MH13/234, 13/2/1871 to 6/3/1871

⁹² MH13/218, 10/7/1862 to 6/8/1862

sewerage and the resultant rate increases could be shouldered locally. Major Tulloch, with knowledge of the locality, was instructed to take the inquiry. In the event, three separate inquiries proved necessary. At the first, although there was no opposition to the parishes being brought within the scope of urban government, there was much dissension over the detailed arrangements. Some parties pushed for a single USD rather than the two signified in the convening notice, partly in order to avoid the fragmentation of Hounslow and partly because Heston and Hounslow inescapably drained to the Thames by way of riparian Isleworth. Others urged that such an arrangement would be detrimental to Heston parish unless it had equality of voting with the more populous Isleworth. Tulloch was persuaded of the demerits of a two-district solution and recommended a second inquiry to consider the formation of a single USD. On this occasion, opposition to the principle of a single district subsided once the issues had been fully aired, but a third inquiry was indicated since, as Tulloch put it in his report: ‘a general feeling seems to prevail that, unless the different parts of the district are separately represented, the interests of the place which happens to be in a minority on the board will be sacrificed to those of the other places.’⁹³

Fresh notices were posted for a further inquiry to consider the division of the district into wards in accordance with the Sanitary Law Amendment Act 1874. Tulloch favoured the smallest number of wards that would be politically acceptable whilst creating no new boundaries, viz. (i) the ecclesiastical parish of Hounslow, (ii) the residue of the parish of Heston, and (iii) the residue of the parish of Isleworth. As to ward representation, opinion at the inquiry was divided between those would

⁹³ MH12/6912, 14/10/1874 to MH12/6913, 6/3/1875

determine it on the basis of population, on Annual Rateable Value, and on the acreage of the wards. In his report Tulloch discounted land area as being adequately reflected in ARV, then constructed a formula to take account of population and rateable value, producing 7 members for Isleworth, 6 for Hounslow and 5 for Heston, the Board membership reflected in the PO finally issued in June 1875.⁹⁴

Thematic discussion

- (i) The Engineering Inspectorate: an active or passive institution?

Lambert, in his unsurpassed 1962 article in *Victorian Studies*, not only rescues the LGAO from historical oblivion, but demonstrates its extraordinary achievements in spite of explicit parliamentary disapproval and the convictions of most of its own staff. Yet his comparisons of the LGAO team with John Simon and his lieutenants do the former less than justice. It is hard to believe that anyone as familiar with the public records in MH13 as was Lambert could state that ‘the LGAO seems at first sight anonymous and humdrum, lacking in outstanding personalities and in constructive achievement’, or complain of the ‘fundamental lack of purpose, ambition, and imagination which characterised the LGAO.’⁹⁵ Despite describing Tom Taylor’s publication on the LGA 1858 as the ‘best analysis of the Act’, Lambert describes Taylor as ‘the genial Secretary, preoccupied with outside literary and dramatic activities, often indecisive and slovenly in routine, lacking the single-minded missionary fervour of a Chadwick or a Simon.’⁹⁶ There is no more evidence that his extra-mural activities adversely affected the LGAO’s work than that John Lambert’s

⁹⁴ MH12/6913, 10/3/1875 to 5/6/1875

⁹⁵ Lambert, ‘Central and local relations’, 122, 133

⁹⁶ Lambert, ‘Central and local relations’, 122 n. 5, 127

interest and expertise in early church music was to be a handicap in the efficient running of the LGB. It is true that his annual reports to Parliament were perfunctory digests of the office's ever-increasing activity, contrasting strongly with the evangelistic character of Simon's reports. Do not these comparisons, however, reflect their relative positions under the statutes? The LGAO was designed to be reactive and regulatory whereas the Medical Department had secured the right to take initiatives and the obligation to report on them, and Simon, as even Chadwick admitted, was a very good report-writer.⁹⁷

Bellamy, admittedly generalising about the LGB as a whole, alleges that its resources were devoted to 'ensuring effective local stewardship, ... certification of returns, and the checking of forms for local compliance with statutory and departmental regulations.' With no focus on 'service review', she sees no feedback informing the development of central policy.⁹⁸ It is true that after 1871 the engineering inspectors had to adopt more prescriptive office systems and to work through the Secretariat, yet the information required of local authorities in preparation for an engineering inquiry bore directly on the issue at hand, whether it was a loan sanction, compulsory purchase or boundary alteration. Bellamy accepts that LGB policy emerged largely through case work.⁹⁹ Every instance of 'inquiry and report' from August 1871 underwent review by John Lambert before a decision was signed off by the President of the LGB or his Parliamentary Secretary, providing a huge store of field information, both factual and attitudinal, to inform policy development.

⁹⁷ Lambert, *Simon*, 272-273, 297

⁹⁸ Bellamy, *Administering central-local relations*, 14

⁹⁹ Bellamy, *Administering central-local relations*, 137

Bartrip's findings, that the importance of inspection had been exaggerated by historians and that the impact of inspectors on government policy has been limited, were in the main based on his detailed research into the inspectorates of factories and mines. As he acknowledged, 'inspectorates differed in terms of purposes, powers, duties, organization, status, qualifications, titles, jurisdictions and remuneration.' The balance of the Engineering Inspectorate's activities differed markedly (in being a gateway to financial credit and delegated powers) from the compliance and enforcement role of most of the bodies in Bartrip's classification.¹⁰⁰

(ii) Changing perceptions and practice of the Inspectorate's role

In 1862, Croydon Local Board recognised the necessity of extending to the rapidly growing population of Norwood the sanitary facilities long enjoyed by the inhabitants of Croydon town. In applying for the necessary loan sanction, it asked that the LGAO inspector should adjudicate between two alternative schemes, one at £8,000, the other £18,000. Tom Taylor referred the request to Rawlinson who, before arranging the inquiry, recorded that the Local Board:

sought to make the inspector umpire in a question involving a sum of £10,000. If the larger sum is only for an extension of the smaller estimate, there need not be much difficulty in deciding in this case, but if the plans vary materially, the Local Board ought to be advised to mature and define a plan before any sanction is granted.

He went on to conduct the inquiry with the choice unresolved, recommending sanction of the lower figure on account of vocal opposition from Norwood ratepayers

¹⁰⁰ P.W.J. Bartrip, 'British government inspection, 1832-75', *The Historical Journal*, 25:3 (1982), 605-607

to any expenditure beyond the immediately essential. One can be sure that, in later years, Rawlinson would have dismissed such an imprecise application out of hand.¹⁰¹

The hardening of Rawlinson's attitudes was already apparent from his evidence to the Royal Sanitary Commission in 1869 that he had vowed:

that nothing should force me to attempt to compel a community to do what was even for their own benefit ... If persons are unwilling to receive you, you must shake the dust from your boots and go somewhere else where they will. My whole life's experience goes to this, that you cannot compel unwilling men.¹⁰²

Moving forward to 1874, Croydon RSA, faced with divided opinion within the authority on the merits of Joseph Bazalgette's scheme for the Wandle Valley settlements of Merton, Morden, Mitcham & Wallington, applied for the help of an LGB inspector. They received the following stonewall response from Rawlinson:

This Board cannot undertake to devise works of sewerage. There are engineers of eminence who are capable of examining the district and the plans and estimate submitted by Sir J Bazalgette, and of advising the Local Authority. Application to one of these gentlemen is therefore recommended. This Board cannot however undertake to name any special persons.¹⁰³

Contrast this with Rawlinson's letter to Tom Taylor three years earlier when the inspectorate was sinking under a 60 week backlog of work. Here, in describing the realities of the role, he drew attention to the fact that the inspector 'assists the local surveyor most materially by advising him as to works, and acting for the time as consulting engineer to the local board, though of course gratuitously.'¹⁰⁴

¹⁰¹ MH13/57, 30/9/1862 to 6/11/1862; *Croydon Chronicle*, 25/10/1862

¹⁰² PP 1868-69 [4218], Q.702 quoted in Bellamy, *Administering central-local relations*, 117

¹⁰³ MH12/12180, 3/6/1874

¹⁰⁴ MH13/250, 22/2/1871

‘The tutelary role to which its [the LGB’s] officers aspired’, writes Bellamy, ‘could be pursued only as a by-product of and was limited by its formal statutory duties.’ She ascribes this aspiration to ‘the unquestioned assumption in the central administrative elite that it was intellectually and empirically more developed than those who ran the localities.’¹⁰⁵ One can imagine that this might be the stock position of the LGB’s general inspectors, but for the Engineering Inspectorate, dealing often with the most eminent engineers of the day as consulting engineers to the local authorities, the advantages lay, not mainly in their technical prowess, but in their capacity to bring together, from wide experience, knowledge of sanitary law, the public finance rules, the current state of engineering, and a broadly neutral stance on the politics of a situation.¹⁰⁶ Of course, the inspectors shared the tutelary aspiration to different degrees, with Arnold Taylor sometimes overstepping the mark, not only in his informal advice, but even in making formal recommendations that turned out to be unlawful. But, as one authority commented in a study of civil service neutrality in the nineteenth century: ‘What do the technicalities of political responsibility matter, if the people perish? ... We do well to be thankful to some of these men for their improprieties.’¹⁰⁷

(iii) Obstacles to sanitary development: socio-economic, scientific and technical

In characterising the attitudes of the LGAO’s ‘clients’, Lambert finds them to be shaped by ‘certain common attributes: ignorance of sanitary science, confusion about

¹⁰⁵ Bellamy, *Administering central-local relations*, 134, 273

¹⁰⁶ Lambert, ‘Central and local relations’, 150

¹⁰⁷ G. Kitson Clark, ‘Statesmen in disguise: reflections on the history of the neutrality of the civil service’, *Historical Journal*, 2(1) (1959), 38

sanitary law, and the “terrible dread of the expense”¹⁰⁸ of sanitary improvement.’¹⁰⁹

MacDonagh concurs that ‘perhaps the most powerful and persistent of middle class demands was that for financial economy.’¹¹⁰

Cox generalises from correspondence in the Conservative *Croydon Guardian* that the wealthy commuter living in Upper Norwood and other select parts of the parish ‘saw Croydon as a sort of sylvan retreat; not only was he unenthusiastic about having to pay additional rates to benefit those who remained in the place all day, but he was positively against any destruction of what he saw as the town’s quaint charm.’¹¹¹

Hennock drew attention to the problems of what he called the ‘narrow financial foundation’ of the local authorities in newly-established urban areas, their rate income being wholly related to real property and only reflecting Britain’s increasing commercial wealth in a very indirect and often unfair fashion. He attributed the failure of responsible bodies to commit to sanitary action and their frequent retraction from decided policies to the recalcitrance (and sometimes the instability) of ratepayer opinion.¹¹² Wohl contrasts the coherent interest groups such as ratepayers’ associations with ‘the often poorly organized party politics of local government.’¹¹³ Bellamy would have us discard ‘the notion of a unitary or transcendent “community”’ in favour of ‘a structure of interests defined by relations to its real or immovable property’ in which ‘the local authority was not perceived to occupy a neutral place.’¹¹⁴

¹⁰⁸ MH13/223, 30 April 1870, Clegg of Epping to Home Secretary

¹⁰⁹ Lambert, ‘Central and local relations’, 145

¹¹⁰ MacDonagh, *Early Victorian government*, 17

¹¹¹ Cox, ‘The old centre of Croydon’, 200-201

¹¹² E.P. Hennock, ‘Finance and politics in urban local government in England, 1835-1900’, *The Historical Journal*, 6 (1963), 214-215

¹¹³ Wohl, *Endangered lives*, 171

¹¹⁴ Bellamy, *Administering central-local relations*, 12

With the annual real rate of increase in local government expenditure running at about twice that of central government expenditure, Daunton quotes a calculation by P.K. O'Brien that local rates moved from representing 14% of total taxation in the 1820s to 34 % in 1910. Without significant redistribution from other tax bases by way of grants, local government expenditure was approaching a ceiling by the late nineteenth century.¹¹⁵

On the scientific and technical front, Wohl observes that 'in 1874 alone some thirty-two patents were taken out for sewage treatment systems, and how was a local authority to know which was the best?'¹¹⁶ At every turn, Burn notes, 'there had to be trial and error in the technological as well as in the administrative field; and, embarrassingly, these two processes had to go on at the same time.' As a result, 'new problems were constantly being added to the back-log of half-solved problems.'¹¹⁷

Hamlin, however, credits the localities with more sanitary activism than he finds recognized in the Whitehall-centric studies published in the twenty-five years following MacDonagh's 1958 reappraisal of the revolution in government.¹¹⁸ In cautioning us to reconsider our own cultural expectation of what the mid-nineteenth century local authority should have achieved, each in its unique circumstance, he argues that:

large-scale sanitary reforms were more difficult to bring about than has generally been believed, and that what was recognized by officials of central government as

¹¹⁵ Daunton, *Trusting Leviathan*, 258-259

¹¹⁶ Wohl, *Endangered lives*, 104

¹¹⁷ Burn, *The age of equipoise*, 137, 138

¹¹⁸ Hamlin, 'Muddling in Bumbledom', 56

resistance to progress was often bewilderment and frustration with technical and legal complexities and fear of taking a wrong step.¹¹⁹

(iv) Political philosophy

MacDonagh warns us to be ‘very circumspect indeed in deciding that Benthamism was the operative force in any particular instance’ of administrative reform, and that ‘the genuine contribution of Benthamism to modern government must be measured in terms of the particular actions of particular individuals.’¹²⁰ Tom Taylor, in his rhetoric before the passing of the 1858 LGA, displays not a shred of Benthamism:

I maintain that the central action may most beneficially be called in aid of local self-government when the latter is most animated by a patriotic and unselfish spirit. It may, and should, act as an ally of real local self-government against spurious local self-government.¹²¹

He was soon to know the reality, that once ‘interference’ had been invited through adoption of the Act, it would turn into ‘a clamour for expert guidance.’¹²² The proposition that ‘administration may be, so to speak, creative and self-generating’ was still a fresh perception when Lambert, writing of the LGAO, averred that:

The very dynamics of this tiny fragment of government reveal, on a miniature scale but with a distinctiveness seldom matched elsewhere, certain powerful forces which operated to expand the growth of the state.¹²³

Where MacDonagh postulates that ‘throughout and even before the Victorian years ‘intolerability’ was the master card’, Kitson Clark qualifies this with the observation

¹¹⁹ Hamlin, ‘Muddling in Bumbledom’, 60. 79-83

¹²⁰ O. MacDonagh, ‘The nineteenth-century revolution in government: a reappraisal’, *Historical Journal*, 1(1) (1958), 65-66

¹²¹ Taylor, ‘Central and local action’, 477

¹²² Lambert, *Simon*, 437

¹²³ MacDonagh, ‘Revolution in government’, 53; Lambert, ‘Central and local relations’, 122

that 'it was a wayward power, a wind which could blow up to gale force, and, when still desperately needed, drop off or give place to cross or contrary breezes.'¹²⁴

Hamlin is again sceptical, finding the need for a more direct trigger before remedial action follows 'intolerability', such as an injunction at common law to discontinue a nuisance, though the records show that injunctions rarely helped a locality and its leaders to find an effective and affordable solution, or conferred any significant political leverage.¹²⁵

Rawlinson's creed, despite his work for the GBH in its early years and his friendship with Miss Nightingale, can be readily distinguished from that of Chadwick in two respects. On the one hand he was quite prepared to allow a locality to choose to remain in its state of 'filth', such that Lambert criticises him for failing to 'use his great prestige to urge more dynamic policies upon his colleagues and superiors.'¹²⁶

On the other hand he exhibited strong views that the purity of rivers should transcend other interests and was dismissive of Chadwick's obsession with the supposed profitable agricultural use of sewage.¹²⁷ His 1869 report on the Barking Outfall noted that the MBW had 'fettered themselves throughout to striving to obtain what they consider the full value of the sewage, when this ought to have been a secondary consideration, prevention of pollution of the Thames being the first consideration.'¹²⁸

Rawlinson's tenets match closely those which Bellamy attributes to John Stuart Mill,

¹²⁴ MacDonagh, 'Revolution in government', 58; Kitson Clark, 'Statesmen in disguise', 37

¹²⁵ Hamlin, 'Muddling in Bumbledom', 58 ff.; Daunton, *Trusting Leviathan*, 269

¹²⁶ Lambert, 'Central and local relations', 128

¹²⁷ Even in mid-century 'the cost of excrement removal was twice the potential value as manure.'
(Wohl, *Endangered lives*, 100)

¹²⁸ PP 1870 [C.7] quoted in F. Clifford, *A history of Private Bill legislation*, I, (1885-1887, reprinted 1968), 347; the MBW continued to try agricultural disposal until the 1880s, when farmers would not take the sludge free of charge (Cottrell, 'Resolving the sewage question', 93)

namely ‘that localities should be legally allowed to mismanage their own affairs, but the law should intervene to prevent the violation of the interests of others.’¹²⁹

(v) Professionalism and personal motivation

MacDonagh listed engineers among the ‘men who had distinguished themselves in other walks of life’ that became vital recruits to the public service in the face of new social problems.¹³⁰ He found them bound closely into a profession, even by 1850, confident that ‘no engineering or mechanical problem was ultimately irresolvable.’¹³¹ This attitude could account for Henry Austin’s astonishing statement to the 1857 conference of the National Association for the Promotion of Social Science that ‘practically the battle of town drainage is at an end. It is satisfactory to know that there is no longer a question of brick sewers versus pipes.’ A staunch Chadwickian, he had been at the heart of the debate over sewer design from the late 1840s onwards, and appeared unaware that the battle was moving from the first and second phases of Chadwick’s trinity of priorities, cleansing the house and the street, to the third, that of acceptable sewage outfall. Later in his paper Austin does acknowledge that ‘the very progress ... has led *temporarily*¹³² to an evil which at the present moment constitutes the most pressing difficulty. Our towns being relieved of their refuse, our rivers are polluted with it.’¹³³

¹²⁹ Bellamy, *Administering central-local relations*, 10, paraphrasing J.S. Mill, *Essay on representative government* (Oxford, 1912), 379

¹³⁰ MacDonagh, *Early Victorian government*, 200

¹³¹ MacDonagh, *Early Victorian government*, 3-4

¹³² My emphasis

¹³³ H. Austin, ‘On a few points in relation to the drainage of towns’, *Trans. Nat. Asscn. for the Promotion of Social Science*, 1 (1857), 423

When Thomas Sweet Escott, in his 1879 broad-brush survey of English society, came to consider the professions, he asserted that:

At the head of all the new professions must be placed that of the civil engineer. The calling is pre-eminently that created by the most distinctively characteristic achievements and aspirations of the age, while it opens up a vista of rich rewards to those who follow it with the success which special aptitude and industry command.¹³⁴

Eighty years later, Kitson Clark was scarcely less effusive, though he did provide more evidence for the importance of the government's use of professional engineers. In examining the challenges presented by post-1830 Britain, he counted civil engineers and the officers of the Royal Engineers among those who 'could be trusted to apply to any problem careful systematic observation and self-confident and rigorous argument working from relatively simple and superficial first principles', distinguishing them from their political masters as 'not confused by too profound or intrusive a philosophy.'¹³⁵ Buchanan also notes the profession's 'remarkable capacity for conformity with the prevailing political consensus.'¹³⁶

Burn, too, identifies the Corps of Royal Engineers as the heaven-sent solution to a number of manpower shortfalls at a time when civil servants were largely underpaid and ill-regarded. Their officers were especially useful in tackling roles that were new to the public service, from the Ordnance Survey to the supervision of the railways.¹³⁷

In addition to the recruitment of Major Hector Tulloch, Lieutenant-Colonel Ponsonby

¹³⁴ T.H.S. Escott, *England: its people, polity and pursuits* (London, 1881), 507-508

¹³⁵ Kitson Clark, 'Statesmen in disguise', 35-36

¹³⁶ R.A. Buchanan, 'Engineers and government in nineteenth-century Britain', in R.M. MacLeod (ed.), *Government and expertise: specialists, administrators, and professionals, 1860-1919* (Cambridge, 1988), 41

¹³⁷ Burn, *The age of equipoise*, 224; Buchanan, 'Engineers and government', 49-51; R.M. MacLeod, 'Introduction', in R.M. MacLeod (ed.), *Government and expertise: specialists, administrators, and professionals, 1860-1919* (Cambridge, 1988), 10

Cox and Captain Robert Hildyard to established posts during the period under consideration (and others were to follow in the 1880s and 1890s), the Engineering Inspectorate employed RE officers to cover sickness and absence.

To balance this technocratic perspective on professionalism, Bellamy identifies the heavy stress placed by the engineering inspectors themselves in their evidence to the RSC on ‘their exploitation of personal influence and empirical demonstration, reinforced by patterns of social deference and authority.’ She quotes Arnold Taylor as arguing that legal qualifications were an acceptable alternative to those of engineering (he was not a CE), but ‘above all the inspector must be a gentleman.’¹³⁸ The social aspirations of the new professions, according to Duman, were to be supported by ‘retaining the ideal of the gentleman while refurbishing it to conform with the expectations and requirements of modern society.’¹³⁹ The modern gentleman was, above all, to be ‘a disinterested man of integrity’¹⁴⁰ and the source of his moral authority was to be his commitment to public service.¹⁴¹

Bartrip demonstrates, in his study of the factory department of the Home Office, that not only should one discriminate between inspectorates, but also between inspectors in the same department.¹⁴² Burn had posited that government inspectors in general ‘did not interest themselves in certain things simply because they were servants of the State; rather, they were servants of the State because they were interested in those things, because they had formed opinions which an official position allowed them to

¹³⁸ PP 1868-69 [4218], Q.884 quoted in Bellamy, *Administering central-local relations*, 116

¹³⁹ D. Duman, ‘The creation and diffusion of a professional ideology in nineteenth-century England’, *Sociological Review*, 27 n.s. (1) (1979), 119-120

¹⁴⁰ Burn, *The age of equipoise*, 259

¹⁴¹ T. Carlyle, *Past and present* [1843] (Boston, 1965), 292 quoted in Duman, ‘Professional ideology’, 120

¹⁴² Bartrip, ‘British government inspection’, 621

translate into action.’¹⁴³ The handful of members of the Engineering Inspectorate that dominate the period of this study constitute an interesting set for the test of this hypothesis. Burn’s assertion must have been true for Robert Rawlinson at the outset, given the relatively advanced and eminent state of his career at that time, though he quickly rose above routine fieldwork, seemed to make no effort to attempt to use his senior administrative position to advantage, and confined his evangelism to his involvement in special investigations and evidence before Royal Commissions and Select Committees.

For Robert Morgan, on the other hand, inspection seems to have been a desirable job, free of some of the disagreeable crosswinds of private sector engineering practice, to be performed with punctilio, dignity and good organisation, but never with controversy or straying beyond his brief. He travelled the length and breadth of England and Wales for nineteen years until the strain of rail travel forced his early retirement at 61. His contribution to the major events in Outer London was modest, though he conducted one important inquiry at Bromley in 1874-5.

Burn’s thesis seems to be embodied in Arnold Taylor, whose zeal for urban improvement found expression through his fieldwork over nearly three decades between the ages of 40 and 70. His response to Brentwood’s protestations that it was a healthy place lends credence to Simon’s assertion of a distinction between sanitary engineering and public health. He (Taylor) insisted that the ‘obligation [to perform its duty] exists apart from the question of healthiness or the low death rate of a

¹⁴³ Burn, *The age of equipoise*, 223-224

district.’¹⁴⁴ Lambert describes Arnold as ‘the sole man in the Office who had any faith in central supervision. Of the first fifty inquiries under the [coercive] clauses, he conducted no less than thirty-nine, and his influence was decisive in converting a crude legislative gesture into a routine administrative device.’¹⁴⁵

Already in his mid-fifties when he joined the LGAO full-time, John Thornhill Harrison’s motivation clearly followed the Burn model. A pugnacious controversialist, he had crossed some of the big names of the profession in debate at the Institution of Civil Engineers as early as 1853.¹⁴⁶ Despite his embarrassing mishandling of an 1879 sewage irrigation inquiry at Hanwell, Harrison went on to replace Cox as the central figure in the series of major inquiries that punctuated the unhappy life of the Lower Thames Valley Main Sewerage Board.¹⁴⁷

Ponsonby Cox and Hector Tulloch represent contrasting versions of the retired RE officer. Cox was domineering and opinionated, disdainful of the social status of his colleagues, yet the ideal man to throw into the chaos that was the Lower Thames Valley in the period 1875-1877, while the latter was efficient, diplomatic and a problem-solver, as he showed when he got to grips with a swathe of adjacent authorities in south-west Middlesex (Chiswick, Brentford and Twickenham). In 1879 Cox resigned to take up an appointment in Bombay, whilst Tulloch went on to be Rawlinson’s successor as Chief Inspector.¹⁴⁸

¹⁴⁴ MH13/217, 16/8/1867, quoted in Gutchen, ‘Local improvements and centralization’, 94

¹⁴⁵ Lambert, ‘Central and local relations’, 139

¹⁴⁶ J.T. Harrison, ‘On the drainage of the district, south of the Thames’, *Minutes of Proceedings, ICE*, 13 (1853-54), 64-120

¹⁴⁷ Clifford, ‘Lower Thames Valley’, 24-26

¹⁴⁸ MH32/95, 5/7/1879

Conclusion

This study has amply demonstrated that, of the three options offered at the outset, none is valid as a generalisation covering the inspectorate at all times over two decades.

The fragile political position of the LGAO in the aftermath of the 1858 ‘revolution’ forced it to adopt a reactive profile in its early years, though it quickly became apparent that there would be no shortage of business. The award of explicit tutelary powers solely to the Medical Department left the LGAO with limited scope for initiative but, following the legislation of the mid-1860s, it could at least afford to abandon its invisibility. Moreover, because of its isolation as an appendage of the Home Office, it was able to operate with a degree of independence insofar as its minuscule resources allowed, as when the Taylors widened the scope of a Croydon loan sanction inquiry in order to investigate the entire capital account. Although the office could only initiate proceedings by using ingenuity and collusion, this independence enabled it to make recommendations to the Home Secretary without modification by a senior civil servant. This situation ceased abruptly with the formation of the LGB in 1871, at which point greater procedural discipline was imposed on the process of inquiry and report. Nonetheless, the inspectorate continued to receive appropriate backing from the LGB President and his Permanent Secretary.

The inspectors made a major contribution to moulding the pattern of urban local government in a period of growth and redistribution of population, and to the endorsement of specific plans for the siting, execution and financing of permanent sanitary works. These activities, as we have seen, met with intractable complications

when the vagaries of natural drainage brought them into contact with the governance system of the Metropolis and the conservancy bodies respectively of the Thames, the Lea, and the Essex marshlands.

The task of stopping a sanitary authority from doing something imprudent might be characterised as ‘policing’, though the relevant reports can sometimes be read as though the inspector is no more than an umpire weighing up the evidence of the opposing forces. Thus Rawlinson’s refusal of Kingston’s attempt at the compulsory purchase of Ham Fields and Harrison’s refusal of a loan sanction for Richmond’s agreed purchase of Blagdon Lodge could both be laid at the door of the weight of opposition, though it is clear in each case that the inspector held a personal view that the application was not in the public interest. It could be just as valid to see these refusals as ‘midwifery’, easing the applicants towards more appropriate solutions, even though these might not yet be apparent.

Any pejorative connotation inherent in ‘policing’ could hardly be deserved in relation to Arnold Taylor’s upbraiding of Croydon Local Board for sloppy management of its capital account, where he so presciently anticipated the framework that the LGB would enforce to keep the Treasury wolves at bay. The inspectorial involvement at West Ham/Silvertown and at Heston/Isleworth/Hounslow falls clearly into the category of attempted problem-solving, the ‘midwifery’ role, though the first of these shows the helplessness of the inspectorate, and even of the government minister, in the face of legal obstacles.

Whatever their predispositions of character, their professional backgrounds or their social origins, the inspectors were all afflicted by the limiting factor of extreme overwork. That this did not turn the entire team into ‘mere functionaries’ is remarkable in itself. The brevity of many of Morgan’s reports suggest that he might have come closest to that description, yet at his retirement on health grounds in 1882 there is a sense of warmth and regret in John Lambert’s letter accepting his resignation.¹⁴⁹ Overload certainly seems to have affected Rawlinson’s toleration of local ineptitude, to have depressed his expectations of what could be achieved, and to have produced in him a fatalistic attitude to the constraints of inadequate and ill-integrated laws.

However elusive the categorisation of the Engineering Inspectorate may be, it was incontestably the only knowledgeable link between the localities, of Outer London as of the remainder of England and Wales, and the central government on what Wimbledon Local Board described as ‘this subject which embraces the great difficulty of the day.’¹⁵⁰

¹⁴⁹ MH32/95, 22/4/1882

¹⁵⁰ MH13/206, 11/6/1868

Appendix

Engineering Inspectorate activities in Outer London 1858-78

Part A Local Government Act Office 1858-1871

	Boundary settlements	Adoptions of Act*	Loan sanctions		Petitions for POs		Section 49 inquiries
			Place	Amount £	Compulsory purchase	Other	
1858-59			Croydon	11,050			
1859-60			Enfield Romford	1,500 6,600			
1860-61	Ham		Croydon Harrow Romford Tottenham West Ham	7,200 1,100 800 2,050 30,000			
1861-62	Hounslow	Ham	Ham Tottenham West Ham	3,300 4,120 12,600	Croydon		
1862-63	Ealing Barnet	Ealing Hampton Wick	Croydon Enfield Tottenham Uxbridge West Ham	8,000 400 4,720 300 8,000	West Ham		
1863-64		Barnet	Croydon Ealing Tottenham West Ham	4,500 15,000 11,700 11,000			
1864-65	Sth Hornsey	Sth Hornsey	Croydon Ealing Tottenham	21,700 5,000 7,700			
1865-66	Highgate	Acton Wimbledon	Acton Croydon Enfield Romford Tottenham Uxbridge West Ham	26,324 36,200 5,000 2,500 1,675 600 5,000			
1866-67	New Malden	Bromley New Malden Teddington	Cranford Finchley Croydon Enfield Tottenham West Ham	1,500 1,600 53,180 1,200 4,050 4,500	Harrow	Acton et al. Finchley Kilburn	
1867-68		Twickenham	Croydon Ealing Enfield Harrow Tottenham Leytonstone	20,185 2,000 1,295 1,200 1,000 3,000	Hornsey	Wimbledon	
		carried overleaf		<u>£350,349</u>			

Part A Local Government Act Office 1858-1871 (continued)

	Boundary settlements	Adoptions of Act*	Loan sanctions		Petitions for POs		Section 49 inquiries
			Place	Amount £	Compulsy. purchase	Other	
1868-69		Brought forward		350,349	Kingston	Croydon Walthamstow	East Barnet Leyton
			Bromley	1,700			
			Croydon	8,380			
			Harrow	4,300			
			Hornsey	3,100			
			Romford	15,900			
			Wimbledon	1,500			
			Walthamstow	2,000			
1869-70		Chiswick	Bromley	4,000	Bromley	Ealing	
			Croydon	10,493	Chiswick		
			Sth Hornsey	5,000	East Barnet		
			Teddington	2,200			
1870-71	Kilburn		Acton	2,000	Acton	Wimbledon	Edmonton Worces'r Pk Petersham Tottenham Hornsey East Ham
			Croydon	4,170			
			Edmonton	49,700			
			Enfield	23,340			
			Hornsey	3,000			
			Romford	1,000			
			Twickenham	3,000			
			Uxbridge	6,000			
			West Ham	8,000			
			Richmond	denied			
			East Barnet	16,497			
				£ 525,629			

Part B Local Government Board 1871-1878

	Loan sanctions		Petitions for POs			Section 49 inquiries
	Place	Amount £	Compulsory purchase	Constitution of USDs	Other	
1871 Aug to Dec	Hornsey Tottenham Child's Hill Leyton	45,600 9,000 1,000 1,500				
1872	East Barnet Child's Hill Croydon Leyton Leytonstone Teddington Tottenham Wimbledon	4,000 1,500 15,070 1,300 650 1,500 4,400 8,000	Ealing Wimbledon		East Barnet Kingston West Ham	Uxbridge
1873	Acton Croydon Edmonton Hornsey Uxbridge Wimbledon	600 5,000 15,000 15,000 4,400 53,000	Richmond Richmond	Walthamstow Leyton Richmond East Barnet Brentford	Woodford Ealing Beckenham Mitcham	Edmonton Hornsey Sth Hornsey Brentford
1874	Barnet Chiswick Croydon Ealing Leyton Tottenham Twickenham Bromley RSA	8,500 1,000 10,600 16,200 1,925 6,600 21,000 7,000	Ealing Bromley Richmond Chiswick	Willesden Heston and Isleworth	Sth Hornsey Child's Hill Willesden	Worc'r Park Acton
1875	Acton Croydon Ealing Edmonton Hornsey Leyton Richmond Tottenham Uxbridge Walthamstow Wimbledon	3,000 1,710 4,200 4,000 8,580 2,000 28,000 11,000 3,000 9,150 25,100		Heston and Isleworth	Chiswick Leyton West Ham Edmonton Harrow Stn Wanstead	Hornsey Sth Hornsey Romford Tottenham
1876	Acton Brentford Chiswick Croydon Ealing Heston & Isl. Hornsey Leyton Richmond Carried overleaf	5,000 3,000 10,000 39,750 9,000 1,500 1,700 1,230 4,000 £434,265	Brentford	Erith	Edmonton Beckenham Hendon RSA	Croydon

Part B Local Government Board 1871-1878 (continued)

	Loan sanctions		Petitions for POs			Section 49 inquiries
	Place	Amount £	Compulsory purchase	Constitution of USDs	Other	
1876 contd.	Brought forward	434,265				
	Sth Hornsey	4,000				
	Twickenham	17,324				
	Wimbledon	15,000				
	Bromley RSA	2,700				
1877	Bromley	1,900	Hendon RSA	Beckenham	Highgate	
	Beckenham	7,300	Heston & Isl.	Hanwell		
	Chiswick	20,000	Beckenham	Orpington		
	Croydon	16,385	Hanwell	St Mary Cray		
	East Barnet	12,725	Barnes and			
	Edmonton	6,300	Mortlake			
	Enfield	28,500	Harrow Stn.			
	Erith	1,544				
	Harrow	6,000				
	Hornsey	2,000				
	Leyton	4,410				
	Norwood	400				
	Richmond	8,000				
	Teddington	8,650				
	Tottenham	20,900				
	Twickenham	2,000				
	Walthamstow	42,200				
	West Ham	20,000				
Wimbledon	15,500					
1878	Barnet	8,700	Hanwell	East Ham	Romford	Leyton
	Beckenham	650		Finchley	Tottenham	Hornsey
	Brentford	1,600		Hendon		Woodford
	Bromley	4,100		Sutton		
	Chiswick	30,000				
	Croydon	23,625				
	Ealing	3,980				
	East Barnet	5,300				
	Erith	580				
	Harrow	2,200				
	Hornsey	3,000				
	Leyton	2,100				
	Merton	14,685				
	Mitcham	20,428				
	Morden	6,014				
	Richmond	4,000				
	Sth Hornsey	10,150				
	Tottenham	15,495				
Twickenham	12,000					
Uxbridge	8,995					
Wallington	18,117					
		£893,722				

Sources

I Unpublished and official sources

A Administrative records in the National Archives

- HO 45/6655 Correspondence regarding establishment of the LGAO
HO 45/8429 Kingston sewage: proposal to use Ham fields for irrigation
- MH 12 Correspondence of the LGB with urban and rural sanitary authorities, arranged by Poor Law Union
- MH 13/4 to 13/210 Correspondence of the LGAO with urban districts
MH 13/216 to 13/242 Correspondence of the LGAO with rural districts
MH 13/250 & 259 Correspondence of LGAO with Home Office re establishment and emoluments
MH 13/252 Correspondence of the LGAO with the Medical Dept of the Privy Council
- MH 19/85 to 19/87 Internal correspondence of the LGB re staffing and procedures
MH 19/207 Internal correspondence of the LGB re staffing
- MH 32/95 LGB personal files of inspectors
- MH 78/44 Printed memorandum to LGB Secretary from engineering inspectors
- T 1/1858/20834 Treasury file re establishment of LGAO
T 1/1861/18312 Treasury file re Rawlinson's appointment
T 1/1864/16892 Treasury file re Morgan's appointment
T 1/1865/17488 Treasury file re LGAO estimates, Rawlinson's secondment and Arnold Taylor's appointment
T 1/1868/17481 Treasury file re Rawlinson's salary
T 1/1869/21583 Treasury file re Rawlinson's claim for an honorarium for his Cotton Famine work

B Personal and private papers

Nightingale papers, British Library

C Other records and series

London Borough of Hackney Archives
HOR/1-2, Minutes of South Hornsey Local Board (1865-1875)

- Institute of Civil Engineers, Minutes of Proceedings*
 Harrison, J.T., 'On the drainage of the district, south of the Thames',
 13 (1853-54) 64-120
- Kingston-upon-Thames Archives & Local History Service*
 KB 5/6/11, Minutes of Special Drainage Committee, Kingston
 Corporation (1869-1877)
- National Association for the Promotion of Social Science, Transactions*
 Austin, H., 'On a few points in relation to the drainage of towns', 1
 (1857), 422-429
 Taylor, T., 'On central and local action in relation to town
 improvement', 1 (1857), 473-480
- Society of Arts, Journal*
 Rawlinson, R., 'London sewerage and sewage', 38 (1889-90), 66-79
- West Ham Local Board of Health, Reports*
 Rawlinson, R., *Report on the completion of the public sewerage works
 for the district of West Ham* (1862)

II Parliamentary papers and returns

Annual reports by the Home Secretary on the execution of the Local Government Act 1858:

- First report 1859 [2585] XI.117
 Second report 1860 [2746] XXXI.617
 Third report 1861 [545] XXXIII.43
 Fourth report 1862 [505] XXVIII.317
 Fifth report 1863 [553] XXVI.739
 Sixth report 1864 [554] XXX.563
 Seventh report 1865 [479] XXIX.521
 Eighth report 1866 [532] XX.507
 Ninth report 1867 [576] XIX.671
 Tenth report 1867-68 (494) XXI.145
 Eleventh report 1868-69 (437) XVII.385
 Twelfth report 1871 (287) XVI.143

First report of the Royal Sanitary Commission, 1868-69 [4218] XXXII.301
Report on inquiry as to pollution of the River Thames at Barking, 1870 [C.7] XL.545
Second report of the Royal Sanitary Commission, Vol. 1, 1871 [C.281] XXXVI.1

Annual reports of the Local Government Board:

- First report 1872 [C.516] XXVIII.1
 Second report 1873 [C.748] XXIX.1
 Third report 1874 [C.1071] XXV.1
 Fourth report 1875 [C.1328] XXXI.1
 Fifth report 1876 [C.1585] XXXI.1
 Sixth report 1877 [C.1865] XXXVII.1
 Seventh report 1878 [C.2130] XXXVII Pt.I.1
 Eighth report 1878-79 [C.2372] XXVIII.1

III Published and literary works

A Books

- Anon., *The natural history of Local Boards; or local government as it is* (London, 1888)
- Bellamy, C., *Administering central-local relations, 1871-1919: the Local Government Board in its fiscal and cultural context* (Manchester, 1988)
- Buchanan, R.A., 'Engineers and government in nineteenth-century Britain', in R.M. MacLeod (ed.), *Government and expertise: specialists, administrators, and professionals, 1860-1919* (Cambridge, 1988), 41-58
- Burn, W.L., *The age of equipoise: a study of the mid-Victorian generation* (London, 1964)
- Chadwick, E., *Report on the Sanitary Condition of the Labouring Population of Great Britain* [1842], ed. M.W. Flinn (Edinburgh, 1965)
- Clifford, F., *A history of Private Bill legislation*, I, (1885-1887, reprinted 1968)
- Coppock, J.T., 'A general view of London and its environs', in J.T. Coppock and H.C. Prince (eds.), *Greater London* (London, 1964), 19-41
- Cottrell, P.L., 'Resolving the sewage question: Metropolis Sewage & Essex Reclamation Company, 1865-81', in R. Colls and R. Rodger (eds.), *Cities of ideas: civil society and urban governance in Britain, 1800-2000: essays in honour of David Reeder* (Aldershot, 2004), 67-95
- Cox, R.C.W., 'The old centre of Croydon: Victorian decay and redevelopment', in A. Everitt (ed.), *Perspectives in English urban history* (London, 1973), 184-212
- Daunton, M.J., *Trusting Leviathan: the politics of taxation in Britain, 1799-1914* (New York, 2001)
- Escott, T.H.S., *England: its people, polity and pursuits* (London, 1881)
- Flinn, M.W., 'Introduction', in A.P. Stewart and E. Jenkins, *The medical and legal aspects of sanitary reform* [1867] (Leicester, 1969)
- Hall, P., 'The development of communications', in J.T. Coppock and H.C. Prince (eds.), *Greater London* (London, 1964), 52-79
- Hamlin, C., *A science of impurity: water analysis in nineteenth-century Britain* (Bristol, c. 1990)
- Hamlin, C., *Public health and social justice in the age of Chadwick* (Cambridge, 1998)
- Harris, J.S., *British Government inspection: the local services and the central departments* (London, 1955)
- Jahn, M., 'Suburban development in outer west London, 1850-1900', in F.M.L. Thompson (ed.), *The rise of suburbia* (Leicester, 1982), 94-156
- Johnson, J.H., 'The suburban expansion of housing in London, 1918-39', in J.T. Coppock and H.C. Prince (eds.), *Greater London* (London, 1964), 142-166
- Lambert, R., *Sir John Simon, 1816-1904, and English social administration* (London, 1963)
- Luckin, W., *Pollution and control: a social history of the Thames in the 19th century* (Bristol, 1986)

- Luckin, W., 'The metropolitan and the municipal: the politics of health and environment in London, 1860-1920', in R. Colls and R. Rodger (eds.), *Cities of ideas: civil society and urban governance in Britain, 1800-2000: essays in honour of David Reeder* (Aldershot, 2004), 46-66
- MacDonagh, O., *Early Victorian government, 1830-1870* (London, 1977)
- MacLeod, R.M., *Treasury control and social administration: a study of establishment growth at the Local Government Board, 1871-1905* (London School of Economics Occasional Papers on Social Administration, 23; London, 1968)
- MacLeod, R.M., 'Introduction', in R.M. MacLeod (ed.), *Government and expertise: specialists, administrators, and professionals, 1860-1919* (Cambridge, 1988), 1-24
- Prest, J., *Liberty and locality: Parliament, permissive legislation and ratepayers' democracies in the nineteenth century* (Oxford, 1990)
- Rawcliffe, J.M., 'Bromley: Kentish market town to London suburb, 1841-81', in F.M.L. Thompson (ed.), *The rise of suburbia* (Leicester, 1982), 28-91
- Redlich, J. and Hirst, F.W., *The history of local government in England (1903)*, 2nd edn. (London, 1970)
- Stewart, A.P., *The medical aspects of sanitary reform [1867]* (Leicester, 1969)
- Taylor, T., *The Local Government Act, 1858, and the Acts incorporated therewith; together with the Public Health Act, 1858* (London, 1858)
- Wohl, A.S., *Endangered lives: public health in Victorian Britain* (London, 1983)
- Young, K. and Garside, P., *Metropolitan London: politics and urban change, 1837-1981* (London, 1982)

Articles

- Bartrip, P.W.J., 'British government inspection, 1832-75', *The Historical Journal*, 25:3 (1982), 605-626
- Charles, J.A., 'Sir Robert Rawlinson (1810-98)', *Dams & Reservoirs* (July 2005), 6-10
- Davis, J., 'London government 1850-1920: the Metropolitan Board of Works and the London County Council', *London Journal*, 26:1 (2001), 47-56
- Duman, D., 'The creation and diffusion of a professional ideology in nineteenth-century England', *Sociological Review*, 27 n.s. (1) (1979), 113-138
- Gutchen, R.M., 'Local improvements and centralization in nineteenth-century England', *The Historical Journal*, 4:1 (1961), 85-96
- Hamlin, C., 'Scientific method and expert witnessing: Victorian perspectives on a modern problem', *Social Studies of Science*, 16:3 (1986), 485-513
- Hamlin, C., 'Muddling in Bumbledom: on the enormity of large sanitary improvements in four British towns, 1855-1885', *Victorian Studies*, 32 (1988), 55-83
- Hennock, E.P., 'Finance and politics in urban local government in England, 1835-1900', *The Historical Journal*, 6 (1963), 212-225
- Hennock, E.P., 'Central/local government relations in England: an outline, 1800-1950', *Urban History Yearbook* (1982), 38-49
- Kitson Clark, G., 'Statesmen in disguise: reflections on the history of the neutrality of the civil service', *Historical Journal*, 2(1) (1959), 19-39
- Lambert, R., 'Central and local relations in mid-Victorian England: the Local Government Act Office, 1858-71', *Victorian Studies*, 6:2 (1962), 121-150

- Lancaster, B., 'The 'Croydon case': Chadwick's model town under siege', *The Local Historian*, 34:1 (2004), 17-27
- MacDonagh, O., 'The nineteenth-century revolution in government: a reappraisal', *Historical Journal*, 1(1) (1958), 52-67
- MacLeod, R.M., 'The Alkali Acts administration, 1863-1884: the emergence of the civil scientist', *Victorian Studies*, 9 (1965), 85-112
- MacLeod, R.M., 'Statesmen undisguised', *American Historical Review*, 78(5) (1973), 1386-1405
- Mason, S.C.W., 'East Ham: problems of local government and relations with the Local Government Board', *Transactions of the London and Middlesex Archaeological Society*, 39 (1998), 191-205
- Otter, C., 'Cleansing and clarifying: technology and perception in nineteenth-century London', *Journal of British Studies*, 43:1 (2004), 40-64
- Szreter, S., 'The importance of social intervention in Britain's mortality decline c.1850-1914: a reinterpretation of the role of public health', *Social History of Medicine*, 1 (1988), 1-37
- Szreter, S., 'The GRO and the historians', *Social History of Medicine*, 4(3) (1991), 401-414
- Wilson, J.F., 'The finance of municipal capital expenditure in England and Wales, 1870-1914', *Financial History Review*, 4 (1997), 31-50

IV Unpublished dissertation

- Clifford, J.A., 'The quest to divert sewage from the river in the Lower Thames Valley, 1858-1891' (unpublished B.A. dissertation, University of Surrey, 2006)