

Chapter One

Central Melbourne

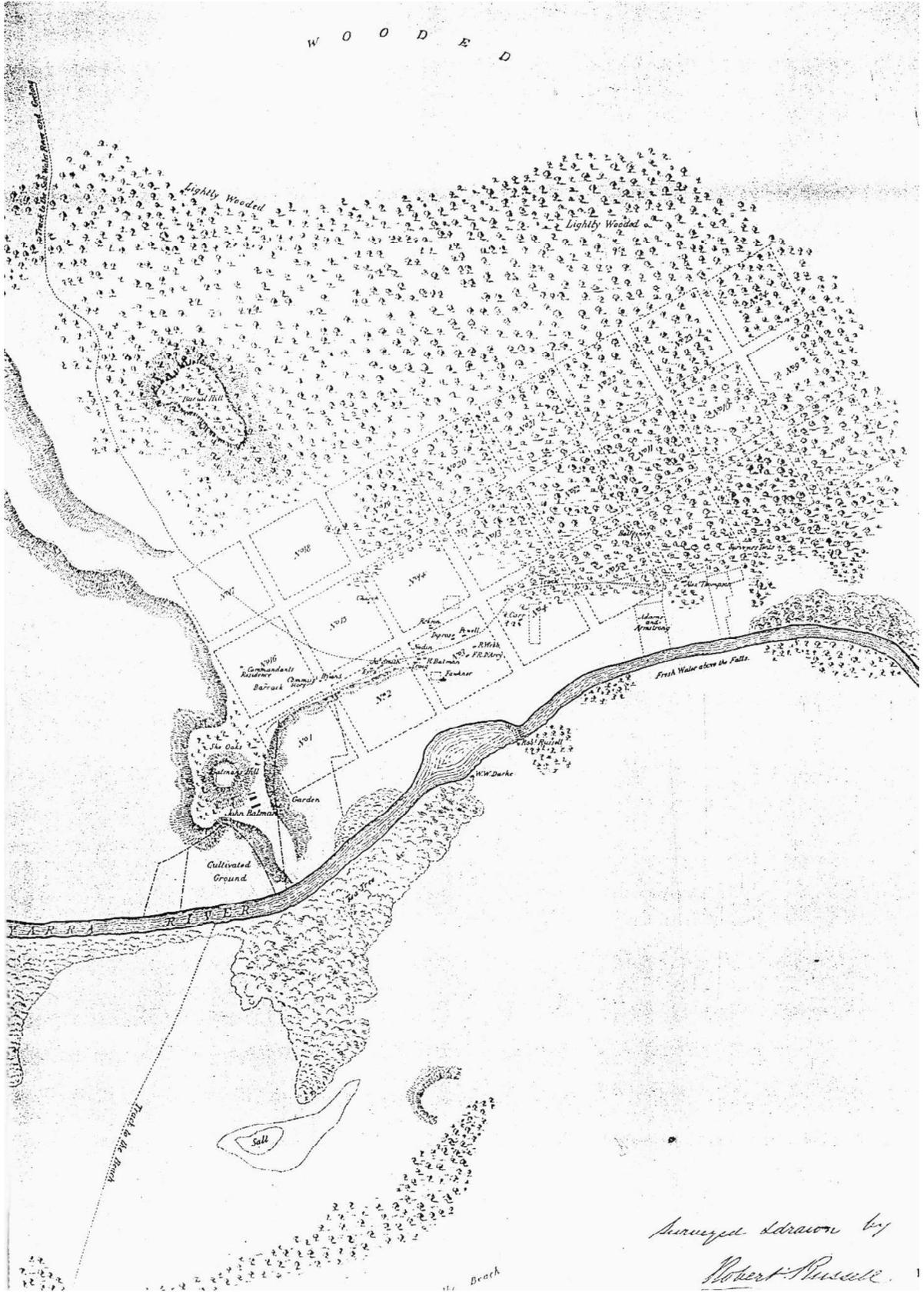
1.1 Introduction

Roads have been an essential part of the social and economic structure of the great metropolitan city of Melbourne, from its founding to the present day. This book tells just a little of the fascinating story behind their location, construction, use and continuing development. The work is written with a strong physical bias. Readers searching for information on the more human side of inner Melbourne's streets and roads are referred to Andrew Brown-May's excellent book *Melbourne street life*¹ and to Robyn Annear's evocative *Bearbrass: imagining early Melbourne*.²

John Batman was a Tasmanian free settler, pastoralist and land-owner. Encouraged in part by glowing reports from both explorers Hume and Hovell, he had first asked the Colony's administrators in Sydney for a land grant in the region covered today by Victoria in 1827. This and subsequent requests were consistently rebuffed. On 27 May 1835 Batman and ten colleagues left Launceston, aiming to cross Bass Strait and circumvent the government by obtaining vast tracts of land in the "vacant" Port Phillip District. He arrived uninvited and unannounced. His action was also illegal, as the Colony's law prohibited the establishment of new settlements without Sydney's prior approval.³ However, Harcourt argues that Batman had high expectations that his actions would subsequently be legalized.⁴

In his defence, Batman and his colleagues had mounted the argument that Sydney had no jurisdiction over the area. Batman arrived at the mouth of the Yarra on 2 June 1835 and on 6 June 1835, somewhere in Melbourne's northern suburbs, Batman made a private treaty with the brothers Jagajaga and other local aborigines to take up a huge portion of their land.⁵ When he returned to Launceston, he boasted that he was "*the greatest land-owner in the world*." A very detailed and human account of the settlement is available.⁶

On Monday, 8 June 1835, his schooner sailed some 10 km up the Yarra River to a natural basin of "*good water and very deep*." Two other factors intervened. First, the right bank of the river offered firm landing after the soft swamps of the river estuary. Second, some small "*falls*", or "*rapids*", near the current site of Queens Bridge created a drop of about 1.5 m in water level at low tide.⁷ This was enough to ensure a supply of fresh water above the site and to prevent the further upstream passage of seagoing ships. For obvious reasons, the location came to be known as the "*turning basin*" or "*saltwater basin*". These features can be seen in Map 1.1. The falls were formed by a basalt reef⁸. When the reef was fully removed between 1883 and 1893, there was a noticeable draining of swamps as far up-river as Scotch College.⁹



Surveyed & drawn by
 Robert Russell.

Map 1.1 Portion of Russell’s first map. Full version of “Map shewing the site of Melbourne and the position of huts and buildings previous to the foundation of the township by Sir Richard Bourke” available as <http://handle.slv.vic.gov.au/10381/74744> or <https://bit.ly/3qlJmNe>. Other very similar other maps are probably overlays or redraws of this map. Dated 1836 and 1837, parts might have been drawn in 1836 but this book lists it as 1837. Russell is discussed in Sub-Chapter 1.2, which also describes the debate over the relative contributions of Russell and Hoddle to the basic Melbourne plan¹⁰. The dotted squares on the Map exactly foreshadow today’s city streets. It appears that Russell did the surveying and his assistant, Frederick d’Arcy, drew the map.¹¹

In his journal, Batman declared “*This will be the place for a village.*” The statement is from John Batman’s Journal¹². However, Davison comments¹³ that “*modern scholars believe (Batman) was actually up the Maribyrnong River making his treaty with local aboriginals when other members of his party reached this part of the river and came ashore, probably near Southbank.*” In 1803 Governor King had sent an expedition under Grimes to explore the Port Phillip District. Its diarist (and former gardener) James Fleming had recorded Charles Grimes’ comment “*The most eligible place for a settlement that I have seen is on the (Yarra) River.*”¹⁴

On 26 August 1835, Governor Richard Bourke abolished all private land claims in the Port Phillip District – effectively land south of the Murray River – which he formally claimed as part of the Colony of New South Wales. Disposal of any land rested solely with the Crown and so Bourke was able to declare Batman’s claims to be void. The decision had no short-term impact. Just four days later Captain John Lancey – a retired sea captain sponsored by Batman’s rival Tasmanian developer, John Pascoe Fawkner – sailed the schooner *Enterprize* to the turning basin and began unloading stores and horses. In blissful ignorance of Bourke’s decision, he quickly turned Batman’s village vision into a shared reality.¹⁵

Later in the year, Melbourne’s first wharf was established along the northern edge of the turning basin at a site marked today by Immigration Museum which was the original Customs House in Flinders St¹⁶ (Map 1.1 and Figure 1.1). Beginning with the *Enterprize* and its cargo of first settlers, ships of up to 90 t were soon safely using the wharf which was to develop into a major facility known as Queens Wharf. By 1841 parts of the wharf were to come to within a few metres of the current corner of William St and Flinders St. A more recently constructed “commemorative” wharf at the general location¹⁷ is called the *Enterprize Wharf*.



Figure 1.1 Painting from 1844 showing Queens Wharf, the Customs House and the rocks forming the rapids in the Yarra SLV

The town’s first ways were rough and random riverside towpaths used for hauling sailing ships between the river mouth and the turning basin. The first “road” was also created in 1835, following the establishment of Queens Wharf. It wandered westward from the wharf and the associated river flood plain, towards useful high ground, later known as Batmans Hill,¹⁸ marked approximately by the current Batmans Hill tram stop where Collins St crosses the Southern Cross Station rail tracks. Map 1.1 suggests that Batmans Hill was closer to the line of Flinders Lane and that the first road foreshadowed the future location of the Lane. The more carefully drawn Map 1.2 discussed below places it about 50 m north of the line of Flinders Lane. Batman created a farm there with his house at the foot of the Hill on a

strip of land leading to the right bank of the Yarra. The hill was so-named after Batman's death in 1839. It was levelled in 1863-5 during the building of the Spencer St (now Southern Cross) railway station.

Bourke was soon aware that he not only had Batman and his team to contend with, but also Fawkner's supporters and an increasing number of overlancers travelling south from New South Wales (see Sub-chapter 3.1). Not surprisingly, by October he was pragmatically arguing that it would be simpler to administer and tax the various trespassers, rather than to prosecute them. In response, and to fill the vacuum, the Secretary of State for the Colonies on 13 April 1836 made the new village official. This permitted the Governor on 9 September 1836 to give the settlement his blessing and recognition, and thus hopefully turn its 200 or so trespassers into honest, taxpaying citizens.¹⁹

Batman's behaviour in illegally establishing Melbourne set a grand local precedent and Lewis²⁰ has remarked that one of the unique features of Melbourne is that "*it was established by speculators, technically in breach of the law.*" Chapter 2 will support his further thesis that, subsequently, its "*hinterland was licensed, leased and purchased by investors and speculators.*" Barrett similarly speaks²¹ of:

"industrious men who, after establishing their economic enterprises in the new settlement, were to turn their thoughts to the need for suitable public authority."

The Melbourne so described is thus the consequence of private enterprise and private speculation, and of largely ineffective government intervention. Davison noted²² that from the beginning "*Melbourne had been essentially a commercial settlement*". For all this to be imposed on an unprepossessing terrain was surely a recipe for disaster. What, if anything, happened to produce, instead, a fine and functioning metropolis that has long claimed to be marvellous Melbourne? The first use of the phrase was attributed to G. A. Sala, a popular English journalist, who wrote in 1885 "*It is gold that made Melbourne what she is – magnificent and marvellous.*"²³

The following text will provide some clues to assist in answering this question, but let it be clearly said from the outset that the answer was not the slavish and unswerving adherence to a visionary and universally accepted grand plan. Perhaps the first clues might come from the visitor in 1839 who observed²⁴ "*the enterprise, activity and attention to business of the gentlemen of Melbourne*" and the commentator in 1841²⁵ who described Melbourne as "*a lusty, stately city, vigorous in its growth.... a bustling, stirring sort of place.*" In her splendid thesis, Rose McGowan had a somewhat different explanation when she noted²⁶:

"the magnificent foresight and faith in the future city that characterised these people, a mere handful of settlers along the banks of a small river."

1.2 The first plan

By its second year the small settlement had occupied the riverside strip from the "falls" downstream to Batman's Hill. A census²⁷ showed that by November 1836 its population had grown to 186 males and 38 females. All but three were Tasmanian emigrants. Sensing uncontrolled change in the Port Phillip area, the Sydney-based administrators of the Colony of New South Wales felt obliged, in September 1836, to use Captain Hobson and his ship *Rattlesnake* to send former army officer and now civil servant Captain William Lonsdale to act as police magistrate, with the aid of a detachment of about 30 troops (see also Chapter 2.1a). His charter meant that he was local police chief as well as magistrate. William Lonsdale later became far more than that and Barrett describes him as a one-man Board of Works.²⁸ When the District became an independent Colony, he was retained as the Colonial Secretary.

Later in the year, Sydney sent a junior surveyor, Robert Russell, to reconnoitre and register the land. On 5 October 1836, Russell and his assistants, Frederick d'Arcy and William Darke, arrived from Sydney on the HMS *Stirlingshire*. The ship anchored at Williamstown in the area marked today by Nelson Place. Russell was born in 1808 and had trained as an architect. He had been a surveyor in Ireland and worked as an architect on Buckingham Palace, emigrated in 1833 and had surveyed part of Sydney²⁹. He was an excellent artist, having trained under Conrad Martens, and left many water-colours of the early town. He was made Clerk of Works (i.e. in charge of public works, including roads) in 1838, but was sacked in 1839 for neglecting his duties – he preferred painting.³⁰ He has been described as "*inexperienced and dilettantish*".³¹

Problems with their horses kept Russell's team in the settlement area longer than intended. The horses' sea journey on the *Martha* had taken 19 days, but their food had only lasted 9 days. The starving horses finally arrived on 1 Nov 1836.³² The 1836 survey took a week, using a theodolite, chain and rod and closing with a full triangulation³³. Triangulation (or trigonometric surveying) is a surveying process in which surveyors check the accuracy of their work, often by returning to their starting point, to discover whether their calculated path also returns to the datum.³⁴

In accord with his minimal-disturbance-to-settlers philosophy, Map 1.1 shows about 25 huts, with only three located in a street (Collins St), although Russell recalled that five were affected. The map also shows that Russell and Darke had established gardens at the Falls, but on the left bank. In a note to the colonial Surveyor General dated 25 November, Russell recorded that “*in order to fill up the time*” he was commencing a plan of the settlement.³⁵ He much later recalled “*While we were waiting, it occurred to me that we might as well fill in time by making a survey of the future settlement.*”³⁶ This plan was probably completed by 21 December 1836 and certainly by February 1837.³⁷ On 4 February 1837 Governor Bourke had named the embryonic settlement Melbourne, after the then-current British Prime Minister.

Russell later explained³⁸ the procedural basis for his actions “*Out of mischief I made a survey of the site of Melbourne, without official instructions.*” In an interview,³⁹ Russell was asked why he had picked the particular site for Melbourne. He replied: “*That was largely settled for me by the first settlers...whom I sought to disturb as little as possible...to have as few of the huts as possible actually in the streets.... The old falls on the Yarra really determined the position of the city.*” Russell much later⁴⁰ recounted how he had sent the original of Map 1.1 to his father in England, as Russell “*looked upon it as my own property, as I was merely filling in time.*”

Map 1.1 was submitted by Hoddle to Governor Bourke on 24 March 1837 describing it as “*A small plan of the Settlement by Mr Russell on which I have shown the Town of Melbourne.*”⁴¹ In his Field Book for 8 March 1837 Hoddle had noted that for the Town’s streets “*the line to be as pointed out by the Governor.*”⁴² Thus, there is uncertainty as to who contributed the non-conventional aspects of the plan of the intended town but, as Russell reported to Hoddle, there is at least a formal basis for assuming Hoddle’s intellectual ownership. The plan was approved by Governor Burke in the following month.⁴³

Despite the above doubts, Map 1.1 is certainly Melbourne’s first plan. The role of the right bank of the Yarra and its falls in determining the location and alignment of the town’s plan were discussed in Sub-Chapter 1.1. The other key locational determinant was that Spencer St, particularly at the Bourke St intersection, was as far west as possible, being on the last high ground before the land dropped away into the swamps of the Yarra estuary. It also avoided physical and personal problems that would have arisen from involving Batmans Hill in the proposed plan. A second useful feature of the plan was that it resulted in the key local creek running down one of the streets (Elizabeth St) and through land intended for public sale.

Russell recounted that his planning concept had been based on “*a plan in the Sydney office generally approved as suitable for laying out a new township, and I had a copy of it.*”⁴⁴ Since 1829 plans of all new towns had been sent to Sydney for approval, and so the plan Russell had could have been the plan for one of many towns, from East Maitland onwards.⁴⁵ On another occasion⁴⁶ Russell said, “*The arrangement of Melbourne streets was simply that which the Sydney government decided on.*” The head office plan was indeed the then-standard rectangular-grid (or checkerboard or draughtsboard) town plan that had been used throughout the New World.⁴⁷ Locally it was given force by Governor Ralph Darling’s proscription for town planning in 1829 via his *Regulations for the laying out of townships*, Government Order Number 28, issued by the Colonial Secretary’s Office on 27 May 1829.⁴⁸ Darling had not embodied the north-south requirement in Order 28, contrary to some published statements.⁴⁹ In 1837 Colonel William Light used the same rectangular grid of north-south allotments, mostly at a one-mile spacing, in his laying out of Adelaide.⁵⁰

Some seven years prior to Melbourne’s founding, Governor Darling had been concerned with the haphazard manner in which the Colony had been developing and had had a number of vigorous discussions with Major Thomas Mitchell, his colonial Surveyor-General. It has also been suggested that the Governor might also have been motivated by the way disreputable citizens had been able to congregate undetected in Sydney’s narrow streets and lanes.⁵¹ Driven by a desire for order and symmetry, in 1828 he set up a three-man board to produce planning regulations. The Board comprised Mitchell and himself and was chaired by the Inspector of Roads and Bridges, Henry Dumaresq. Darling’s relations with Mitchell were not friendly,⁵² whereas Dumaresq was his brother-in-law and had accompanied him to Australia. The main discussion related to road widths. Mitchell favoured the narrow, shady streets of Spain and North Africa, which he considered ideal for a hot, dry climate. Wonderful, and appropriate, current examples exist in the Jewish quarters of Seville and Cordoba and the Alcaiceria of Granada. Dumaresq preferred the wide streets he had seen introduced into colonial India.⁵³ After protracted discussions lasting over a year, Darling came down on the side of Dumaresq, selecting a basic 100 ft road width (see below).

Unless otherwise noted, this book uses the terms *street* and *road* interchangeably, although *road* may imply a highway and *street* a local way, as illustrated by the use of the terms in the preceding paragraph.

The new planning regulations were published in the Sydney Gazette⁵⁴ on 30 May 1829. The order was needed as the replacement of a land tenure system with formal land sales was imminent.⁵⁵ Due to some last-minute lobbying by Mitchell, there appears to have been something of a muddle at the time and three critically different versions of the regulation existed, however Order 28 is the “definitive” version.⁵⁶ Later that year the plan was first formally applied in Australia to East Maitland,⁵⁷ near Newcastle, and then to Goulburn and Port Macquarie. Thus, it had been well used before it was applied to Melbourne.

Whilst there was much technical merit in Mitchell’s view, cities in the aftermath of the Industrial Revolution were already suffering pedestrian congestion on narrow streets designed as local places rather than as thoroughfares.⁵⁸ Indeed, some respected commentators criticised the 100 ft as too low. Maslen wrote that Darling’s 100 ft “*in a warm and dry climate will neither admit of a current of air nor prevent conflagrations from spreading. I state this from experience on the ground in India.*”⁵⁹ There was some early retrospective agreement with Mitchell, with commentator Griffith writing in 1845 that Melbourne’s streets were “*immoderately wide.....too wide for a village.*”⁶⁰ In the context of the small buildings of the time, they probably did look disproportionately wide, as Figure 12 illustrates.



Figure 1.2 Elizabeth St looking north in 1847 J S Prout nla

At this stage, our text must switch between the foot units used by the administrators and the chain units used by the surveyors, who measured distances primarily with a special 66 ft (20.12 m) long chain. The chain was the surveyors’ standard device for measuring distance and the nominal 66 ft chain was typically about 66.4 ft long in order to accommodate the inevitable sagging of the chain. There were 80 chain to the mile and 10 square chains to the acre. Thus, a square mile would contain 640 acre. Most land-related records used chains. The advantage of the “80 chain” definition was that smaller practical dimensions could be obtained by simply halving (and then quartering, etc) the surveyor’s original length.

Order 28 was associated with the “Section” land survey process that had been British colonial practice for over a century and which is discussed in more detail in Sub-chapter 2.1. It was based on an array of mile square sections and the intention in many land sales would have been that a square mile would then be divided into $8 \times 8 = 64$ Sub-sections, each with an area of 10 acre. As discussed in Sub-chapter 2.1(c), in many cases no practical provision was made for road space. It was presumably assumed that this would be provided by the new property owners.

Order 28 dramatically influenced Melbourne’s form and so requires some explanation, particularly as it is far from a model document, being obtusely worded and specifying neither principles nor outcomes. Instead, it circumvents the road space problem, concentrating on the intermediate outputs by specifying the allotment sizes and road widths. A systematised recasting of the key surficial features of Order 28 leads to the following core requirements:

* Clauses 2 & 3. Main streets are to be straight and 100 feet⁶¹ {1.51 chain} wide. (An initial version⁶² of 15 October 1828 only required 84 feet.) Effectively, 1.5 chain (99 ft). Prior to this, a 60 ft width had commonly been adopted in NSW. The 100 ft would provide an 80 ft carriageway and two 10 ft footpaths.

- * Clauses 2 & 3. Cross streets are to be orthogonal to the main streets and 84 feet {1.27 chain} wide.
- * Clause 10. The rectangles created by the grid of main and cross streets are to be 10 chain deep between sequential main street property lines. (A square with 10 chain sides has an area of 10 acre.) Note that these rectangles, which we will call *property sub-sections*, were defined by property lines, rather than street centre-lines.
- * Clause 10. Each allotment within a *property sub-section* is to be 0.5 acre {5 sq chain} in area or “as nearly as the nature of the ground and other accidental circumstances will permit”. In practice, a small deduction was also made to provide for the access lanes (Figure 1.3).
- * Clause 10. Each allotment solely adjoining a main street is to be 1 chain wide and 5 chain deep. Typically, there were 6 such adjacent allotments facing a main street (Figure 1.3). The number of such allotments is not specified. There would be $6 \times 2 = 12$ for a square *property sub-section*, which would be 10 acre in area.
- * Clause 10. Each allotment adjoining a cross street is to be 2.5 chain wide and 2 chain deep. Typically, this led to the *property sub-section* having a 10 chain frontage to the main street.⁶³
- * Clause 16. *Property sub-sections* may be devoted to churches, markets, backyards and other public purposes. This was not in the published Order, but was in the earlier minute 34.⁶⁴

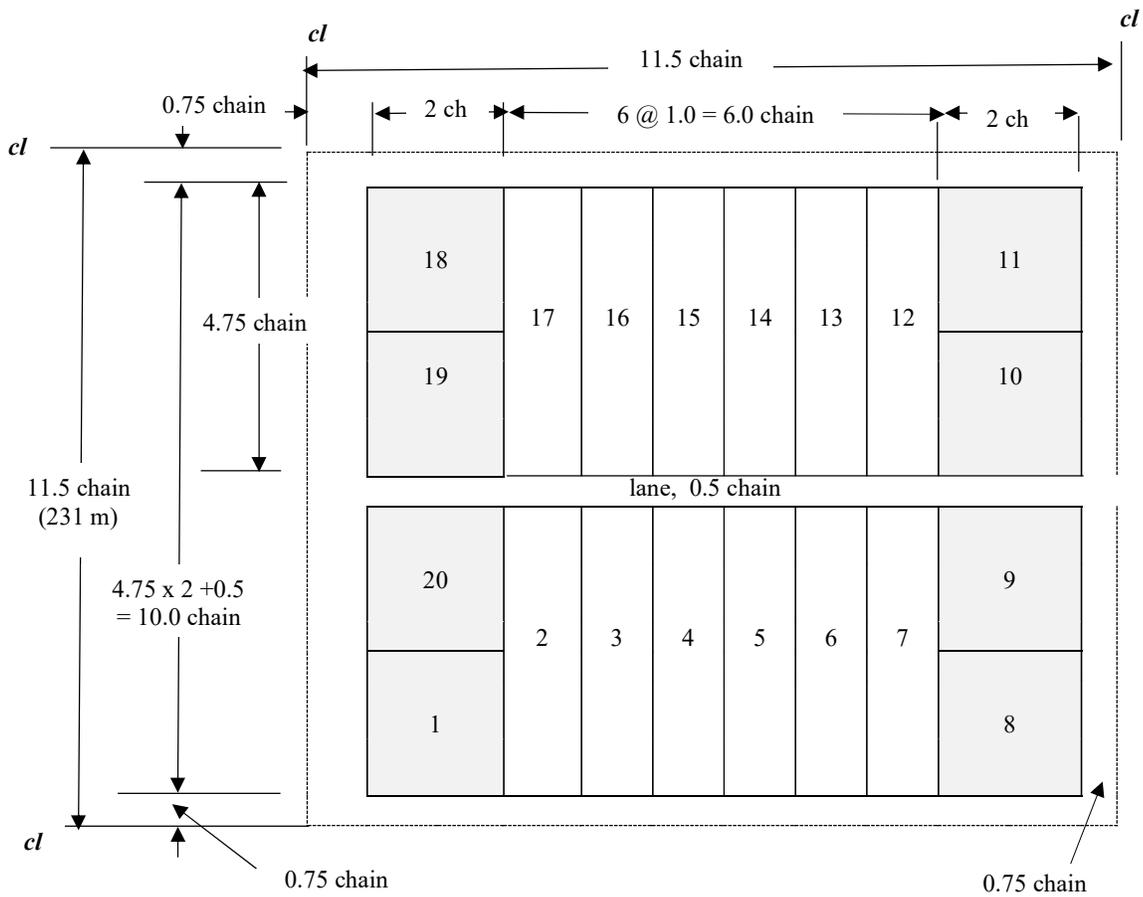


Figure 1.3 Creation of allotments within a *property sub-section*, following Order 28. The sub-sections are shown in Figure 1.4. *cl* = road centre-line

Fawkner's intense subdivision of Allotment 1 in Section 2 into 11 "sub-lots" by 1840 has been well documented.⁶⁵ The *property sub-section* has a nominal area of 10 acre and so each allotment has a nominal area of 0.5 acre. The lane took 0.5 acre, leaving actual areas of 9.5 and 0.475 acre, respectively. In old units, the allotment size was then 76 perch (0.5 acre is 80 perch). Hoddle's plan of 1837 (Map 1.2 below) notes that each allotment has an area of "76 perch". Indeed, the Crown Grant for Melbourne's first land sale (Lot 1 in Section 2) shown on p11 of Volume 3 of Historical Records of Victoria gives its area as 76 perch.

Thus, the initial Melbourne application of Order 28 did not consider street widths and could not be accommodated within the conventional mile-square *section*. Keeping the blocks to the Order's full acre units (e. g. 10 acre and 0.5 acre) and the street widths to Hoddle's 1.5 chain and 0.5 chain could have been achieved by resurveying the new settlement but would have caused delays unacceptable to Governor Bourke.⁶⁶ It would also have been inconsistent with the mile-square sections used elsewhere in the settlement and discussed in Chapter 2.1.

Russell's informal but otherwise proper application of Order 28 to Melbourne via his copy of the "Sydney office plan" consisted of three rows of eight *property sub-sections*, created by using four main streets and nine cross streets (Map 1.1). He commented⁶⁷ that his plan was "*scarcely a design, simply 24 ten acre squares.*" Including Hoddle's 1.5 chain roads and 0.5 chain lanes, it covered a rectangular area 8 blocks long by 3 blocks wide with the dimensions of:

$$8 \times 11.5 + 2 \times 0.75 = 93.5 \text{ chain} = 1.17 \text{ mile} = 1.88 \text{ km, by}$$

$$3 \times 11.5 + 2 \times 0.75 = 36.0 \text{ chain} = 0.45 \text{ mile} = 0.75 \text{ km}$$

This 1.88 km by 0.75 km area is now bounded by Flinders St, Spencer St, Lonsdale St and Spring St. Hoddle's carefully drawn plan confirms that the property Sub-sections were each 10 chain long and the whole subdivision was therefore significantly greater than a mile in length.

Another unusual feature of Russell's Melbourne application of the "standard" Order 28 plan was that the main streets were not precisely aligned to the north-south and east-west compass directions as had been religiously followed in most earlier applications of the grid plan.⁶⁸ Instead, they deviated by 28° to the west in order to align with the direction of the Yarra River near the first wharf and the swamp adjacent to Spencer St (Map 1.1). Despite the problems that this would soon cause, Lindsay Clarke's later subdivision of Footscray township in 1849 aligned its streets parallel to the adjacent bank of the Maribymong River, thus also ignoring the precepts of both compass and consistency.⁶⁹ It should be noted that, although it was common practice, Order 28 does not contain a requirement for the north-south orientation of its streets.

In March 1837 Governor Bourke used the HMS Rattlesnake's second visit to review the happenings in Melbourne. He brought with him the Colony's Assistant Surveyor-General, Robert Hoddle. He had also intended to bring Mitchell, but the Major was on leave in England. Hoddle, in turn, was accompanied by a survey party of six ex-convicts. The party landed on⁷⁰ 4 March 1837 and on 7 March, Bourke directed that the town be named Melbourne in honour of the then British Prime Minister, Viscount Melbourne.⁷¹ In response, Hoddle accepted and built upon Russell's spare-time work outlined in Map 1.1, producing a plan of the town of Melbourne in 25 March 1837 (Map 1.2). The first land was offered for sale within the Hoddle plan on 1 June 1837.⁷² A controversy surrounding Russell's role was addressed by McComb.⁷³

Map 1.2 Hoddle's 25 March 1837 plan of the "Town of Melbourne". The map may have been an overlay of Map 1.1. Available as http://search.slv.vic.gov.au/permalink/f/1cl35st/SLV_VOYAGER968078. Hoddle 1837a.

A major incentive for these first land sales was that Colonial Secretary, Lord Glenelg, had told Bourke on 31 May that:⁷⁴

" the proceeds of the sale of Crown lands in the District of Port Phillip should be applied to the improvement of this new settlement..."

There were many who would later question whether this promise had ever been kept. A condition of each sale was that 2 guineas be paid at the conclusion of the auction and the remainder of the price within a month. A substantial building had to be erected within three years.

In advocating for the use of the standard plan based on mile-square sections, Hoddle argued strongly and successfully for the adoption of 1.5 chain (99 ft or 30 m) for the width of main streets, and implied that all streets should be main streets. Despite misconceptions by many commentators, this 1.5 chain width was in Darling's Order 28 for main streets - but it was conventionally ignored in favour of a 1.0 chain width for all streets. Hoddle's stance for wide streets in the small settlement showed considerable foresight. He later reported⁷⁵ that the successful case that he had put to

Governor Bourke was that the wide streets would be advantageous to the health and convenience of the future city. . There is no first-hand record – Cannon laments “*no original documentation appears to have survived*”.⁷⁶

Bourke in his turn advocated the radical addition to his predecessor’s Order 28 of the city’s now-distinctive Little streets serving as 0.5 chain (10 m) wide lanes. Their width was deemed sufficient to service the rear of the 96 m deep allotments. Bourke said he had added the lanes parallel to the main streets “*to give the owners a means of getting the cows in and out of their backyards*”.⁷⁷ They also allowed the front access to the main street to be devoted to pedestrians and owners were prohibited from making any “carriageways” across the main street footpaths. On the other hand, footpaths were prohibited in the Lanes.⁷⁸ Nevertheless, by 1838 Police Magistrate William Lonsdale and colonial Deputy Surveyor-General Samuel Augustus Perry were reporting that the lanes were being used as property frontages.⁷⁹ Indeed, Perry predicted that – because of this – “*Melbourne would be ruined before it had risen to maturity*.”⁸⁰ In another more florid statement reported he replaced “*maturity*” by “*one of the most striking ornaments in the southern world*.”⁸¹

When Governor Bourke subsequently ordered Hoddle to include the 0.5 chain lanes, Hoddle reduced the north-south building line dimension to 4.75 x 2 + 0.5 chain to preserve the building line and, just coincidentally, to avoid having to resurvey the site. The resulting arrangement is shown in Figure 1.3. The building lines were not very well-marked and were the source of many later disputes.⁸²

Hoddle was born in Westminster in 1794, trained in the army as a surveyor, and worked in South Africa before coming to Australia in 1823.⁸³ He participated in the town planning of Brisbane, Berrima, Liverpool and Goulburn before coming to Port Phillip in 1837 as Senior Assistant Surveyor, supported by Russell, d’Arcy and Darke. He briefly resigned in 1839 after a clash with Governor George Gipps. The dispute was over Hoddle’s salary.⁸⁴ The actual retirement occurred on 4 August 1840 (PPH, 21 July 1840). He was back at his job in June 1841.⁸⁵ Hoddle was appointed an alderman of the first Melbourne City Council following the incorporation of the town in August 1842 under the 1835 English Municipal Corporations Act.

Hoddle was made the first Surveyor-General of the new colony in 1851 and was “persuaded to retire”⁸⁶ by Governor Charles La Trobe in 1853, leaving on a handsome pension and living until 1881.⁸⁷ Hoddle left a permanent and positive mark on Melbourne that went well beyond the inner city. Nial Brennan⁸⁸ wrote in 1972:

A great deal that is possible today in Melbourne and crushingly difficult in Sydney is because Hoddle marked out room for expansion from the beginning.

He was not without his planning faults, as his Sydney superior, Deputy Surveyor-General Perry, was prone to point out. And Perry also had a grand and commendable vision for Melbourne, for in 1839 he felt that if Melbourne could be kept free from land speculators it could become “*one of the most striking ornaments in the southern world*.”⁸⁹ An extensive biography of Hoddle has been published by a descendant⁹⁰ and a detailed but austere account of his life was produced by the surveying profession⁹¹.

1.3 Melbourne property sub-sections

As shown in the preceding Sub-chapter, Russell and Hoddle made provision for initial Melbourne to have 32 *property sub-sections*. They are shown in Figure 1.4 which also gives their “official” numbers, and the date on which they were first offered for sale.⁹² The only recompense the Administration could receive for its efforts in establishing the new settlement was via land sales. The tactic was well understood in 1840, as illustrated by the following comment is the press of the time:⁹³

There is every possibility of frequent succeeding land sales, as the Government looks to Melbourne and Geelong (land sales) for the funds required, not only to make up the deficiencies of the N. S. W. revenue, but also to establish the new settlement of New Zealand.

The Torrens system for land titles was not introduced until 1862.

Spencer								
King	William	Queen	Elizabeth	Swanston	Russell	Exhibition	Spring	Latrobe
32 11/1840	31 11/1840	30 Government use	29 >1844	28 >1844	27 Public space	26 >1844	25 >1844	Lonsdale
17 11/1840	18 9/1838	19 11/1837	20 11/1837	21 11/1837	22 8/1840	23 2/1839	24 4/1839	Bourke
16 11/1840	15 Church +, 9/1838	14 6/1837	13 6/1837	12 9/1837	11 9/1838	10 2/1839	9 4/1839	Collins
1 11/1840	2 6/1837	3 Customs +, 11/1837	4 6/1837	5 11/1837	6 Church +, 9/1838	7 2/1839	8 4/1839	Flinders
1A never								

Figure 1.4 - The original 32 Melbourne *property sub-sections*. The shading indicates the sales period, darkening as time progresses. The area contained within the bold boundary indicates the *property sub-sections* with buildings in place by 1840.

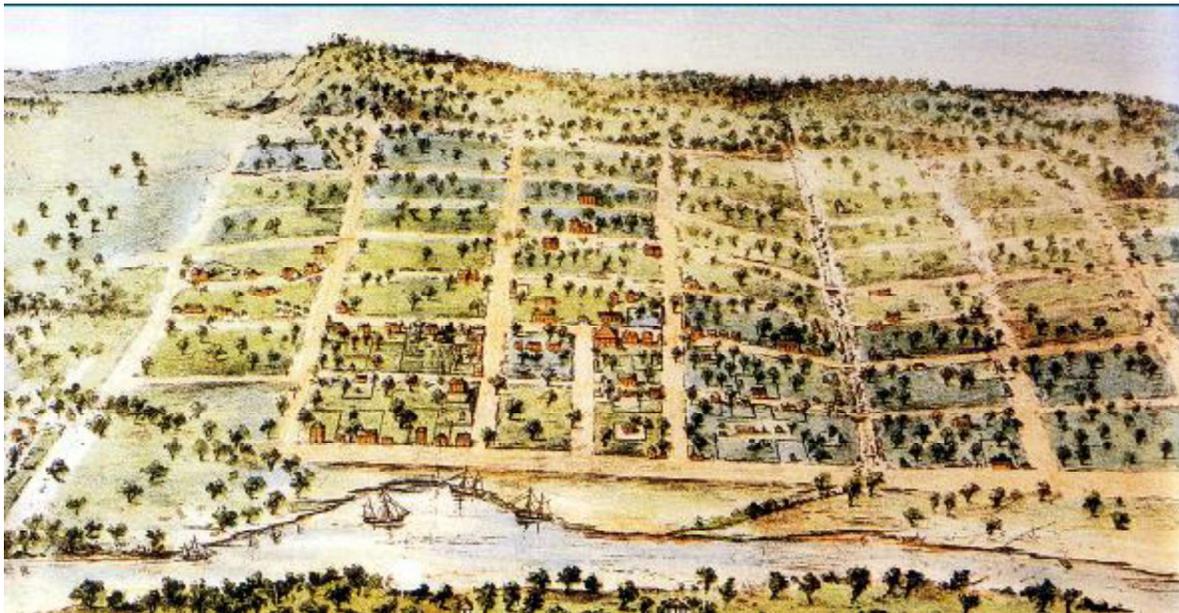


Figure 1.5 – Melbourne in 1838 as drawn by Drouhet in 1888, using earlier documents (SLV image). Elizabeth St in the valley provides a location key. *SLV*

Little time was lost between the completion of the Plan (Map 1.1) in March 1837 and the first sales which were held in Melbourne in June 1837 and brought prices of about £70/acre⁹⁴. There had also been an undeveloped *property sub-section* 1A south of *property sub-section* 1 and between Flinders St and the Yarra River. Figure 1.5 indicates the manner in which the town expanded to fill its original boundaries. The sales of June and November 1837 were held in Melbourne, to the advantage of local settlers. However, the sales in 1838 and 1839 were in adjoining Sections (Figure 1.6) and were conducted in Sydney in order to attract more financially-favoured, and thus competitive, bidders. Whereas the Melbourne sales had been for 0.5 acre lots, the Sydney sales were for 25 acre lots, giving about 250 lots for each *section*. The intense subdivision of Allotment 1 in Section 2 into 11 “sub-lots” by Fawkner in 1840 has been well

documented.⁹⁵ Due to an economic depression in the Colony, there were no further land sales until 1844. However, the continued steady arrival of immigrants seeking land in the relatively hospital countryside and the operation land speculators (known as land jobbers) soon saw a return to rapidly escalating land prices.

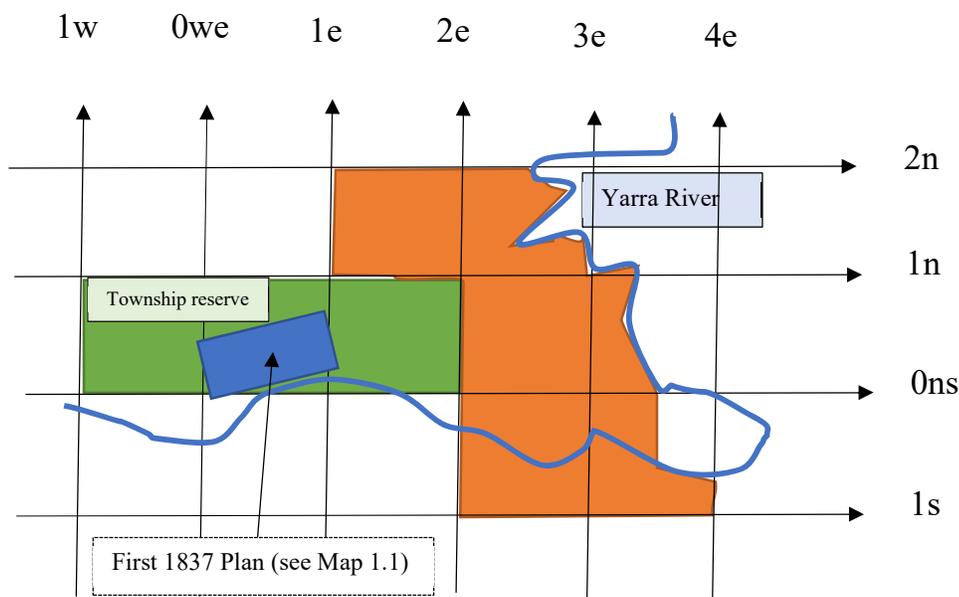


Figure 1.6 – Location of the 1838-1839 land sales, relative to the *section lines*.

Within the property lines, each of the individual *property sub-sections* was then halved along an east-west axis to create the lanes. Finally, following Clause 2 of Governor Darling’s⁹⁶ Order 28, and as shown in Fig 1.1, each *property sub-section* was divided into 20 *town allotments* with an equal area of 0.475 acre (0.19 Ha). Twelve *town allotments* had a 1.0 chain (20 m) width, and a 4.75 chain (95.6 m) depth. The other eight had a width of 2.375 chain (48 m), and a 2 chain (40 m) depth, as shown shaded as lots 20, 1, 8 & 9 in the bottom half of Figure 1.3. Later, the conventional Melbourne suburban allotment was obtained by halving the *town allotments* yet again and using 1.0 chain roads, produced a nominal 18 m by 40 m (0.9 chain by 2.0 chain) allotment with an area of 0.72 Ha (0.19 acre).

In 2000 the RACV purchased a large piece of land running between Bourke St and Little Collins St. It is in *sub-section* 14, and about allotments 14 & 15, using the nomenclature in Figures 1.2 & 1.3. The title data attached to the sale documents indicates that the land is 4.70 chain deep, suggesting that in the 163 years since the land was first sold, 0.05 chain (or 940 mm or 1 %) has been lost from Hoddle’s intention. Survey errors are discussed further in Sub-Chapter 2.1c.

The area lost by the 1.5 chain streets and 0.5 chain lane is, in chains, $11.5 \times 0.75 \times 2 + 10.0 \times 0.75 \times 2 + 10.0 \times 0.5 = 37.2$ sq chain = 3.725 acre. This represents 28 % of the 11.5 x 11.5 centreline acre area of the *property sub-section* and indicates why roads and their sub-optimisation were always high on the land-subdivision agenda.

In summary, Russell and Hoddle had followed instructions and initially laid out the town with 10 chain by 10 chain property lines separated by 1.5 chain roads. With the addition of Latrobe St, Melbourne village had become - as prescribed for villages (sub-Chapter 2.1) - a “proper” *half section*, albeit oversized at 94 chain by 46 chain. Thus, earliest Melbourne was a slightly over-sized *half section* with a street spacing that produced 32 *property sub-sections*.

1.4 Giving substance to the Plan

Flinders St, Spencer St and Lonsdale St represented the settlement’s obvious town boundaries, as determined by natural limits imposed by the Yarra River, the last high ground before the Yarra estuary; Flagstaff Hill and the lack of fresh water (Map 1.1). The remaining boundary at Spring St merely met the “one mile” criterion suggested by Order

28 as the geometric limit of the new township. Indeed, the roads were not developed to the east of Queen St until 1838. The original intention of having the town as four rows of eight *property sub-sections* and their associated streets was completed by the addition of Latrobe St in 1838 as the northern boundary. The town thus now covered 1.17 mile (1.88 km) by 0.59 mile (0.95 km). Superintendent La Trobe subsequently endowed the new street with his own name.

The area covered by the first plan embraced three gentle crests running approximately in a north-south direction from the higher northern hinterlands down to the river flats. To the north, the crests met near the intersection of Elizabeth St and Queensberry St. The westerly crest followed the line of Spencer St to Flagstaff Hill and Batmans Hill; the central crest followed William St and then Market St and was aligned to the “falls” across the Yarra; and the easterly crest was marked by Eastern Hill¹ and then followed Spring St south. Flinders Lane marked the northern limit of the river flats and an east-west cliff near the Lane at the end of the William St crest needed early road-making attention. Some of this detail is shown in Figure 1.5 and Map 1.3.

Map 1.3 Hodgkinson’s 1853 survey focusing on Melbourne’s water supply, sewage and drainage.⁹⁷ The full report and maps are available at VPARL1852-53Vol2p779-877.pdf (parliament.vic.gov.au)

Characteristically, the Order 28 grid plan took no heed of this local topography. The main exception was Flinders St which was on the river flood plain and contained no hills - indeed, it was sometimes called “the Flat”. The southern ends of Elizabeth St and Swanston St were in flatter land between the central and eastern crests, although Elizabeth St was close to the western edge of the valley. Indeed, parts of Elizabeth St closely followed the route of the key local creek that discharged into the river just above the falls. Some early drawings show Elizabeth St on the western face of the valley, but this is inconsistent with various written and map descriptions (e. g. Map 4.3), and with the current topography. It may have been an optical illusion caused by an east-west ridge that ran along Collins St between Queen St and Elizabeth St (see Sub-chapter 7.2). For a time, the cynics called Elizabeth St the River Townend after a grocer by that name who had drowned near his shop at the Collins St corner in about 1844.⁹⁸ Elizabeth St was notoriously dangerous. Children had drowned in the street in 1839 and in 1842.⁹⁹ There were also major gullies along Swanston St. A graphic 1860 word-picture of the scene after heavy rain is available.¹⁰⁰

As a consequence of the gullies, by 1838 four pedestrian bridges (or footbridges) had been built across the Elizabeth St creek at Flinders Lane, Collins St, Bourke St and Lonsdale St, partly using convict labour. In a small way, they were Melbourne’s first bridges. In 1844 tenders were called to reconstruct these bridges, beginning with the Flinders Lane bridge which thus became Melbourne’s first significant bridge. They were certainly needed as heavy rains in the Collins, Elizabeth / Queen St area in 1844 had created “great roadside chasms, about six or more feet wide and four feet deep.”¹⁰¹ On the other hand, Judge Therry noted that in 1845 sheep were grazed on the thick grass that grew in Bourke St.¹⁰²

Another consequence was that Collins St and Bourke St had lengths with quite steep grades where they descended into the Elizabeth St / Swanston St valley. Melbourne’s first convict labourers had been a party of five road gangers sent from Sydney in 1836. Later, convicts also came from Hobart. Convict labour was used on the roads from 1837 to 1841. Their first road task was to “cut, bank and level the intersection of Collins and Queen Streets” and was supervised by Overseer Lewis Pedrana.¹⁰³ Convict labour was terminated by the Sydney-based Colonial administration once Melbourne was legally incorporated and able to levy rates on its residents and thus fund local roadworkers – usually unemployed locals - and purchase their tools and wheelbarrows (Chapter 1.2). Thus by 1842 new Melbourne corporation was using local prisoners sentenced to hard labour to break up stone for roadmaking (see Sub-Chapter 7.2b).¹⁰⁴

The setting of street levels (i. e. their relative vertical position) was particularly important as it affected whether waste-water could be drained from adjoining properties. The establishment of street levels began in 1837 when Hoddle instructed Russell to measure the levels of the town’s first streets so that the data could be supplied to purchasers of the first pieces of land (Sub-chapter 1.2). In 1838 surveyor Darke was given the task of checking that any subsequent buildings were compatible with the official property boundaries and street levels.¹⁰⁵ A comprehensive plan of levels was issued by the Council in 1847.¹⁰⁶ An 1852 report by surveyor Hodgkinson (referred to in the caption to Figure 1.3) observes that in the block bounded by Bourke, Swanston, Little Bourke and Elizabeth Sts there was about 100 m² of “green, putrid, semi-liquid mass, produced by the outpourings of surrounding toilets. Adjacent passages were similarly saturated”. Major street paving and drainage did not occur until 1854.¹⁰⁷ Early road-making is pursued in more detail in Sub-chapter 7.1.

¹ {-37.809463, 144.975130}

The street names of early Melbourne were chosen by the current Governor¹⁰⁸ – he remembered himself with Bourke St and his deceased wife with Elizabeth St. Collins St was named after Lt-Col David Collins, who had led the 1803 landing at Sorrento, Flinders St after Matthew Flinders, King St after an earlier Governor, Lonsdale St after the first magistrate Queen St and William St after the reigning British king (who died in 1837), Russell St after Lord Russell (a prominent British politician), Spencer St after Lord Spencer (the British Chancellor of the Exchequer), Spring St after the Secretary of State for the Colonies in London, and Swanston St after Captain Charles Swanston,¹⁰⁹ a local businessman who had been one of Batman's promoters in Launceston and who was the first owner of two allotments on Swanston St, on the north-west corners of both Bourke St and Little Bourke St. Cannon has observed that no official documentation survives that conclusively answers questions concerning the naming of the streets.¹¹⁰ Street names on signs were introduced in 1850.¹¹¹

All the Governor's street names persist, except for Exhibition St that the Governor had called Stephen St after the head of the Colonial Office in London. Stephen St had subsequently become a street of ill-repute. Moral rectitude was restored by renaming the portion north of Collins St to mark the International Exhibition of 1880, held in the current Exhibition Buildings. The southern portion became Collins Place and was renamed Exhibition St in 1963.¹¹² In 1999 Exhibition St was extended south over the rail tracks as Batman Avenue to link to the western end of Swan St (State Route 20).

All the debated geometric features discussed in Sub-chapter 1.2 are now dominant aspects of modern central Melbourne. The streets have changed little over the intervening 165 years. Market St, opposite the first wharf, near Customs House and serving the then-current Western Market, was the only exception to Russell's pattern.¹¹³ Market St was introduced in 1841 to accommodate the town's first market.¹¹⁴ This was the Western Market which opened in 1841 and was located in the Market St / Collins St / William St / Flinders Lane block.¹¹⁵ With the boom of the goldrush, the market site was totally inadequate by 1855, leading to the creation of the Eastern Market at the Exhibition St / Bourke St corner.¹¹⁶

In terms of the *property sub-section* and allotment diagrams to be discussed in Sub-chapter 1.3, the Customs House, the General Market and Market St occupied the western half of *sub-section 3*, the Customs House to the south of Flinders Lane and the Market to the north of the lane. Another major addition has been the Arcades, with Queens Arcade (Lonsdale St to Little Bourke St) opened in 1853, Royal Arcade in 1870, and the Block Arcade in 1893.¹¹⁷ A pedestrian mall was introduced into Bourke St between Elizabeth St and Swanston St in the 1980s and Swanston St was partially closed to through traffic in 1992.

The Lanes were named at Lonsdale's suggestion. The citizens liked the lanes but thought the name Lane lacked prestige. From 1838 onwards they lobbied to have the lane names changed from, for instance, Collins Lane to Little Collins St. In the mid-1840s the new Melbourne Town Council formally agreed to the request. When Little Flinders St became a mecca for the clothing trade, more lobbying had its name changed back to Flinders Lane.¹¹⁸ Parts of other lanes have also had their own names, e. g.

- * Little Collins St was called Chancery Lane between William St and Queen St,
- * Little Bourke St was called Law Courts Place between William St and Queen St, Post Office Place between Queen St and Swanston St, and Gordon Place between Exhibition St and Spring St, and
- * Little Lonsdale St was called Mint Place between William St and Queen St.

The general provision of lanes as originally envisaged by Bourke and Hoddle did not survive beyond the original subdivision. For example, when the inner city was expanded a block north to Franklin St, the intervening a'Beckett St (named after the first Chief Justice of Victoria) was made 1.0 chain wide, rather than the 0.5 chain used for lanes, but still placed at the "intermediate" spacing - 5 chain - used for the lanes.

At this stage Hoddle abandoned any pretence at keeping the lanes as 0.5 chain wide rear accesses. They were clearly being used as useful property frontages, so in new areas Hoddle kept their 5-chain spacing but henceforth made them all 1.0 chain wide. Thus Bourke's original major deviation from Order 28 was reinforced rather than repressed. In 1957 the Melbourne City Council introduced a set-back regulation requiring any new development along the Little streets to be set-back a further 1.45 m. The major effect can be seen at the western end of Flinders Lane, following extensive rebuilding in what was then a relatively undeveloped sector.

Two common characteristics were missing from Governor Darling's Order 28 and Hoddle's consequential plan. There was no mandatory requirement for a large central square or open space, and there were no provisions for dominant radial roads approaching and then entering the town. As a consequence, in the 1850s when development in the growing

inner town had reached Spring St and Latrobe St, the noticeable absence of a town square caused a strong public reaction against Hoddle.¹¹⁹ In 1851 Hoddle himself was arguing¹²⁰ for a square in the Lonsdale, Russell, Latrobe and Swanston St block. In this vacuum, the new State Government approved a Parliament House at the top of Bourke St and a Treasury Building at the top of Collins St. These fine structures coincidentally prevented the associated key streets to the east from becoming feeders to the downtown area, a fact that greatly annoyed Hoddle. Another response to the vacuum was the creation of Melbourne's¹²¹ arc of well-loved inner city gardens, which were largely due to Governor La Trobe, who formalised their existence in 1852.¹²² Indeed, Hoddle's maps (e.g. Map 2.3 below) show his plans to subdivide areas such as the Kings Domain and Fitzroy Gardens which today are some of Melbourne's best-loved parks. This action was despite the fact that, from as early as 1839, the local press led by the Port Phillip Patriot had been bemoaning the town's lack of reserves, public places and parks along the river.¹²³ The Fitzroy Gardens were named in the first instance after Fitzroy St, which subdivider Hoddle had initially placed on the line of Eades St.

Interestingly, in one map¹²⁴ from 1843 the original town *half-section* is shown neatly quartered by Elizabeth St and Bourke St, Elizabeth St is extended north to join Sydney Rd (State Route 55) at the [0ns], [3n] *section* corner and extended south to the Yarra, and Bourke St is extended west to also meet the Yarra. To the east Bourke St was helpfully extended to the corner of Smith St and Victoria St (route EW3). No other maps suggest these options, although the western extension of Bourke St would have usefully serviced Old Footscray Rd (route WT4).

Some of the roads of the original town remain features of today's broader metropolitan road network and are discussed further in Chapter 4, using the alphanumeric identification employed in the rest of this book and defined at the end of Chapter 3. In particular, Spencer St north became part of route WT2; Elizabeth St north part of route MM3; Bourke St east part of route PL2, Flinders St east part of route TW5; Swanston St south part of route SK2; and King St south part of route SK4. A pre-existing track began approximately at the current corner of Flinders St and Swanston St, headed west to the corner of Elizabeth St and Flinders Lane, followed Flinders Lane and the high ground above the river flats to William St, and then – kept on the high ground – heading west-north-west “to Geelong” (Map 1.1). The remainder of this track is discussed in Chapter 4 as route WT2 and route GL9.

Nevertheless, and somewhat uniquely, no radial through route dominated or even influenced the development of Melbourne. And today, there is still no route in inner Melbourne that could be described as a route whose predominant function is to take people in and out of the city. Kings Way (route SK4) is perhaps the closest to such a route, although it disappears in North Melbourne. However, the discussion of Sydney Rd (route KS7) will note that in the early 1840s there had been a plan to link Sydney Rd and Swanston St, thus creating a St Kilda Rd / Sydney Rd north - south link. The development of Flemington Rd diverted attention from the proposal, for which there was little user support.

Notes for Chapter 1

¹ Brown-May, A. 1998

² Annear, R. 1995

³ Barrett 1979, p3

⁴ Harcourt 2001

⁵ Blainey 1984, p18, Grant & Serle 1957, p19-21 & Batman's map of 1835 (Lewis 1995, p143).

⁶ Harcourt 2001

⁷ {-37.820774, +144.960516}

⁸ Boys 1959, p80

⁹ Cooper 1935, p4

¹⁰ Cannon & McFarlane 1988, p43

¹¹ Father 1899

¹² Grant & Serle 1957, p21

¹³ Davison 2000

¹⁴ Shillinglaw 1879, pxv

¹⁵ Lewis 1995, p17

¹⁶ {-37.819257, 144.960441}

-
- ¹⁷ {-37.820354, 144.960356}
- ¹⁸ Grant & Serle 1957, p22, c{-37 820 000. +144 960 000}
- ¹⁹ Statham 1989, p210-1
- ²⁰ Lewis 1995, p9
- ²¹ Barrett 1979, p5
- ²² Davison 1978, p10
- ²³ Davison 1978, p11 and 2004, p280-282
- ²⁴ Davison 1978, p10
- ²⁵ Howitt 1845, p116
- ²⁶ McGowan 1951, p22
- ²⁷ O'Callaghan 1927, p196
- ²⁸ Barrett 1979, p13
- ²⁹ Father 1899 and Cannon & McFarlane, 1988
- ³⁰ Cannon 1984, p200-1
- ³¹ Cannon & McFarlane 1988
- ³² Cannon & McFarlane 1988, p6
- ³³ Father 1899
- ³⁴ Chappel 1966, Chapter 7
- ³⁵ Boys 1959, p57
- ³⁶ Grant & Serle 1957, p6 and Father 1899
- ³⁷ Cannon & McFarlane 1988, p6&19 and Surveyors', p64. During the same period, Russell probably painted his well-known watercolour (e.g. Cannon & McFarlane 1984, p56) of the new settlement.
- ³⁸ Russell 1888
- ³⁹ Father 1899
- ⁴⁰ loc cit
- ⁴¹ Cannon & McFarlane 1988, p43
- ⁴² loc cit, p76
- ⁴³ loc cit, p64
- ⁴⁴ Grant & Serle 1957, p6 and Father 1899
- ⁴⁵ Jeans 1981, p233
- ⁴⁶ Russell 1888
- ⁴⁷ Lay 1992, pp13-14
- ⁴⁸ Minute 34, 5 March 1829. Acts and proclamations, 1829, p223. Reproduced in Historical records of Australia, XV, 1922, p873-4.
- ⁴⁹ Cannon & McFarlane 1988, pxvii
- ⁵⁰ Donovan 1991, p2
- ⁵¹ Fletcher 1984, p173-4 and Sullivan 1985
- ⁵² Australian Encyclopaedia 1998, Darling entry
- ⁵³ Jeans 1981, p232
- ⁵⁴ 27(1664), p1, col 1
- ⁵⁵ Jeans 1981, p229
- ⁵⁶ Dowd 1946, p318
- ⁵⁷ Selkirk, p231 and Jeans 1965, p193
- ⁵⁸ Lay 1992, p303 & Lay 2012
- ⁵⁹ Maslen 1830, p269
- ⁶⁰ Griffith 1845, p5-6
- ⁶¹ Jeans 1965, p192
- ⁶² Darling 1830, p875
- ⁶³ This was variant C, Jeans 1965, p192
- ⁶⁴ Selkirk 1927, p234
- ⁶⁵ Cannon and McFarlane 1984, p14
- ⁶⁶ Colville 2004, p180
- ⁶⁷ Russell 1888
- ⁶⁸ See Lay 1992, p14
- ⁶⁹ Clark's map of 1849
- ⁷⁰ Colville 2004, p74
- ⁷¹ Surveyors' 1989, p65
- ⁷² Sub-chapter 1.4 and Surveyors' 1989, p65.

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- ⁷³ McComb 1937-8
⁷⁴ Boys 1959, p72
⁷⁵ Garryowen 1888, p14.
⁷⁶ Cannon 1984, p37
⁷⁷ Sutherland 1888, Vol2A
⁷⁸ Boys 1959, p72
⁷⁹ Barrett 1979, p13
⁸⁰ Cannon 1984, p41
⁸¹ Brown-May 1998, p10
⁸² Victoria 1885
⁸³ Selby 1929, p52
⁸⁴ Port Phillip Herald, 3 Jan 1840
⁸⁵ See also Scurfield 1995.
⁸⁶ Serle 1963, p134
⁸⁷ Australian Dictionary of Biography, Hoddle. See also Scurfield 1995.
⁸⁸ Brennan 1972, p4
⁸⁹ Cannon 1984, p142
⁹⁰ Colville 2004
⁹¹ Scurfield 1995
⁹² Based on Woodhouse's lithograph of 1888, republished in Phenomenal 1984, item 2; and Eastwood 1983, p15.
⁹³ Port Phillip Herald, 4 Feb 1840, p2
⁹⁴ Grant & Serle 1957, p28; Boys 1959, p72
⁹⁵ Cannon and McFarlane 1984, p14
⁹⁶ Lewis 1995, p27
⁹⁷ In 1852 Hodgkinson had begun the first detailed trigonometric survey of Melbourne (Chappel 1966, p46).
⁹⁸ McIntosh 1984
⁹⁹ Barrett 1979, p19 & Cannon 1991, p126
¹⁰⁰ Grant and Serle 1957, p97-8
¹⁰¹ Cannon 1991, p129
¹⁰² Clark 1950, p425
¹⁰³ Boys 1959, p73
¹⁰⁴ Cannon 1991, p27
¹⁰⁵ Cannon & McFarlane 1984, Chapter 17
¹⁰⁶ Barrett 1979, p66
¹⁰⁷ Lewis 1995, p50
¹⁰⁸ Cannon 1984, p37
¹⁰⁹ Harcourt 2001, Chapter 8
¹¹⁰ Cannon 1984, p37
¹¹¹ McGowan 1951, p10
¹¹² Brown-May 1998, p29
¹¹³ O'Callaghan 1919, Barrett 1979, p21
¹¹⁴ O'Callaghan 1919
¹¹⁵ Barrett 1979, p28
¹¹⁶ Bate 1994, p166
¹¹⁷ Brown-May 1998, p46
¹¹⁸ O'Callaghan 1926, p104 and O'Callaghan 1919
¹¹⁹ Lewis 1995, p46
¹²⁰ Davison & May, p51 (Williams)
¹²¹ Lewis 1995, p42
¹²² loc cit, p30
¹²³ McGowan 1951, p21
¹²⁴ Howe's map of 1843