





RESEARCH ARTICLE

Catchwater colonialism: reshaping Hong Kong's hydrology, infrastructure, metabolism and landscape, 1937–1968

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Abstract

This article explores the development of hydrological infrastructure in colonial Hong Kong between the late 1930s and the late 1960s. Utilizing archival sources in Hong Kong and London, it shows how this infrastructure fundamentally reshaped Hong Kong's geography. By way of concrete catchwaters and metal pipes, both 'green' and 'urban' Hong Kong became counter-intuitively interconnected. This interconnection created both unintended consequences and novel opportunities for colonial governance, driving forward natural conservation, state intervention into rural society and the development of new carceral institutions. Exploring these developments provides pivotal insight into the urban history of Hong Kong, with implications for global studies of historical urban political ecology.

Introduction

The territory of Hong Kong is renowned for its urban cityscape. Yet Hong Kong is also extensively green. Much of the territory is mountainous, large tracts are covered in tropical vegetation and 46 sprawling country parks and protected areas conserve some 40 per cent of its land and waters.¹ Though seemingly paradoxical, these versions of Hong Kong – the urban and the green; the city and the hinterland – do not merely co-exist but mutually co-constitute each other.² This situation is hinted at by the ubiquity of infrastructure in Hong Kong's green spaces: concrete catchwaters, metal sluices and steel pipes abound amidst flowers, succulent evergreens and rugged

¹Hong Kong Agriculture, Fisheries and Conservation Department, 'Hong Kong: the facts', online access, www.gov.hk/en/about/abouthk/factsheets/docs/country_parks.pdf. On the question whether Hong Kong is best described as 'tropical' or 'subtropical', see D. Dudgeon and R. Corlett, *The Ecology and Biodiversity of Hong Kong* (Hong Kong, 2004), 38.

²R. Peckham, 'Hygienic nature: afforestation and the greening of Colonial Hong Kong', *Modern Asian Studies*, 49 (2015), 1177. See also this article, detailing efforts from the mid-nineteenth century to 'green' Hong Kong Island, though for quite different reasons than the water-preservation efforts described here.

mountainside. This article explores how this urban-hinterland integration developed between the 1930s and the 1960s, together with the consequences for practices of conservation, governance and incarceration which followed.

As a legacy of its prehistoric volcanism, Hong Kong is extensively composed of igneous rock. This rock is impermeable to water, meaning that the heavy rainfall released over Hong Kong during the annual wet season quickly runs off into the surrounding South China Sea unless captured and conserved.³ This run-off, moreover, has historically been exacerbated by deforestation, dating back as early as the Song dynasty and intensifying with Hakka settlement of marginal lands from the late seventeenth century.⁴ With a population which grew massively in size during the British colonial period (1841–1997), especially after 1949, this confluence of geological, environmental and demographic pressures made Hong Kong persistently vulnerable to drought during dry seasons.⁵ Droughts struck repeatedly – including in 1902, 1929, 1938, 1963 and 1967.⁶ Even in years without crises, access to water was often rationed.⁷

The predicament of Hong Kong's unreliable hydrosocial cycle posed persistent difficulties for its colonial administration, both pre- and post-Pacific War.⁸ One solution to this vulnerability was to import water across the mainland Chinese border from water-rich Guangdong Province – a process attempted in 1902 and adopted systematically from 1960.⁹ Military and social turmoil before the Pacific War, and then Cold War tension following the mainland Chinese revolution of 1949, however, made this solution fragile.¹⁰

³S.G. Davis, *Hong Kong in Its Geographical Setting* (London, 1949), 71–3.

⁴Dudgeon and Corlett, *Ecology and Biodiversity of Hong Kong*, 31–3. Whereas Punti families such as the Tang clan dominated agriculturally productive regions of Hong Kong, the Hakka, arriving later, pioneered settlement in more inhospitable areas of the territory, such as Sai Kung and Tsuen Wan.

⁵C.K. Mark, 'The "problem of people": British colonials, Cold War powers, and the Chinese refugees in Hong Kong, 1949–62', *Modern Asian Studies*, 41 (2007), 1145.

⁶Davis, *Hong Kong in Its Geographical Setting*, 73.

⁷D. Clayton and F. Mok, 'Bad weather and state-building: effective urban water management during a drought in colonial Hong Kong, 1963–64', *Environment and History*, forthcoming.

⁸For the term 'hydrosocial cycle', see J. Linton and J. Budds, 'The hydrosocial cycle: defining and mobilizing a relational-dialectical approach to water', *Geoforum*, 57 (2014), 170.

⁹D.W. Clayton, 'The roots of regionalism: water management in postwar Hong Kong', in G.C.H. Luk (ed.), *From a British to a Chinese Colony?* (Berkeley, 2017), 22; N.K. Lee, 'The changing nature of border, scale and the production of Hong Kong's water supply system since 1959', *International Journal of Urban and Regional Research*, 38 (2014), 903–21; and D. Tang, 'Local reservoirs and Chinese aqueducts: the politics of water security in Hong Kong', in T. Mostowlansky and M. Hirsh (eds.), *Infrastructure and the Remaking of Asia* (Honolulu, 2022), 110–33. Alongside efforts to engineer the environment, so too were there efforts to engineer the behaviour of the urban population, for which see S.H. Lai and F. Mok, 'Visualizing water use in colonial Hong Kong: separate water metering in 1965 and consumer citizenship', forthcoming.

¹⁰With the establishment of the People's Republic of China in 1949, the Cold War had significant impacts on Hong Kong and geopolitics in the region. Although Beijing adopted a 'long-term and full utilization policy' towards Hong Kong and tolerated British administration due to the colony's strategic importance, the colonial Government was concerned about Hong Kong's vulnerability. The scaling down of the British garrison in the 1950s due to other overseas commitments, such as the Korean War, in particular made Hong Kong militarily indefensible. Together with Hong Kong's reliance on mainland China's supply of food and water, Sino-British relations remained delicate and the colonial Government in general adopted a 'firmness without provocation' principle. See F. Mok, 'Town talk: enhancing the "eyes and ears" of the colonial state in British Hong Kong, 1950s–1975', *Historical Research*, 95 (2022), 288–9, 293–4; F. Mok, 'Disseminating and

The alternative option, preceding and then used to counter-balance the risks of importing mainland water, was to construct an infrastructural network to collect run-off from the colony's hillsides. Collection would be achieved by laying catchwaters: drains typically constructed of concrete, linearly spanning the lower reaches of hills, following their contours and collecting their run-off, and then debouching this water into reservoirs. To properly tap the water supplies of the hills and mountains, catchwaters would have to be extensive: 'very far-flung', in the words of one colonial official.¹¹ By the time the High Island Reservoir was completed in 1978, it was estimated that these catchwaters spread so extensively that one third of the entire land surface of Hong Kong would either drain into them or directly into reservoirs.¹² Tunnels and pipes transporting reservoir water to filters and pumping stations and on into the urban mains would require extensive length too. 'A vast and complicated network', was how the government press office described the transportation infrastructure of one reservoir scheme.¹³ Constructing this extensive infrastructure transformed the geography of Hong Kong (Figure 1). Distant hills were linked for the first time to urban centres; remote reaches were connected by concrete catchwater and metal pipe to homes and factories.

Building such a necessarily extensive network linking the urban centres of Hong Kong with its hinterlands had cascading consequences. It drove the colonial administration into a deeper intervention into rural Hong Kong and its population. Partly, this entailed displacement. Newly built dams drowned villages and displaced residents – as has been much studied in Hong Kong and elsewhere.¹⁴ But the *extensive* character of the catchwater infrastructure entailed complications well beyond displacement alone. As one colonial official wrote, 'I have always maintained that the construction of this catchwater system would prove infinitely more difficult than the building of any reservoir, no matter how many people may be uprooted by the latter.'¹⁵

Building catchwaters meant not only displacement. It also meant villagers had to be coerced or convinced to allow catchwater construction across their agricultural

containing communist propaganda to overseas Chinese in Southeast Asia through Hong Kong, the Cold War pivot, 1949–1960', *Historical Journal*, 65 (2022), 1404; Michael Ng *et al.*, 'Hearts and minds in Hong Kong's New Territories: agriculture and vegetable marketing in a Cold War borderland, circa 1949–1967', *Modern Asian Studies* (2023), 1–28; F. Mok, *Covert Colonialism: Governance, Surveillance and Political Culture in British Hong Kong, 1966–97* (Manchester, 2023), introduction.

¹¹Minutes, 'Catchwaters for Tai Lam Chung scheme Pat Heung & Shap Fat Heung', Hong Kong Record Series (HKRS)163-1-2293, Hong Kong Public Records Office (HKPRO). The official here wrote specifically regarding the catchwaters for the Tai Lam Chung Reservoir. However, the system would become only further flung, as it were, as it developed over the following decades.

¹²'W.R.D.C. Water Resources Development Committee', HKRS394-29-93, HKPRO.

¹³'International tenders invited for unique engineering project', Hong Kong water supplies (1963), CO 1030/1655, The National Archives, United Kingdom (TNA), 1–6, at 4.

¹⁴S. Amrith, *Unruly Waters: How Mountain Rivers and Monsoons Have Shaped South Asia's History* (London, 2018), 12, for the 3,500 Indian and 22,000 Chinese dams built in the post-war period, and their consequences. Dams have received considerable treatment, including their own volume in T. Turpin, *Dam* (Chicago, 2008). For a thorough account of reservoir construction and displacement in Hong Kong, see J. Hayes, *The Great Difference: Hong Kong's New Territories and Its People, 1898–2004* (2nd edn, Hong Kong, 2007), 85–96.

¹⁵Minute by colonial secretary, 'Catchwaters for Tai Lam Chung scheme Pat Heung & Shap Fat Heung', HKRS163-1-2293, HKPRO.

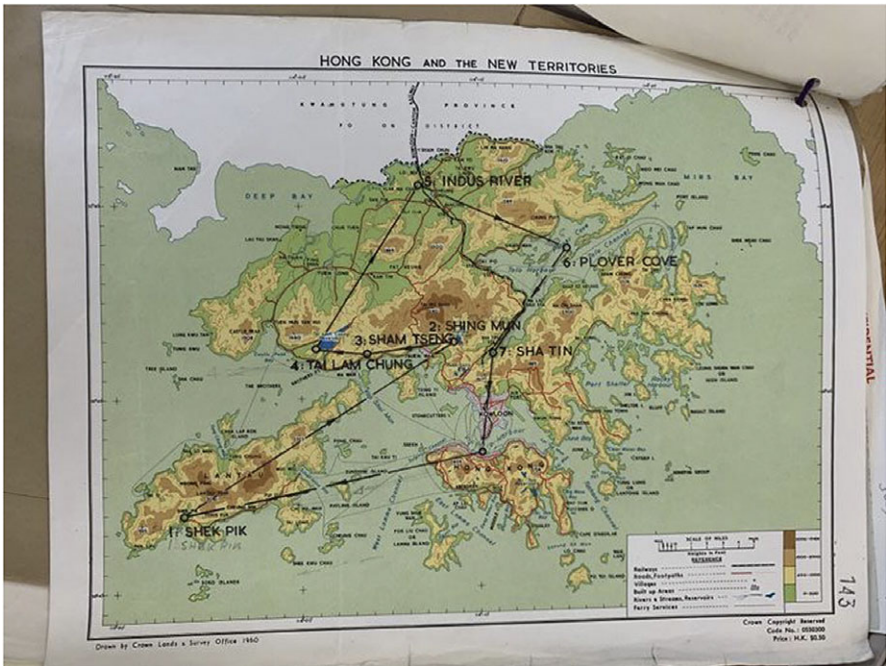


Figure 1. A Government map produced in 1964, showing Hong Kong Island, the Kowloon Peninsula and the New Territories and outlying islands. Note, in particular, Tai Lam Chung in the north-west and Shek Pik in the south-west.

Source: Map titled 'Hong Kong and the New Territories' attached to 'Visit of Mr. J.D. Higham', CO 1030/1656, TNA.

land and ritually significant landscape.¹⁶ It entailed protecting the hillsides so silt and other contaminants would not flow through catchwaters into reservoirs, as well as then guarding against fire spreading in newly afforested areas. These efforts would require a labour force, encouraging new carceral institutions whose internees would help plant trees, construct dykes and fight fires. In tracing these consequences, the notion of the 'assemblage' has perceptive strength – the catchwater-and-pipe system interlinked and built together diverse elements, including hinterland and city; the rural and the urban; incarceration and conservation; trees, pipes, parks, correctional institutes, factories and mountains.¹⁷ The necessities of water management made Hong Kong's 'catchwater colonialism' deep, thick, complex and simultaneously concerned with rapid economic growth, rural stability, natural conservation and prisons.

Geographically, chronologically and methodologically, this article contributes innovatively to the expanding literature on the history of water in Hong Kong. Its

¹⁶For other takes on catchwaters, see Tang, 'Local reservoirs and Chinese aqueducts', 115, which notes their natural entanglements. In contrast to Tang's cross-border interests, however, this article pushes rather on developments within Hong Kong itself, not least the entanglements of the reservoir-catchment system with incarceration.

¹⁷J. Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham, NC, 2010).

geographical contribution is to focus *within* the bounds of the colony. Recent articles have focused on the geopolitically freighted question how far Hong Kong ought to import mainland Chinese water across the border from Shenzhen or from Guangdong's East River.¹⁸ This dramatic issue speaks to Cold War and diplomatic histories and has understandably drawn attention. However, this article is concerned less with water crossing mainland borders, and more with water crossing different boundaries *within* Hong Kong: linking islands, hinterlands and city, urban and rural. It explores interconnections within Hong Kong quite as novel as those crossing the border. When isolated southern Lantau became connected by catchwater, pumping station and marine pipeline to western Hong Kong Island for the first time, this was just as novel as the importation of water to the New Territories from contiguous Shenzhen.

This article also looks beyond the chronological horizon of Cold War Hong Kong, locating the late 1930s as a threshold moment for the developments it traces. It closes in the late 1960s, forcing a crisis response by Government. Focusing on the dramatic events of the water crisis of 1963 and their post-war context can disguise how many of the fundamental processes of Hong Kong's water management and their consequences had been realized already by that year. Infrastructural construction and its environmental and governmental effects spanned the Pacific War. Wartime destruction of records admittedly makes this pre-war history more difficult to reconstruct. In 1960, even the Government of Hong Kong confessed to a limited understanding of pre-war developments.¹⁹ Yet many of the most decisive processes – hinterland extension, cross-island piping, afforestation, legal restrictions at catchments – date to the 1930s or earlier, unfolding across post-war decades along trajectories initiated before the conflict. Both geographically and chronologically, therefore, this article sets aside dramatic events for slower, less obvious, but still profoundly transformational processes.

This article deals with issues well beyond those of concern to scholars of Hong Kong or the East Asian region alone. It contributes to a recent wave of scholarship which has situated research on cities within their wider 'social' or 'urban' metabolisms of hydrological, nutritional and energy flows.²⁰ Hong Kong is an unusually suitable platform from which to explore these themes, having been a case-study for such early urban-ecological work as that of Stephen Boyden and Ken Newcombe in the 1970s. Neil Brenner has drawn attention to the dialectic of *implosion* and *explosion* which characterizes contemporary urbanism.²¹ Urban spaces have become more concentrated. At the same time, an 'extension of the urban fabric' has occurred, with the 'intensification of interspatial connectivity across places, territories, and scales'. This simultaneous concentration and extension forces us beyond 'traditional concepts of cityness, metropolitanism, or urban/rural binarisms'. These insights prove powerful for Hong Kong. The city was concentrated: infamously dense with

¹⁸Lee, 'The changing nature'; Clayton, 'The roots of regionalism'; Tang, 'Local reservoirs and Chinese aqueducts', 113.

¹⁹*Hong Kong Annual Report, 1960* (Hong Kong, 1961), 6.

²⁰P. Bélanger, 'Landscape as infrastructure', *Landscape Journal*, 28 (2009), 79–95; P. Bélanger, *Landscape as Infrastructure: A Base Primer* (New York, 2017); M. Gandy, 'Rethinking urban metabolism: water, space and the modern city', *City*, 8 (2004), 363–79; M. Gandy, *Concrete and Clay: Reworking Nature in New York City* (Cambridge, MA, 2002), for analogous developments in New York City, including the transforming metabolic character of upstate New York's mountains, see 22–3.

²¹N. Brenner, 'Theses on urbanization', *Public Culture*, 25 (2013), 103.

people and construction. But at the same time, as this article shows, urban space was engaged in a process of extension. The dense city became interconnected with pipes, reservoirs, catchwaters, forestry plots, telephone wires and prisons.²²

At the same time, these discussions have principally been driven by geographers and anthropologists. There are fewer archivally anchored understandings of this extended urbanism. This article uses historical methods to archivally ground such perspectives, reshaping abstract theoretical concerns regarding urban metabolism. It draws on a swathe of archival documents released in recent years from both The National Archives in London and, especially, the Public Records Office in Hong Kong. These documents permit a fine-grained perspective on colonial water management and its consequences. In particular, maps appear ubiquitously within these documents, and this article draws upon them extensively. These governmental documents are supplemented with extensive reference to unofficial sources, in particular newspapers from the period.

The main body of this article is divided into two sections, ordered chronologically. The first section is concerned with the Tai Lam Chung Reservoir and its surrounding landscape between roughly 1937 and 1963. Tai Lam Chung was planned before the Pacific War but was then completed after the conflict as the first of Hong Kong's post-war reservoirs. Inaugurated in May 1957, construction on its catchwaters was completed only in 1963.²³ Building the Tai Lam Chung Reservoir and its extensive catchwater system entailed the transformation of the landscape in ways spotlighting the themes of this article. The second section focuses on the Shek Pik Reservoir, its catchwaters and its landscape, on which construction began in 1957 and was completed in 1968. As with Tai Lam Chung, analysing the transformation of this landscape brings out the themes of the article. By no means were these the only reservoirs built in Hong Kong during this period. But nevertheless, this article argues that their development illustrates key characteristics of the more general process of reservoir construction across this period.

Tai Lam Chung Reservoir, 1937–63

Between the 1930s and the 1950s, a formerly remote corner of Hong Kong's territory became integral to the colony's broader hydrosocial infrastructure. This was the Tai Lam river valley and its surrounding hills. North of the Kowloon range, the area was firmly situated within the north-west of the leased New Territories, relatively far from the urban centre of Kowloon to the south-east. The area mostly consisted of agricultural land, with some heavily eroded badlands and pockets of older forest

²²As with the 'incommensurables' of Timothy Mitchell, this article represents in many ways a case-study of the unexpected conjunctions of elements thrown together by infrastructural development, extending well beyond developmentalist or modernist techno-politics or socio-technical imaginaries. For which see, T. Mitchell, *Rule of Experts: Egypt, Techno-Politics, Modernity* (Berkeley, 2002). For reflections on Hong Kong's infrastructure and the limits of techno-modernism, see Tang, 'Local reservoirs and Chinese aqueducts', 133.

²³For these dates, see *Hong Kong, Report for the Year 1961* (Hong Kong, 1962), 222; and *Hong Kong, Report for the Year 1963* (Hong Kong, 1964), 246. In May 1957, the storage reservoir, tunnels and pipelines were completed, but construction of the catchwaters extended into 1963, reaching their intended extent of 11,196 acres.

on the highlands.²⁴ The Tai Lam Chung Reservoir was built here, with initial plans being laid in 1938, then with construction being undertaken between 1953 and 1963 after the war, initially overseen by G.B. Gifford Hull, who had previously worked on the Shing Mun scheme.²⁵ The Tai Lam Chung River was dammed. Catchwaters extended north, east and west across surrounding hills, as far as Tai Mo Shan in the east. Pipes and pumping stations were then created to transport collected water to urban Kowloon and Hong Kong Island. To build this network, agricultural land was disrupted in an explicitly stated programme to subordinate local interests to colony-wide ones. The complications of this process drove policies of afforestation and conservation, including through the use of carceral labour.

The 1930s were a threshold in the deepening integration of urban and hinterland Hong Kong. For one, at this moment the demands of Hong Kong Island's urban population outstripped the water supplies of the Island itself. Before 1930, the Island's fundamental system for collecting and distributing water was laid out in essence between 1863, when the colony's first reservoir was built at Pokfulam, and 1883, when work began on the Tai Tam Reservoir. This system expanded in size and sophistication in the decades following 1883, but remained ultimately bound by the supplies of the Island itself.²⁶ The Island's supply, however, was quickly becoming insufficient. By 1936, it was believed that the Island had witnessed all of the catchwater installation that was feasible, covering some 25.53 square miles.²⁷

Infrastructural development at this moment broke dependency on the water supplies of the Island alone, however. In 1930, the first cross-harbour pipeline was installed by divers, permitting Kowloon's water to be systematically delivered to the Island. At a ceremony to mark the completion of the cross-harbour tunnel, the governor of the colony turned a latch at the fountain at City Hall, celebrating the Kowloon water which spurting upwards outside this building in central Hong Kong Island.²⁸ In 1935, a second cross-harbour tunnel followed.²⁹ The simultaneous exhaustion of room to expand the Island's water supplies and the new feasibility of importing water across the harbour encouraged attention to Kowloon's water, including that of Tai Lam Chung.

The water of Kowloon and the New Territories thus gained new significance in the 1930s, though this was also being driven by urban expansion on the Kowloon Peninsula itself. Reservoir construction on the Peninsula had moved gradually northwards with the construction in sequence of the Kowloon Reservoir (1910), the Shek Lei Pui Reservoir (1925), the Kowloon Byewash Reservoir (1931) and the Shing Mun (Jubilee) Reservoir (1936).³⁰ In 1936, the catchwater system of the Shing Mun system reached the foothills of the Tai Mo Shan mountain for the first time.³¹ It was in this context of the extension of Hong Kong's hydrological infrastructure ever

²⁴Dudgeon and Corlett, *Ecology and Biodiversity of Hong Kong*, 29 for the Tai Lam badlands and 102 for the possible preservation of ancient primary forest on the highlands of Tai Mo Shan.

²⁵*Hong Kong Annual Report*, 1960, 12.

²⁶C.A. Middleton-Smith, 'Water supply in Hongkong', *Far Eastern Economic Review*, 30 (1934), 355.

²⁷'Hongkong's water', *South China Morning Post (SCMP)*, 28 Aug. 1936, 7.

²⁸'More water for Hongkong', *SCMP*, 1 Apr. 1930, 11.

²⁹'Hong Kong waterworks', HKRS70-8-5108, HKPRO, n.p.

³⁰'Hong Kong waterworks', 1 Jan. 1974, HKRS70-8-5108, HKPRO, n.p.

³¹Tai Mo Shan is the tallest mountain in Hong Kong and sits almost exactly in the centre of the New Territories, serving as the point from which nearly all the colony's few rivers radiate.

deeper into the hinterland that the decision was made the following year, 1937, to construct a new reservoir and catchwater system in the valley of the Tai Lam River.³²

The end of the Japanese Occupation in August 1945 renewed the major lines of this development almost exactly as they had been laid down prior to the disruption of the Pacific War, only now under even greater pressure to supply water to a growing population. The Communist Revolution of 1949 across the mainland Chinese border brought a swathe of new residents to the colony, posing problems of social integration and challenges for social services, referred to famously as the ‘problem of people’.³³ These pressures drove the renewal of the Tai Lam Chung scheme – both nearby British Army camps and residents of Tsuen Wan clamoured for a greater supply.³⁴

The key purpose of the Tai Lam Chung scheme was to collect water from the hills encircling the Tai Lam Valley by means of a 23 kilometre-long system of concrete catchwaters, tunnels and pipes and delivering it by gravitation to a filtration system and pumping station in Tsuen Wan, situated some 10 miles to the south-east of the reservoir.³⁵ In part, the water was delivered locally to farms, villas, villages and a textiles factory along the Castle Peak Road.³⁶ But the water was also delivered much farther away. From Tsuen Wan, water from the reservoir was to be delivered to the urban Kowloon settlements of Lai Chi Kok, Cheung Sha Wan and Mong Kok and across the harbour to central Hong Kong Island (Figure 2).

With the construction of the Tai Lam Chung system, water mains were newly built or extended to carry water across the colony – passing under, or through, some of the most important areas of Hong Kong. In 1955, a new water main was constructed under Nathan Road, the central arterial of the Kowloon Peninsula, to carry its load.³⁷ In the same year, mains were extended to carry water eastwards – passing through a section of Kai Tak airport.³⁸ In 1954, a main had been built to carry the reservoir’s water through to central Hong Kong Island – passing from Queen’s Pier, under the cricket club and up to a storage reservoir at the Botanical Gardens.³⁹

³²More generally, this moment was one of increasingly deep penetration by the colonial state in Hong Kong. This greater penetration was simultaneously geophysical and social. The Government was reaching ever deeper underground in the colony, as with the laying of the harbour pipe (1929–30), the production of Hong Kong’s first geological map (1936) and the imposition of monopoly ownership over sand (1936). In terms of social depth, the Government in this moment was increasingly concerned with housing, the imposition of new taxes on income and property and a greater attention to labour conditions. For this moment, see L.F. Goodstadt, ‘The rise and fall of social, economic and political reforms in an industrialising Hong Kong, ca. 1946–1960’, *Labor History*, 62 (2021), 470, for reforms in general; M. Jones, ‘Tuberculosis, housing and the colonial state: Hong Kong, 1900–1950’, *Modern Asian Studies*, 37 (2003), 653, for housing; and J. Brigstocke, ‘The aesthetics of sand: reclaiming Hong Kong’s unsettled grounds’, *GeoHumanities*, 7 (2021), 381–2, for the colonial sand monopoly.

³³Mark, ‘The “problem of people”’.

³⁴Letter from chief engineer, HQ Land Forces, to director of Public Works Department, 17 Mar. 1951, and ‘Water supply to Nam Bin Wai village, Un Long’, 20 Oct. 1952, HKRS287-1-569, HKPRO. As this letter notes, ‘The present position in regard to the water supply in the Un Long-Ping Shan area is not satisfactory.’

³⁵*Hong Kong Annual Report, 1960*, 14–15, for the technical details on the extent of Tai Lam Chung.

³⁶Tai Lam Chung catchwaters. Intakes – sections H & I, ‘Properties supplied with water from Tai Lam Chung catchwaters (1961–1963)’, HKRS287-1603, HKPRO, 26A, for the list of local properties supplied, ranging from the ‘wooden hut[s]’ of Wong Chun-hing and Yau Kuen-wah to the Boulder Lodge villa of the Kadoorie family and Green Jade villa of prominent surgeon Li Shu-fan.

³⁷‘Water main to be laid in Kowloon’, *SCMP*, 6 Dec. 1955.

³⁸‘Water main. Seven miles of pipe to be laid’, *SCMP*, 22 Oct. 1955.

³⁹‘Harbour pipeline’, *SCMP*, 14 Jan. 1954.

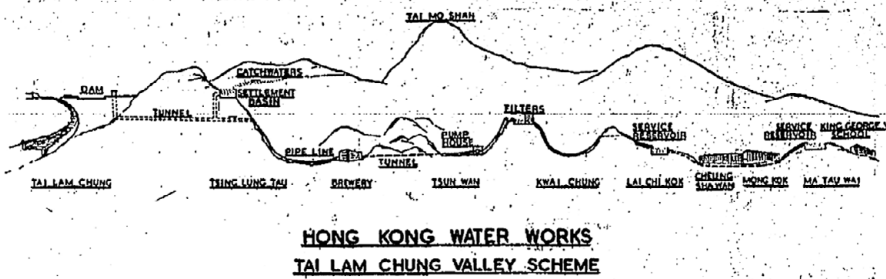


Figure 2. Diagram of the Tai Lam Chung catchwater system – note the collection of water in catchwaters west of Tai Mo Shan and its delivery through a series of filters, pipes and service reservoirs through Tsun Wan eastward into central Kowloon (Mong Kok) and onwards.

Source: '\$40 million reservoir for colony', *China Mail*, 28 Aug. 1951.

The colonial state had been little concerned with Tai Lam prior to the planning of the reservoir and its catchwaters in the late 1930s. The area was hardly integrated into the broader colony. The exceptions were the Castle Peak Road and the Tai Lam British Army camp, which opened on the coast just north of the road in 1931. Castle Peak Road is telling of the limited reach of the state in this area. Named the 'Trunk Road', this road had been constructed between 1909 and 1920 to facilitate trade, policing and pier development in the north-west, but merely snaked along the coastline south of the Tai Lam Valley, hugging the coast while the interior remained little affected by urban development.⁴⁰

In contrast, however, to the landscape prior to reservoir and catchwater construction, the colonial state became highly concerned with the management of the Tai Lam area in the mid-1950s, after construction began on the reservoir system. Partly, this entailed negotiating the resumption of agricultural land for the laying of catchwaters.⁴¹ More contentiously, it also entailed responding to disputes arising from the catchwaters and their effects on the local hydrology. Local farmers were aggrieved at catchwater construction, such as the farmer Tang Tai-kwong, who wrote to the water authority that the situation was 'very unfair': 'nearly every drop of water has been collected by the water catchment', he complained.⁴² Colonial officials were wary of the dispute. At its height, in the spring of 1958, the district officer in Yuen Long declared, 'The Police are very worried and so am I.'⁴³

The logic of the colonial response to the dispute reveals the changed geography of the area. A state propaganda campaign was launched against the local villagers whose land was disrupted by catchwaters: 'a period of intensive propaganda', as the district

⁴⁰Hong Kong Hansard, 7 Oct. 1909, 138, for descriptions of the rationale for developing the Castle Peak Road. Map of Hong Kong in 1922, online access, hkmaps.com.

⁴¹See for instance, 'Lot No... In D.D. 359, Cheung Kun Tam, New Territories', HKRS156-1-6310, HKPRO, 1.

⁴²Letter from Tang Tai-kwong to water authority dated 28 Jul. 1963, 'Properties supplied with water from Tai Lam Chung catchwaters (1961–1963)', HKRS287-1603, HKPRO, 36. Tang noted that without efforts from the water authority, then 'my orchard and the water supply to the families of my village, would be suffered from serious consequence [sic]'.
⁴³Minute by district officer, 'Catchwaters for Tai Lam Chung scheme Pat Heung & Shap Pat Heung', HKRS163-1-2293, HKPRO, n.p.

commissioner called it, 'similar to a military operation or a squatter clearance operation'.⁴⁴ This entailed targeted publicity published 'in main Hong Kong papers'.⁴⁵ The propaganda leveraged different scales: the level of the village, the *heung*, or the multi-village alliance, the *yeuk*, against the colony. As the Government explained, 'this system of catchwaters is vital to the needs of the Colony as a whole'.⁴⁶ In its press releases, the Government explained to the broader Hong Kong public that if the catchwaters had been constructed as planned, then the water rationing imposed during the summer would have been avoided.⁴⁷ Having made this attempt to shame recalcitrant villagers before the Hong Kong public, the press release concludes: 'The Tai Lam catchwaters are therefore an immediate and essential requirement for the Colony, and they must now be built without further delay'.⁴⁸ Formerly relatively remote from the state, the area had now become *essential* for Hong Kong more broadly.

This fundamental transformation of the north-western New Territories brought a newly intimate interest by the state in the area. Alongside negotiations with villagers, this was expressed by afforestation on the hillsides of the catchment area: the mass planting of trees was undertaken explicitly to preserve the quality of the water, stop siltation and prevent the rapid run-off of water. Around the same time as the dispute with the farmers, the colonial authorities spoke in 1956 of the forested areas as themselves a 'natural reservoir', 'feeding the streams and providing a more regular flow into the reservoirs'.⁴⁹ Afforestation programmes in Hong Kong were not novel – they dated back to at least the 1870s on the Island, had begun in 1902 in Kowloon, and had been resumed shortly after the end of the Pacific War, when in February 1947 planting had been re-started in Kowloon by foresters temporarily housed in decommissioned pillboxes.⁵⁰ But afforestation intensified with the post-war construction of the Tai Lam Chung Reservoir and its catchwaters. An afforestation programme commenced at Tai Lam Chung in 1952: partly through the purchase of trees originally planted by villagers, and partly through further planting.⁵¹ In 1953, this was followed by an explicit forestry policy to reforest the colony's hillsides: aiming for

⁴⁴Letter from district commissioner to director of public works, 27 May 1958, 'Catchwaters for Tai Lam Chung scheme Pat Heung & Shap Fat Heung', HKRS163-1-2293, HKPRO, 10.

⁴⁵Letter from district commissioner to director of public works, 27 May 1958, 'Catchwaters for Tai Lam Chung scheme Pat Heung & Shap Fat Heung', HKRS163-1-2293, HKPRO, 10.

⁴⁶Memorandum by colonial secretary, 12 May 1958, 'Catchwaters for Tai Lam Chung scheme Pat Heung & Shap Fat Heung', HKRS163-1-2293, HKPRO, 1-3, 1.

⁴⁷Government of Hong Kong daily information bulletin, 25 Jul. 1958, 'Catchwaters for Tai Lam Chung scheme Pat Heung & Shap Fat Heung', HKRS163-1-2293, HKPRO, 1-3, 1.

⁴⁸Government of Hong Kong daily information bulletin, 25 Jul. 1958, 'Catchwaters for Tai Lam Chung scheme Pat Heung & Shap Fat Heung', HKRS163-1-2293, HKPRO, 1-3, 1.

⁴⁹'Hill fires in colony', *SCMP*, 20 Jan. 1956, 1.

⁵⁰'Re-afforestation', *SCMP*, 13 Feb. 1947, 5. On afforestation, see Dudgeon and Corlett, *Ecology and Biodiversity of Hong Kong*, 35. Most of the pine trees planted in these afforestation campaigns were wiped out by an invasive nematode in the 1980s, but Hong Kong's current secondary forest follows on from the model of this early planting; see Dudgeon and Corlett, *Ecology and Biodiversity of Hong Kong*, 98 and 252. See also P.A. Daley, 'Man's influence on the vegetation of Hong Kong', in L.B. Thrower (ed.), *The Vegetation of Hong Kong: Its Structure and Change* (Hong Kong, 1975), 44–56, at 48.

⁵¹*Annual Departmental Report by the Director of Agriculture, Fisheries & Forestry for the Financial Year 1952–53* (Hong Kong, 1953), 67.

at least 1,000 acres of afforested land per annum.⁵² In 1957, the hills around Tai Lam Chung had been partly forested but also extensively scarred. Within a few years, however, the area was being used to showcase Hong Kong's afforestation to visiting conservationists – visitors attending a UN Forestry and Agriculture Organization conference were taken on a tour of the area in 1962 and so too was Horace Albright, who in 1916 had helped found the United States National Parks Service, who was taken around in 1965.⁵³

Hill fires naturally play major ecological roles on the uplands of Hong Kong.⁵⁴ Young plantations were highly vulnerable to them, and devastating wildfires spread through the plantations annually. From 1947 to 1972, the authorities recorded 9,198 fires in forested areas. Between 1954 and 1955 alone, there were 433 incidents of fire.⁵⁵ Given their threat to afforestation, and therefore Hong Kong's water supply, these wildfires became a major consideration for the Government: 'It is plain', a Government official announced in 1956, 'that hill fires have a direct bearing on water supplies and for this reason alone, everything possible should be done to prevent them.'⁵⁶ The threat of fire dragged the colonial state into yet deeper involvement in the area. In 1955, the Government launched a publicity campaign using fire posters and danger notices to win public involvement in fire prevention.⁵⁷ In 1956, it launched the slogan, 'Prevent hill fires; keep Hong Kong green.'⁵⁸ Directors of forestry made public appeals begging caution with incense sticks during the grave-visiting festival of Ching Ming in 1958, 1962 and 1965 – emphasizing, in 1965, the harm to Hong Kong's 'soil and water'.⁵⁹ Paralleling educational efforts to reduce countryside fires, the Government also launched more punitive actions – the Tai Lam Chung catchment was patrolled by helicopter during the Ching Ming festival in 1966, with those visiting family graves monitored from the air in case incense offerings induced conflagrations. One ancestor-worshipper was indeed arrested after a fire was started.⁶⁰ An infrastructure of fire prevention extended over the catchment areas: a fire lookout was erected at Tai Lam in 1956, fire barriers were created, paths were laid and by the early 1970s there were 12 fire-fighting centres and 6 hill-top lookouts

⁵²Daley, 'Man's influence', 49; A.F. Robertson, *A Review of Forestry in Hong Kong with Policy Recommendations* (Hong Kong, 1953), 3.

⁵³'Meeting discusses H.K. nature conservation', *SCMP*, 20 Mar. 1965; 'Multiple roles of forest recognised', *SCMP*, 13 Sep. 1962.

⁵⁴Dudgeon and Corlett, *Ecology and Biodiversity of Hong Kong*, 85–6.

⁵⁵Daley, 'Man's influence', 50.

⁵⁶'Prevent hill fires; keep Hong Kong green', *SCMP*, 20 Jan. 1956.

⁵⁷*Hong Kong Annual Departmental Report by the Director of Agriculture, Fisheries & Forestry for the Financial Year 1956–57* (Hong Kong, 1958), 68.

⁵⁸'Hill fires in colony', *SCMP*, 20 Jan. 1956; *Hong Kong Annual Departmental Report by the Director of Agriculture, Fisheries & Forestry for the Financial Year 1956–57*, 71.

⁵⁹Ching Ming. Public asked to help prevent forest fires', *SCMP*, 31 Mar. 1965, 13; 'Season of fires on hillsides', *SCMP*, 27 Nov. 1958, 9; 'Public urged to prevent fires', *SCMP*, 25 Dec. 1962, 4. The colonial Government thereby broke with its usual lack of interference into Chinese religious matters in Hong Kong, on which see T.S. Liu, 'A nameless but active religion: an anthropologist's view of local religion in Hong Kong and Macau', *China Quarterly*, 174 (2003), 374.

⁶⁰'Move to prevent more forest fires', *SCMP*, 24 Oct. 1966, 1; 'Public urged to prevent fires', *SCMP*, 25 Dec. 1962, 4.

across the colony.⁶¹ At this moment, a network of field telephones was installed across afforested areas in order to mitigate fire risk through early warnings.⁶²

Both afforestation and hill fire prevention were closely linked with another key way in which the Tai Lam Chung area was transformed – the construction of the Tai Lam Prison, which opened in October 1958 for the rehabilitation of drug users.⁶³ In contrast to crowded prison facilities on Hong Kong Island, this was an ‘open prison’, with an emphasis on rehabilitative labour in the outdoors.⁶⁴ The prison, the reservoir and the new forests were intertwined.⁶⁵ Once construction had ceased on the reservoir, the accommodation built for its labourers and engineers was directly repurposed for the use of 680 prisoners and the prison’s staff.⁶⁶ These prisoners were employed in afforestation work, once they had overcome their withdrawals from narcotics, being conscripted to plant some 200,000 trees in the area, together with the creation of dykes, bunds, roads and paths.⁶⁷ A tree nursery was established within the grounds of the prison itself.⁶⁸ Throughout the 1960s, these prisoners fought the fires which spread among the trees planted around the reservoir.⁶⁹ Facilitating the role of prisoners in forestry work, a telephone wire was installed leading directly across the 5 miles between the prison and the Tai Lam Chung district forest office.⁷⁰

After the construction of the Tai Lam Prison, a further set of disciplinary institutions would follow in proximity to the reservoir. Immediately facing the reservoir’s dam, which overshadowed its buildings, the Tai Lam women’s prison opened in November 1969 – holding women convicted for involvement in sex work, drug use and the 1967 riots.⁷¹ Slightly farther south, the Siu Lam Psychiatric Centre, for prisoners with psychiatric complications, was inaugurated in November 1972.⁷²

⁶¹Hong Kong Annual Departmental Report by the Director of Agriculture, Fisheries & Forestry for the Financial Year 1956–57, 68–9; Daley, ‘Man’s influence’, 54.

⁶²H.K. forestry areas: field telephones used in control of fires’, *SCMP*, 8 Jun. 1956.

⁶³The Tai Lam Prison would later be known as the Tai Lam Correctional Institution, the name it bears today.

⁶⁴Norman, *The Story of Tai Lam Prison*, 1–4.

⁶⁵This carceral labour can also be seen as a late instance of the long tradition of using prisoners as labour for the construction and maintenance of colonial cities in the British empire. Recent works have examined this process for Singapore, for instance, A.A. Yang, *Empire of Convicts: Indian Penal Labor in Colonial Southeast Asia* (Oakland, 2021). Nineteenth-century prisoners in Hong Kong were deported to the Bras Basah Prison in Singapore, for instance, at which site the interned engaged in such labour as printing the *Government Gazette*. B. Tan, ‘Bras Basah convict jail’, Singapore Infopedia, www.nlb.gov.sg/main/article-detail?cmsuuiid=1eeff2ee-7f8b-4cbf-b431-84c9319eba81.

⁶⁶‘Hong Kong’s prison for drug addicts’, *U.N. Bulletin on Narcotics*, 1 Jan. 1961.

⁶⁷C.J. Norman, *The Story of Tai Lam Prison* (Hong Kong, 1963), 4–5; ‘Tai Lam Prison’, *SCMP*, 24 Mar. 1959, 6.

⁶⁸‘Tai Lam Prison’, *SCMP*, 24 Mar. 1959, 6.

⁶⁹‘Inmates help fight plantation fire’, *SCMP*, 17 Oct. 1966; ‘Prisoners help fight forest fire’, *SCMP*, 8 Jan. 1963; ‘Prisoners fight hill blaze’, *SCMP*, 26 Oct. 1966.

⁷⁰*Annual Departmental Report by the Director of Agriculture and Fisheries for the Financial Year 1966–67* (Hong Kong, 1968), 66.

⁷¹‘Tai Lam centre helps these women find a new life’, *SCMP*, 29 Aug. 1970, 10. See the photograph which accompanies this article to demonstrate just how close the prison sat by the reservoir’s dam. N. Perera, ‘Tai Lam’, *SCMP*, 13 Jul. 1975, 6.

⁷²‘Legislation to care for mentally ill in prison’, *SCMP*, 28 Apr. 1973, 7.

Meanwhile, earlier in the same year, the nearby Siu Lam hospital for ‘mentally subnormal’ children was opened in June.⁷³

There were hopes that the Tai Lam Chung system would solve the issue of Hong Kong’s unreliable water supply. The *Far Eastern Economic Review* noted, ‘the water supply should... be continuous throughout the year if population does not increase’.⁷⁴ But with rapidly increasing numbers of mainland migrants in the late 1950s and 1960s, this hope was hollow. Whilst construction of Tai Lam Chung was still ongoing, the Government planned for the future extension of the system – particularly in the form of the Shek Pik Reservoir. Construction of this began in the year when Tai Lam Chung was inaugurated, 1957, and it is to this reservoir that this article now turns.

Shek Pik Reservoir, 1957–68

Whilst construction at Tai Lam Chung remained ongoing, the valley of the Shek Pik River was chosen as a site for another reservoir by the consulting engineers Binnie, Deacon and Gourley. Shek Pik lies farther south than Tai Lam Chung. It is situated at the southern headland of Lantau, the largest ‘outlying island’ of the New Territories. Investigations into the site were undertaken in 1955. Construction of the reservoir began in 1957. Work on its extremely extensive system of catchwaters and tunnels was completed in 1968.⁷⁵ On a map, the reservoir appears much like Tai Lam Chung in shape: a bloated oval, dammed at the south, surrounded by tall hills, with nearby Lantau and Sunshine peaks constituting two of the highest elevations in Hong Kong.

At Shek Pik, an extensive system of 15 miles of catchwaters and tunnels was created to funnel water off the hillsides, constituting a direct catchment area of 3 square miles and an indirect catchment area of 9.6 square miles, with water then transported by 15.3 miles of concrete catchwater and 3 miles of tunnel.⁷⁶ This infrastructure thereby covered almost all the island of Lantau. The water collected in this manner was held by a dam erected in the Shek Pik Valley, before being treated at the coastal village of Pui O, and then being pumped across the Lamma Channel to Hong Kong Island by way of a long pipe laid on the seabed (Figures 3 and 4).

Building this system linked hinterland and core Hong Kong. Analysing the twin islands of Hei Ling Chau and Chau Kung To reveals this. These islands were among the most isolated sites in Hong Kong in the 1950s. Lantau itself was isolated. Just north of the pipeline, Our Lady of Joy Abbey had been founded around this time, in 1956, for refugee Trappist monks. The abbot-general praised the site in that year, as being suitable for the Trappists and their ‘love of silence and prayer away from the haunts of men’, reminiscent of the wilderness in which Christ spent 40 days, and a taste of the delights to come after Christ’s return. But these two islands were more isolated still – among the most isolated sites in Hong Kong in the 1950s.⁷⁷ Sat in the channel between the Hong Kong Island and Lantau, they were used to host populations of the socially shunned or unintegrated, enforcing spatial separation from

⁷³Hospital opening’, *SCMP*, 28 Jun. 1972, 4.

⁷⁴Extract from *Far Eastern Economic Review*, 26 Nov. 1953, Tai Lam Chung water supply scheme, CO 1023/199, TNA, 11.

⁷⁵*Hong Kong, Report for the Year 1968* (Hong Kong, 1969), 175–6, for the completion of the project.

⁷⁶*Report for the Year 1960*, 23–4.

⁷⁷‘Trappist Monastery’, *SCMP*, 20 Feb. 1956, 6.

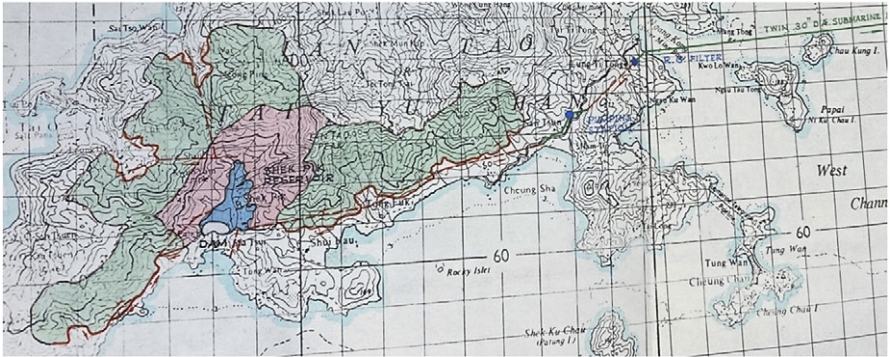


Figure 3. Map (1967) showing the direct (pink) and indirect (green) catchwater-and-tunnel system spanning out from the Shek Pik Reservoir.

Source: Letter from water authority to *Cartactual* dated 6 Jan. 1967, Shek Pik water scheme information, HKRS287-1-437, HKPRO, n.p.

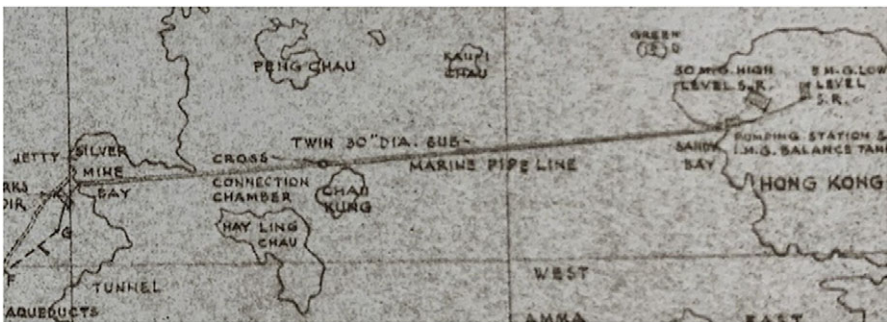


Figure 4. Map (1963) showing the 'Marine Pipe Line' connecting the Shek Pik Reservoir on Lantau Island on the left, the connection chamber off Chau Kung To in the centre, and Hong Kong Island on the right.

Source: 'Hong Kong water supply, Shek Pik scheme, Lantau', Nov. 1960, water supply – Hong Kong, 1960–62, CO 1030/1279, TNA, 102–19, 106.

everyday urban life. From 1950, Hei Ling Chau served as a leprosarium.⁷⁸ From 1953, Chau Kung To was a rehabilitation centre for destitute Chinese refugees, run by a Quaker missionary, a refugee himself.⁷⁹ Both islands served their purposes through being distant from urban Hong Kong and the threats and temptations of contemporary city life. Guy Borgeest, the Quaker founder of the Chau Kung To settlement, confessed that in his youth he had dreamed of being a 'vagabond lying under a sheltering palm on a tropical island', and while his settlement discouraged indolence it was indeed framed as such a tropical arcadia, one where settlers worked hard amidst natural beauty on the island's farm and papaya orchard.⁸⁰ On Hei Ling Chau, published accounts emphasized the modernity of the treatments available but so too its tropical pastoral setting – as in the translated words of one patient who put his

⁷⁸Jason Wordie, 'Memories of Hong Kong's last leper colony', *SCMP*, 17 July 2016.

⁷⁹'New life on Rocky Isle', *SCMP*, 2 Apr. 1961, 2.

⁸⁰'Sunshine Island: Mr Borgeest gives talk of his work', *SCMP*, 19 Oct. 1953; 'Sunshine Island: rehabilitation of destitute H.K. families', *SCMP*, 25 Mar. 1954.

impressions of the island to verse, describing how Hei Ling Chau's 'rippling waters' and 'green hills' made it 'known to the world as the Leper's Paradise'.⁸¹

With the construction of the Shek Pik system, the isolation of Hei Ling Chau and Chau Kung To came to be illusory, however. Hydrological infrastructure linked this remote corner of Hong Kong with the colony's urban and industrial life. In 1963, a submarine pipeline was laid from Mui Wo to a 'connecting chamber' just off the coast of Chau Kung To. The pipe transported water from Shek Pik, by way of Pui O. The water was then sent east to Kennedy Town on Hong Kong Island, to be used either in the city or to be pumped across the harbour to the Kowloon Peninsula. By this process, even the 'Leper's Paradise' of Hei Ling Chau was integrated into the infrastructural network of the Hong Kong metropolis.⁸²

In part, the Shek Pik system had been created exactly because of its isolated quality. At the time of its initial planning, the consulting engineers explained that Lantau was the only remaining area of Hong Kong where work could be undertaken without such major social disruption as had occurred with the Yuen Long landowners.⁸³ Resistance to the reservoir and catchwater system did occur. Distrust of catchwaters as reducing irrigation water supplies spread at Tai O in 1967, but not to the same extent as had occurred earlier in the north-west.⁸⁴ But even without obvious social disruption, Shek Pik was transformative.

On the one hand, the construction of Shek Pik transformed the landscape of the urban centre. Pipes were to be laid under the mid-levels of Hong Kong Island, transporting the water through service reservoirs at Mount High West and Kennedy Town to such wealthy streets as Pokfulam Road and Connaught Road.⁸⁵ On the other hand, the landscape around the Shek Pik Reservoir was transformed too. This again entailed building an auxiliary forestry infrastructure. By 1960, telephone links with Hong Kong Island had been installed, along with two helicopter pads.⁸⁶

A catchwater-carceral assemblage was created in southern Lantau, even greater in extent than that of Tai Lam. Carceral institutions followed reservoir construction, with prisons borrowing from improved road access due to the reservoirs, or – as with Tong Fuk Prison – being built by the same construction companies commissioned for the reservoir system.⁸⁷ A precedent had already been set in south Lantau by the Chi Ma Wan Prison, immediately north of the Shap Long Reservoir and opening a year after the reservoir's inauguration. After the construction of the Shek Pik Reservoir, the Shek Pik Training Centre for criminalized youths opened in 1964. As with the Tai Lam Prison, barracks originally installed for reservoir engineers were repurposed as quarters for the training centre's inmates.⁸⁸ The nearby Tong Fuk Prison would then open in 1966, situated just off the South Lantau Road. The Sha Tsui Correctional Institute would open immediately south of the Shek Pik dam in 1972. In 1984, the

⁸¹'Poem by H.K. Leper', *SCMP*, 14 Apr. 1955.

⁸²'Submarine pipeline laid from Lantau to Hong Kong', daily information bulletin, Hong Kong Government information services, 29 Aug. 1962, CO 1030/1279, TNA, 48–50.

⁸³'Shek Pik Reservoir studies favourable', *SCMP*, 26 May 1958.

⁸⁴'Tai O water supply', memo from water supplies to D.O. South dated 12 Apr. 1967, HKRS287-1-560, HKRPO, 59.

⁸⁵'New water mains for HK Island', *SCMP*, 30 Dec. 1961, 6.

⁸⁶*Hong Kong Annual Report, 1960*, 25.

⁸⁷'Tunnel to Shek Pik completed', *SCMP*, 24 Aug. 1965, 1.

⁸⁸'Third training centre for youths', *SCMP*, 29 Jul. 1964, 6.

existing reservoir-carceral system would be extended with the opening of the high-security Shek Pik Prison, also immediately south of the dam. Connections between the reservoirs, catchwaters and prisons extended beyond propinquity alone. There were intimate interlinkages between the three: prison labour played an instrumental role in reshaping the hydrological landscape of southern Lantau. Prisoners from the Chi Ma Wan and Tong Fuk prisons undertook afforestation and road-building work on the Shek Pik catchment throughout the 1960s and the 1970s.⁸⁹ As late as the early 1980s, these prisons were connected to the piped water system centred on the Shek Pik Reservoir, whilst local villages were often dependent on wells and streams.⁹⁰

As with Tai Lam Chung, then, Shek Pik again integrated hinterland and core, and was characterized by follow-on effects in afforestation, conservation and incarceration.

Conclusion

In 1979, the MacLehose Trail was inaugurated. This is a long-distance hiking trail which spans the New Territories from Sai Kung in the east to Tuen Mun in the west. The opening of the trail was celebrated by newspapers for permitting the escape of Hong Kong's residents from the city into nature. 'Good for getting away from it all', the *South China Morning Post* entitled one article. 'Escape into the wilderness' was another. This article noted: 'One of the great paradoxes of living in Hong Kong is that we have some of the world's most densely populated areas situated almost cheek-by-jowl to vast tracts of undeveloped virgin country.'⁹¹

Yet what is striking is that the MacLehose Trail did not really entail 'getting away' nor escaping into 'wilderness' at all. The trail passes through a landscape of natural beauty, but one which had been extensively engineered as a hydrological infrastructure for the benefit of urban and industrial Hong Kong. The trail begins on the access road to the High Island Reservoir and passes along two of the reservoir's dams. The trail's middle section passes alongside the Shing Mun Reservoir. Its final stage comes after passing along the Tai Lam Chung Reservoir. Signs to guide hikers are sculpted into the concrete of the catchwater. The Lantau Trail, which was inaugurated in 1984, is similar: it passes for one stage directly along the concrete catchwaters delivering water into the Shek Pik Reservoir. In neither case was Hong Kong's natural landscape in fact paradoxical – Hong Kong's natural landscape had become isomorphic with its hydrological infrastructure. For all their natural beauty, these are landscapes of urban and industrial utility, serving to funnel water to the urban centres of the colony.

In answering this paradox, this article has made contributions both to the study of Hong Kong, but also to the literature on urban political ecology more broadly.

This article has pushed beyond the binary of 'urban' versus 'green' or 'rural' Hong Kong. Most literature has described division, difference and diversion between Hong Kong's urban centre and its rural New Territories hinterland. The terms the 'great

⁸⁹Chimawan prisoners start work in Shek Pik', *SCMP*, 3 Nov. 1960; 'Governor visits Lantao', *SCMP*, 26 Sep. 1964, 6; T. Lewis, 'Inside Chi Ma Wan Prison', *SCMP*, 2 Sep. 1970, 6.

⁹⁰V. Wong, 'Water just a pipe dream for some...', *SCMP*, 25 Mar. 1984.

⁹¹V. Wong, 'Great for getting away from it all', *SCMP*, 4 Aug. 1979; 'Escape to the wilderness', *SCMP*, 29 Dec. 1979. If Wong recycled popular tropes of the wilderness of Hong Kong here, then elsewhere she wrote incisively regarding the reservoir-prison nexus on Lantau Island, for which see Wong, 'Water just a pipe dream for some...'

difference', the 'great rift' and the 'great divide' have been used to diagnose the relationship.⁹² But, informed by urban political ecology, this article has rather stressed convergence. Hydrological infrastructure directly connected hinterland to centre. This interconnection transformed the hinterland: it led to state attention, afforestation and prisons. Even the Leper's Paradise of Hei Ling Chau was brought into connection with Hong Kong's urban centre. At the same time, the article has supplemented the rich existing literature on the importation of Guangdong's water to Hong Kong, among other cross-border flows. This importation was of major significance, as these works have shown.⁹³ But attention to these flows ought not occlude the importance of transformative developments within the colony itself, as explored by this article.

This article has implications for a much broader audience than that concerned exclusively with the history of Hong Kong and mainland China. It has contributed to studies of the history of Hong Kong with its urban political ecological perspective. This Hong Kong case-study also contributes to urban political ecology more broadly. For one, it has helped counteract the elision of Global South and East Asian sites from urban political ecological perspectives, recently noted in a state-of-the-field article by Matthew Gandy.⁹⁴ But so too is Hong Kong an especially acute site to consider issues at the heart of urban metabolic thinking. Hong Kong played an important role in the emergence of this perspective. This school of thinking was partly developed in the late 1970s and early 1980s, when Stephen Boyden and his 'Man and the Biosphere' project, Ken Newcombe and others studied the urban ecology of Hong Kong. This article has helped further that body of work, whilst also extending beyond it – employing the tools of the historian to ground this foundational urban-metabolic work in the archive.

In 1978, almost simultaneous to the opening of the MacLehose Trail, Ken Newcombe, Jetse D. Kalma and Alan R. Alson published 'The metabolism of a city: the case of Hong Kong' in the journal *Ambio*. The article applies an urban-metabolic perspective to Hong Kong, tracing such inputs and outputs as 'liquid fuels', 'human food' and 'fresh water'.⁹⁵ One diagram interposes the statistics of these flows over a visual diorama of Victoria Harbour, with urban Hong Kong in the foreground and Kowloon and the mountains of the New Territories behind. The image is a striking illustration of metabolic flows across the physical landscape (Figure 5). Their work represents foundational thinking in situating Hong Kong within its broader ecology, to which later work is indebted. But it remains abstracted and disembodied: 'fresh water' hovers over the land, a statistical input divorced from its landscape. In contrast to this disembodiment, this article has traced the material and political circumstances

⁹²Hayes, *The Great Difference*, 1; C. Lange, 'New Territories: deconstructing and constructing countryside – the great divide of rural and urban in Hong Kong', *Architectural Design*, 86 (2016), 92; J. Hayes, 'The great difference, the great rift, and the great need: the New Territories of Hong Kong and its people, past and present', *Asia Pacific Journal of Public Administration*, 30 (2008), 1.

⁹³T. Zhou, 'Leveraging liminality: the border town of Bao'an (Shenzhen) and the origins of China's reform and opening', *Journal of Asian Studies*, 80 (2021), 337; D.Y. Ho, 'Hong Kong, China: the border as palimpsest', *Made in China Journal*, 8 Feb. 2021; Clayton, 'The roots of regionalism'; Lee, 'The changing nature'.

⁹⁴M. Gandy, 'Urban political ecology: a critical reconfiguration', *Progress in Human Geography*, 46 (2022), 22 and 25.

⁹⁵K. Newcombe, J.D. Kalma and A.R. Aston, 'The metabolism of a city: the case of Hong Kong', *Ambio*, 7 (1978), 4.

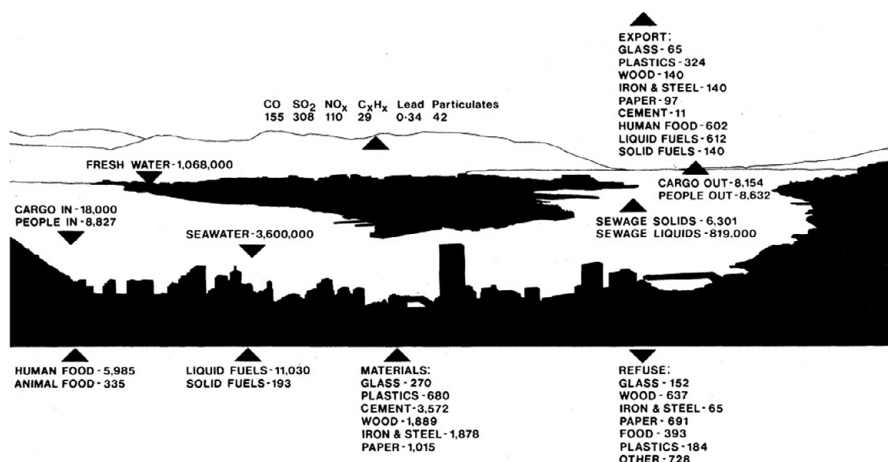


Figure 5. Diagram showing the urban metabolism of Hong Kong, reproduced from the *Ambio* article of Ken Newcombe, Jetse D. Kalma and Alan R. Aston. Note the input of 'fresh water' on the left.

Source: Reproduced from K. Newcombe, J.D. Kalma and A.R. Aston, 'The metabolism of a city: the case of Hong Kong', *Ambio*, 7 (1978).

of Hong Kong's urban metabolism. If it were to reproduce this diagram itself, it would emphasize the two pipelines which run beneath the harbour, permitting the transportation of Kowloon and New Territories water. Or the pipeline which runs just to the left of this diagram, arriving at Kennedy Town having passed the 'Leper's Paradise' on its way from Shek Pik. Or in the hills in the background, it would describe the new landscape created by catchwater colonialism: one of simultaneous afforestation and incarceration. In short, informed by the archive, it provides an account of the material and socio-political underpinnings of this abstract model of metabolism. Less 'Man and the Biosphere', that is, than an account of specific people, like Tang Tai-kwong and his disappearing water, or the inmates of Tai Lam, Siu Lam, Tong Fuk and Chi Ma Wan, in specific, transforming landscapes.

Through a nuanced archival study, this article has described a landscape which had become simultaneously wild and carceral, rural and urban, natural and infra-structural. This was a landscape reshaped by the urban metabolism forged in the particular fulcrum of Hong Kong's catchwater colonialism.

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