

# Urban Fringe Claypits

## Effects of Claypit Sites on Urban Form in Melbourne

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**Claypits, which primarily produce materials for construction, are often located on the urban fringe – situated to take advantage of cheap land and outside of the stricter regulatory context of town planning boundaries but close enough to efficiently service their market. In Melbourne, the fringe location of claypits has frequently brought them into overlap with the expanding urban growth boundary in both historic and contemporary contexts. This paper follows the urban fringe of Melbourne in a northerly direction over time, studying the brick industry and its influence on the urban fabric which ultimately surrounds it. Focusing on three case studies at Brunswick, Preston and Wollert in Melbourne’s north, the paper maps the location of brick factories and claypits in these suburbs and follows the development of these sites over time. A particular focus is on documenting the contemporary use of ex-claypit sites to find patterns of post-industrial use at different time periods. The paper shows that in an historic setting, claypit sites are often repurposed for public functions - in some suburbs they account for the majority of open space. In a contemporary setting however, increased land values on the urban fringe have disrupted this pattern of public re-use. The extraction of new claypits is managed and limited in order to support their future transformation into housing estates. The conclusions shows the role that urban fringe claypits have traditionally played in shaping urban form and public space, and highlights the potential differences in newer suburbs as claypit sites remains in private use.**

*Keywords — claypits; Melbourne; urban fringe.*

### INTRODUCTION

The brickmaking industry involves the extraction and transformation of the earth into building products. Industries of extraction, more than other industries, therefore need large areas of land in order to ensure the supply of their raw resources and this tends brickworks to be situated on the fringes of cities and towns – close enough to service their market but far enough away to ensure large land allotments and relaxed planning regulations. The Extractive Industries Areas of Interest report for Melbourne 2003 illustrates this urban pattern in a contemporary setting, showing the urbanised areas in which extraction is prohibited, existing sites of extraction on the fringes of the urban boundary, and areas of interest extending from the urban boundary outwards (Olshina, & Burn, 2003). This pattern has repeated throughout Melbourne’s history with suburbs such as Brunswick and Preston to the north of the CBD, or Hawthorn, Box Hill and Oakleigh in the city’s east. The continuous growth of Melbourne’s urban boundary brings industries on the urban fridge into co-existence and

conflict with residential development.<sup>1</sup> The large physical nature of claypits as well as the degraded and topographically altered state which extraction causes means that claypits represent a unique urban problem to be managed, one which has implications for the layout and planning of new suburbs.

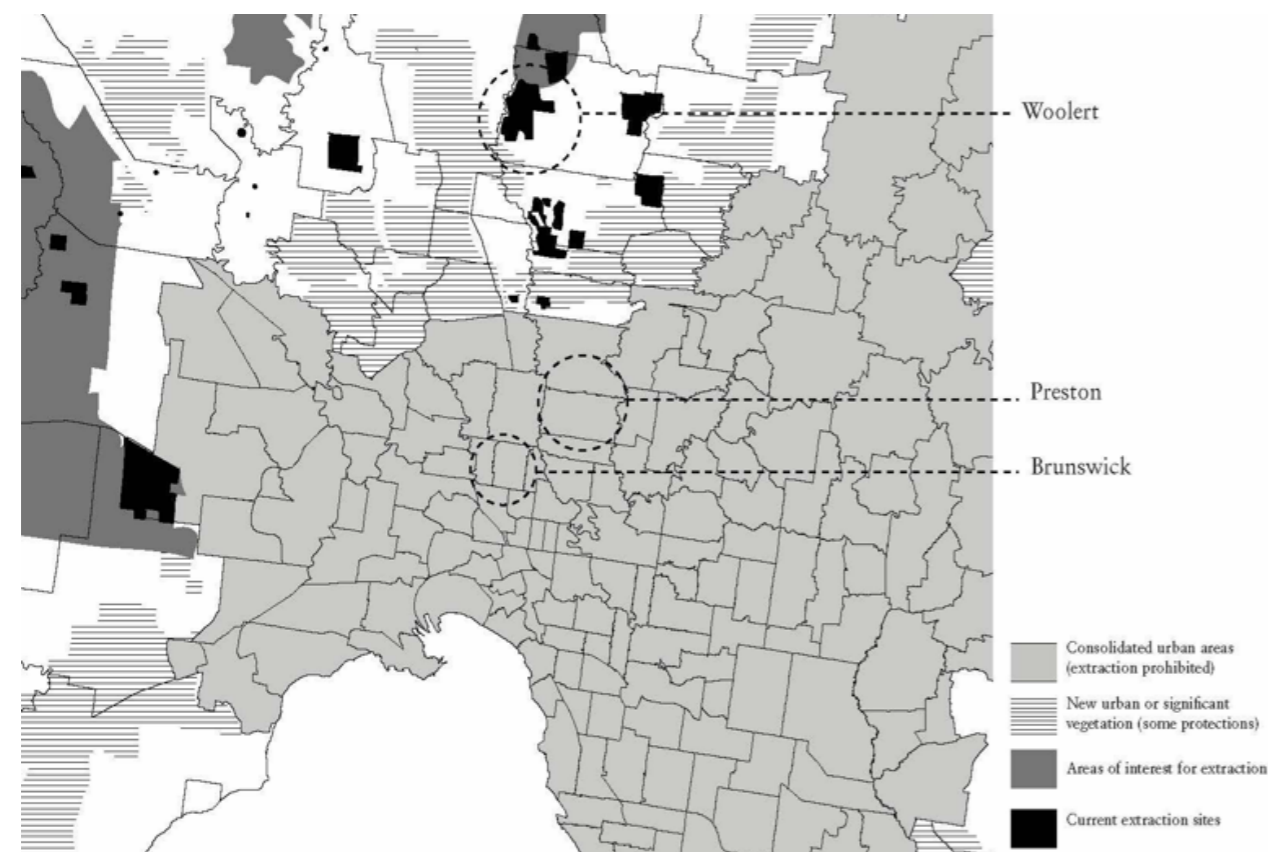


Figure 1. Map of Melbourne showing allowable and current industries of extraction.

This paper studies the physical effect that claypits have on the organisation and layout of the fringe suburbs that urbanise around them. The case studies chosen follow the urban boundary of Melbourne out along the Merri Creek, from Brunswick to Preston and finally to Wollert (refer to Figure 1).<sup>2</sup> The current path of the Merri Creek was formed as water cut through through the thick layer of basalt laid down by successive lava eruptions from nearby hills. (Rosengren, 1993). The geology along the banks of the Merri Creek is a combination of the large areas of basalt with pockets of sedimentary and alluvial soil where erosion has caused deposits as well exposure of underlying older sedimentary formations. It is these pockets of sedimentary deposit that have the potential to provide clay, and subsequently to supply the brick manufacturing industry that arose in these locations.

All three of the case studies presented here were once outside of the metropolitan boundary of Melbourne. The area which is now Brunswick was incorporated as a suburb of Melbourne in 1857, and Preston in 1871 ('Melbourne

<sup>1</sup> The conflict between encroaching urbanization and industry has been discussed in relation to existing industrial and agricultural uses (Bryant 1995) (Alviano and Mercer 1996).

<sup>2</sup> The case study of Wollert is considerably further north than Preston. The lack of claypits in the area between Preston and Wollert along the Merri Creek can be explained by geology – suburbs in between Preston and Wollert such as Reservoir, Lalor and Epping exist almost entirely over continuous basalt. The choice of this slice of Melbourne for case studies is primarily due to the current existence of the Austral Brickworks in Wollert – the largest brickworks now functioning in Melbourne – as a contemporary example.

Metropolitan Area' 2016). Wollert is right on the edge of the Northern Growth corridor of Melbourne and currently in the process of being rezoned for residential use. The Wollert case study therefore provides an example of urbanisation of a post-industrial landscape in progress, which can be compared with the historic processes that occurred in Brunswick and Preston.

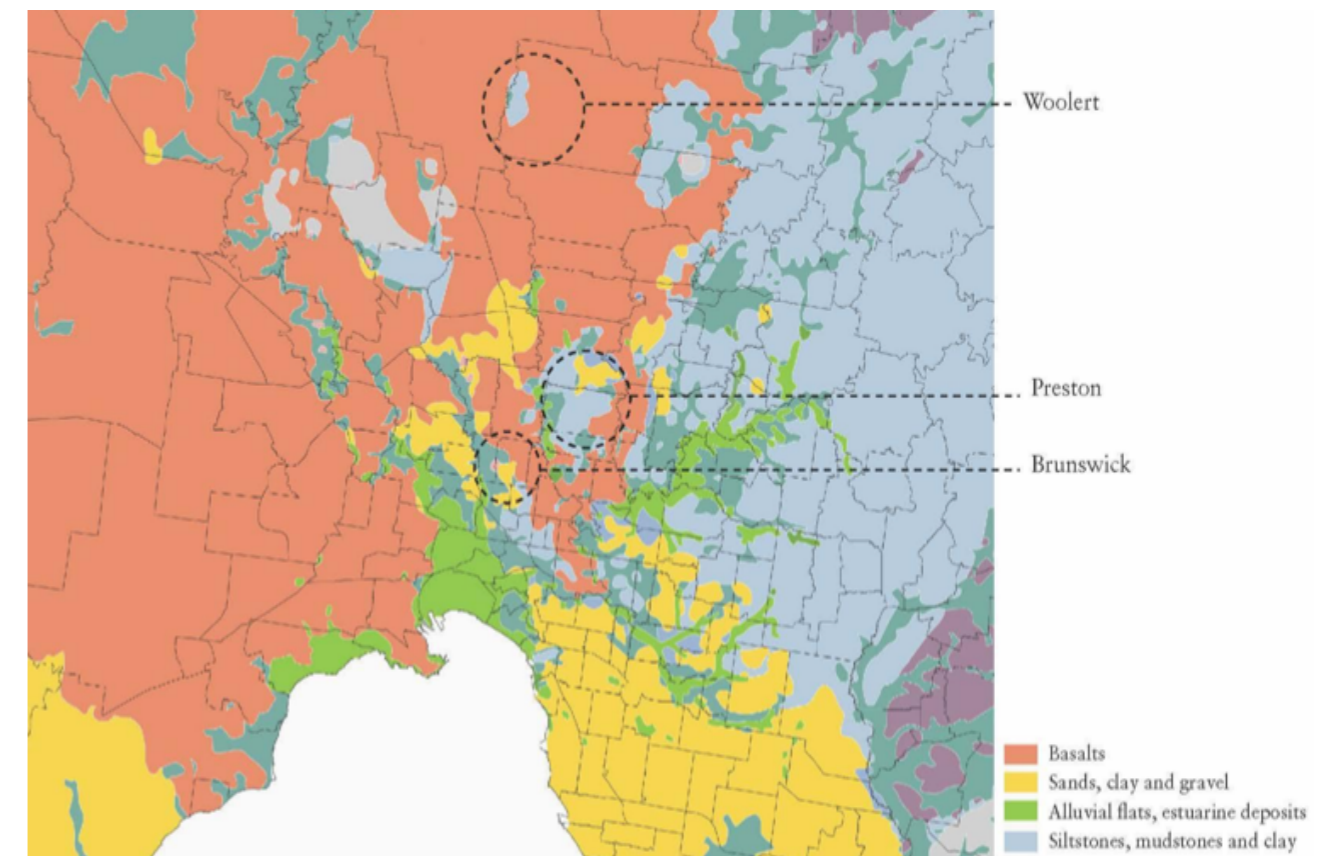


Figure 2. Map of Melbourne showing geology underlying each case study location.

The paper shows that in an historic setting, Melbourne's claypit sites have often been repurposed for public functions - in some suburbs they account for the majority of open space. In a contemporary setting however, increased land values on the urban fringe have disrupted this pattern of public re-use. The extraction of new claypits is managed and limited in order to support their future transformation into housing estates. The paper explores the role that urban fringe claypits have traditionally played in shaping Melbourne's urban form and public space, and highlights the potential differences in newer suburbs where claypit sites remain in private use.

## BRUNSWICK

The area that is now Brunswick was once part of the parish of Jika Jika, surveyed and subdivided by Robert Hoddle between 1837 and 1839 (Summerton 2010). Jika Jika parish was bounded by what is now Park Street to the south and Gaffney/Murray Road to the north, Moonee Ponds Creek to the west and Darebin Creek to the east. Merri Creek ran through the middle of the parish, creating the boundary between the suburbs of Brunswick and Coburg to the west and Northcote and Preston to the east. Hoddle envisaged much of Jika Jika as agricultural land around the satellite town of Pentridge that had been surveyed about 9km north of the Melbourne town centre. The town of Pentridge was subdivided into small town allotments with reserves for public, civic and religious functions and a grid of streets similar to that of central Melbourne. In contrast, Brunswick was subdivided into larger farming allotments, where the only public reserve

was the central thoroughfare of Sydney Road (Summerton 2010). Farming allotments were long and thin and ran east-west from the central Sydney road to Moonee Ponds or Merri Creek, a layout which allowed both street and creek frontages to each allotment.

Although many of the early settlers in Jika Jika were farmers, different and competing factors began to influence the value of land in Brunswick, specifically relating to uses to service the growing needs of Melbourne. One of these factors was the underlying geology. Clay and bluestone had been discovered in the Brunswick area as early as 1840 (Penrose 1994). Bluestone industries were clustered in the east of Brunswick and along the banks of the Merri Creek. In the west, the basalt geology gave way to deposits of alluvial and sedimentary soil which contained excellent clay deposits (Summerton 2010). Early brick-making in Melbourne consisted of small handmade operations which arose opportunistically to service needs of particular settlements, including notably at the early (and later abandoned) convict settlement Western Port Bay, which was later abandoned (Stewart 1987). In Brunswick a permanent and wide-spread brick industry developed, supported by and supplying the material for Melbourne's building boom spurred on by the goldrush in the mid to late 19th century (Davison 2004). The brickmaking industry once established also 'attracted new entrepreneurs who increased competition and developed new markets for related specialised products, such as fancy bricks, fire bricks, flower pots, stoneware and sanitary ware' (Davison 2004, 51). In 1871, there were 44 potteries in Brunswick alone and most of these had their own claypit of varying size, with manufacturing and kilns adjacent (Vines and Churchward 1992).

Land in Brunswick was also in demand for housing, and in particular for workers housing to services its growing industry. Landowners opportunistically subdivided their farming properties into small terrace house size allotments, and laid out streets to best suit their individual plots without reference to neighbouring allotments or to any overall plan. Intermixed with this new urban arrangement were the claypits of the brick industry. The nature of these holes, sometimes hundreds of feet deep, made their surface unsuitable to build on. Similarly, if land had been built on with houses there was no way to then access the wealth of clay underneath – 'housing and industry increasingly competed for space in a dense urban landscape characterised by factories, belching chimneys, deep clay holes and quarry pits' (Summerton 2010, 8). The suburb of Brunswick became a complicated and unplanned combination of small allotments and discontinuous streets in sudden and strange adjacency with gaping holes.

When a particular claypit was 'worked out', or when a brickmaker went out of business, as happened to many smaller operations during the recession of 1890, the claypit was simply abandoned and left in its degraded state. There was no easy or cheap way to re-fill the hole, especially in a way that would produce land stable enough to build on. Just as the value of clay had prevented areas of land from entering into the speculative land market in the late 1800's, now it was cost of re-filling these pits that prevented their transformation. Large holes remained in Brunswick for many years – with the last and largest Hoffmans brickworks closing in 1993.<sup>3</sup> Some holes, like Temple Park were taken over as tips and incrementally filled with waste, while others remained in their exploited state with sometimes as little as a picket fence to protect passersby from falling in. As the community in the area became more established, residents complained about the danger and unsightliness of claypits ('Dangerous Clay Holes: Discussion in the Brunswick Council' 1903), and many were taken over and managed by the local council. One particular characteristic of Brunswick that can be traced back to its colonial farmland divisions was the lack of reserves for public purposes. This contrasted, for example, with the neighbouring township of Pentridge which had generous crown reservations set aside for public and civic buildings of the future. In Brunswick, the claypits began to fulfil this role, effectively reserving land for future uses. Here, open space and other non-residential functions were also more easily accommodated on the unstable and contaminated land left by the brick industry.

An overlay of sites of past extraction with current land use shows the role that former claypits tend to play in the suburb

<sup>3</sup> The last operating brickworks in Brunswick was that established by Hoffman Brick and Pottery Ltd. Hoffman's was purchased by Cliftons in 1960 and later by Nubrik before being finally closed in 1993.



Figure 3. Development of Brunswick overtime, clockwise from top left: Geology & waterways, first land divisions, street layout after subdivision, claypits and quarries.



Figure 4. New uses for claypits in Brunswick, see reference to numbers in text above.

of Brunswick (refer to Figure 4). Of the claypits surveyed here many have been converted to public function: eight are used as parks including Gilpin(6&7), Brunswick(3&4), Clifton(2), Balfe(18), Fleming(16), Temple Park which includes the Brunswick Trugo Club (11), and Methven(15); two are now used for large scale shopping centres, Barkly Square (13) and Woolworths(10); three are now used for industrial purposes (8,9,17); one is the Our Lady Help of Christians School including a sunken basketball courts in the previous hole (20); and one has become Foundation House refugee centre (5). In the last five years since 2009, several of the final remaining ex-claypits in Brunswick have been transformed into medium and high density housing (1, 12, 14, 19, 22, 22). The cost of remediation which prohibited their use before now seems to be offset by rising land values and increases in density. The development of former holes of extraction over 100 years since their industrial function ceased shows the influence that these left-over sites have had and continue to have on the way Brunswick has evolved over time.

## PRESTON

The suburb of Preston is bounded on both sides by the deep-cut watercourses of Melbourne's basalt north. Between the Darebin and Merri Creeks lies a low, generally level plain; a mix of old siltstones and clays and comparatively younger basalts (Carroll and Rule 1985). Like Brunswick, this underlying geology would shape the development of the region; unlocking particular industrial potential in the form of ideal brick-making clays. However, unlike Brunswick, Preston's more open pattern of initial settlement, its persistent small-hold farming character, and overall later development influenced the nature, scale, and reception of its brick-industries.

The area was first surveyed as part of the parish of Jika Jika by Robert Hoddle between 1837 and 1839 (Forster 1968). Originally made up 12 allotments, the land-surveys made no allocation for close patterns of settlement; no reserves for administration, parklands or roads (Forster 1968). Its early years were 'a period of regularizing land ownership in the area and of beginning some grazing and limited agricultural activities' (Forster 1968, 17).

But industry, when it came, was particular and cohesive. Intersections of land, labour and new infrastructures spurred development. For example, the newly opened Yan Yean reservoir pipeline, completed in 1857, freed the tanneries from their traditional dependent adjacencies to creeks (Carroll and Rule 1985). Texts on Preston describe an unpalatable atmosphere of its industrial precinct and remark upon its dirty, smelly, smoky brickworks, bacon factories and tanneries. These existed in three bands starting to the south of the suburb, and were known respectively as "Bricktown", "Porktown" and "Tantown" ('Church and Organ' 1902). The speculative land-boom in the 1880s rapidly altered the town's fabric, within the decade subdivisions had completely changed the nature of the land tenure. Smaller subdivisions in the northern areas of Preston, even if they were unbuilt upon became unavailable or unattractive to industry, especially at the scale required for clay pits and quarries.

Unlike Brunswick, Preston seems to have had a relatively localised set of sites related to its brick industries (refer to Figure 5). The industry was generally limited to the aforementioned stretch immediately south of Bell St and along Plenty Rd, with a second set adjacent to the railway. These were mainly large-volume and brick-producing resulting in a vast, deep holes. In contrast to Brunswick there was no proliferation of small pottery businesses, specialising in more intricate and fine goods like toilet seats and teapots etc. It is this singularity in the scale and type of Preston's clay holes, combined with the slight lag in their development, that defines the difference between the pits found there and those in Brunswick.

As in Brunswick, the production of Preston's clay industry was permanently affected by the depression of the 1890's ('Brick Kilns Lay Idle' 1893). At a similar time the growing presence of suburbia seemed to put pressure on the council to force the closure and infill of the clay holes (Lemon and Andrew 1983). Newspaper reports from the area at the time record the injuries and deaths of children and adults in and around clay holes, leading communities to advocate for "child proof fences" around the pits or their closure all together ('Preston Shire Council' 1917). The suburb was booming and the incompatibility of large pits with suburban life, along with the pressures of ongoing urbanisation was becoming increasingly clear.

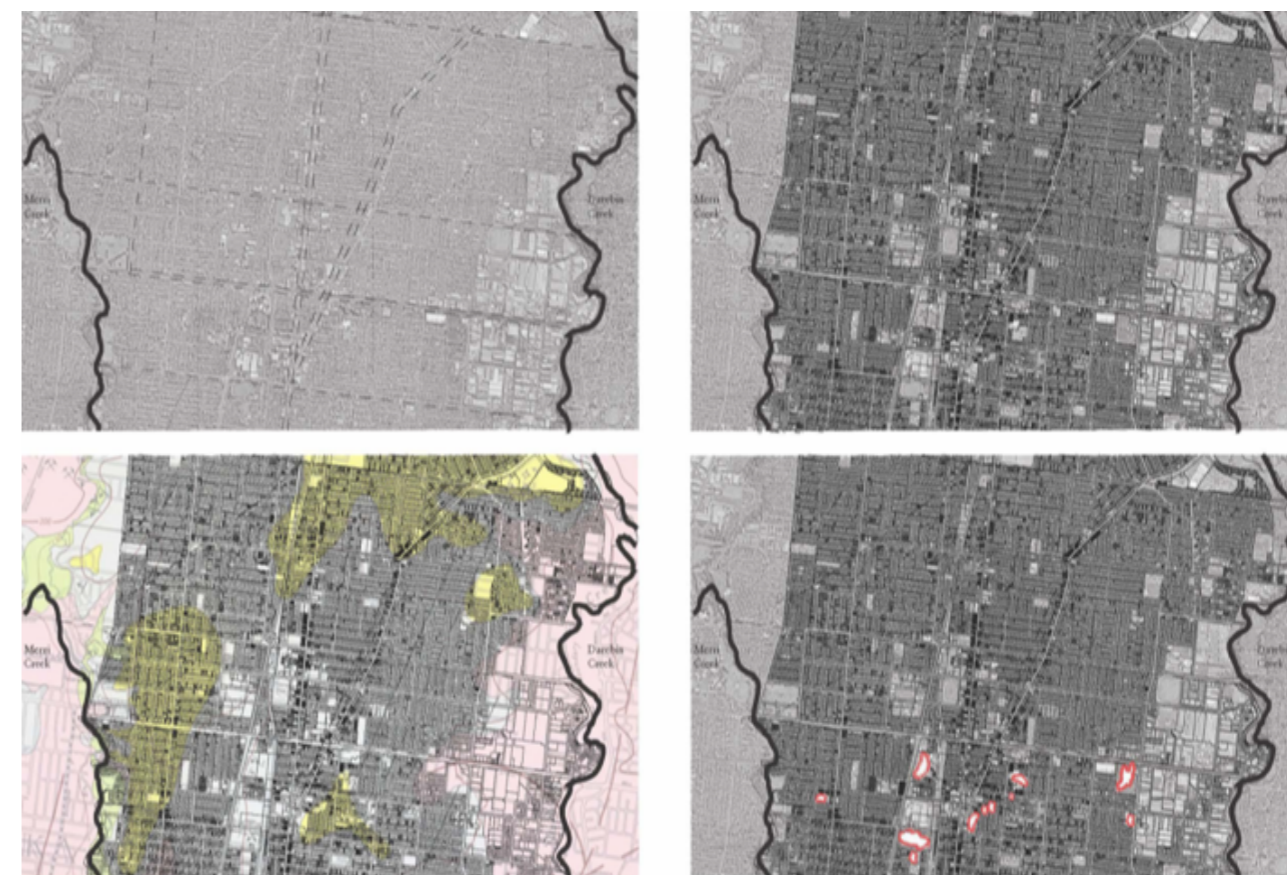


Figure 5. Development of Preston over time

Once closed, some of Preston's clay holes went on to cause new agitations. Discussing the site on Oakover Rd, (now known as the H. Swain Reserve), *The Age* reported that "the pit was purchased by the Preston Council with a view of converting it into a public park after filling it in" ('Preston's Rats' 1927). However, this laudable effort was undermined as "...attracted by decaying animal and vegetable matter, rats bred in such numbers that the pit soon became a seething mass of rats" ('Preston's Rats' 1927). Community complaints again instigated change and the rubbish dumps eventually went on to become parks and playing fields. Other clay holes became home to shopping centres. Basalt quarries closer to Darebin Creek were remediated by council to an extent where land could be sold to use for light industry, but that method was not used for the brick pits.

Preston's clay holes developed later than Brunswick's and the early settlement patterns of the two suburbs went on to influence the way their industries characterised and shaped their respective suburbs. Unlike Brunswick's pits that crept across the suburb and characterised it as a whole, Preston's clay industry existed in "Bricktown", the relatively discrete band of industry below Bell St. Unlike the diversity of holes found in Brunswick, Preston's pits appear to be of a similar scale; missing in its mix were the smaller, speculative pits that arrived during Brunswick's early quarrying history and its large expansive sites that swept across the suburb. The consequence of this is that once Preston's pits were abandoned and their rubbish tips levelled, their use also became singular, mostly reserves and playing fields without the potential for diversity that appears in Brunswick.

## WOLLERT

The area which is now Wollert is part of the larger City of Whittlesea and takes its name from the historic name of the parish which was surveyed in 1838. From that time until the mid-1850s the land was used for rearing sheep. After that,

many of the area's plots were subdivided, and roads were laid out. Dairying took over as the community's main industry, and this remained the case for the next hundred years or so until other forces took hold. In the mid 20th century, the Soldier Settlement Commission gained ownership of larger parcels of land, and it was this acquisition of farmland and then its subsequent sale to and consolidation by [what is now known as] Austral Bricks that transformed the area's economy into one focussed around clay extraction (Gould et al, 1990). Whittlesea was identified as a growth corridor for Melbourne as early as 1971, in the MMBW Framework Plan and covered the area between the then urban boundary at Bundoora past the satellite town of Whittlesea over 50km north of central Melbourne (McLoughlin 1992). In 1971 the corridor was still almost entirely farmland, but it has been progressively urbanised over time and now corresponds to the newly titled North Growth Corridor (*Growth Corridor Plans*, n.d). The suburb of Craigieburn in this corridor extends northwards on the western side of the Merri Creek and the 2016 Quarry Hills Precinct Restructure Plan now outlines detailed urban development over an area of land currently used for claypits and brick manufacturing (*Growth Corridor Plans*, n.d).

The clay deposit which enables brickmaking in Wollert is a relatively isolated pocket within the lava flow which covers this area. This clay deposit is almost entirely covered by a single, enormous claypit and brick-making manufacturer, making it the largest but also the most singular claypit and brickworks studied in this paper (refer to figure 6). The original claypit was established in 1971 by Brick and Pipe Industries and later integrated into the operations of Brickworks Ltd, a parent company of Austral Bricks in 2003 (Vines, 2016). The site includes farmland around the historic and heritage listed Summerhill Estate, a collection of bluestone homestead and farm buildings dating from the 1850's ('Summerhill Complex' 1999). The original claypit and factory were located to the south of the site but over time both the manufacturing facilities and the extent of the claypit grew substantially.. Forming part of the *Northern Growth Zone*, the southern and older parts of the site are planned as new residential development over the degraded claypit land.



Figure 6. Development of Wollert over time clockwise from top left: geology & waterways, encroaching urban fringe, Austral brickpits, current conditions now part of Northern Growth Zone.

In the company overview on their website, Brickworks Ltd outlines that a significant part of the company's business model includes the Land and Development Group which exists 'to maximise the value of the surplus land created by the Building Products business' (*Land and Development Group*, n.d). This is done through either rezoning, rehabilitating and preparing land to be sold on the open market, or assessed and held long term in a property trust until such time as such rehabilitation makes economic sense (*Land and Development Group*, n.d). In addition to its industrial arm, Brickworks Ltd has become a property developer, managing and planning to take advantage of the eventual process of re-use of the urban fringe land that they own for the purposes of brickmaking.<sup>4</sup> In discussing this process on a recent site visit, Business Manager David Clacy explained the process of extraction on the Wollert site was being managed in collaboration with the company's "Property Division", ensuring that high value residential land identified as part of the Quarry Hills restructure plan was not disturbed and extraction was limited to depths which made refilling economically viable.<sup>5</sup>

Other sites of past claypits owned by Brickworks including the former Burwood Brickworks site and the Daniel Robertson Brickworks in Nunawading have also recently been rehabilitated and rezoned under the management of Brickworks Ltd and new large scale residential development is now under construction on both (*Burwood Brickworks*, n.d).

## COMPARISON AND CONCLUSIONS

The three case studies detailed in this paper all reflect a tussle between two different ways to value land on the urban fringe. Extraction industries value land for the volume and the qualities of the physical matter encased in the earth – the stuff below the surface of the land. The process of gaining value from land through extraction involves the removal of the physical matter and the destruction of the surface of the land, a practice which lessens the value of a property by decreasing the uses to which it can be put without costly remediation. In contrast, the property market values land more abstractly – as an asset whose value is ongoing rather than finite. Property speculation and ownership retains the potential of sites to be valuable over time, even though the relative value of land goes up and down according to the preferences and priorities of the market.

In Brunswick and Preston, (and also in other suburbs not studied here such as Box Hill and Oakleigh to the east of Melbourne, and the bluestone-yielding suburbs in the west), brickmakers did not remediate or 'land bank' sites, nor did they play a role in their transformation into new uses. Ex-claypits were sold for minimal amounts to councils for tips, or simply left over time until residents demanded government-led remediation. This process was enabled by regulation but also reflective of different economic conditions and values. In Brunswick and Preston the cost of remediation would not have been offset by the potential profit from the land afterwards - at the time it did not make economic sense to fill sites and transform them into housing.

In the Wollert example, the tussle between the value of land for clay and as property now happens within the one corporate body which manages the way land is valued according to a synthesized economic equation between property and clay. The competing interests represented in Brunswick by brickmakers and property speculators are now, in the Wollert example, represented by different divisions of the same entity who work in collaboration. These competing interests shape the location and methods through which clay is extracted from the land. High value land, such as that with views of the city, is protected from extraction. Extraction is limited to ensure that any remediation and fill required can be done for less than the potential for that land to later be sold for houses. The Wollert plant is a fascinating and condensed

<sup>4</sup> In a personal communication with the David Clacy, Business Development Manager of Brickworks Ltd Victoria, David noted that 'brickmaking was what the company did while waiting for the value of land to increase,' and that the 'location and process of extraction was managed to ensure land with potential high property values was not disturbed.'

<sup>5</sup> Personal communication with David Clacy.

illustration of the forces which influence land use on the urban fringe.

The change in process at Wollert and other past clay pit sites around Melbourne also have potential implications for the way suburbs develop over time, particularly in relation to the nature, location and types of public space present. In Brunswick and Preston, many ex-claypits were remediated using public funds, and in some cases with significant community involvement. The new uses of these claypits reflect the needs and desires of the neighbourhood as understood from a community and governmental perspective.

In Wollert, as well as Nunawading and Burwood and other sites around Australia, both the industrial use and the post industrial use are now managed by a single entity, and decisions as to future use are made based on a set of commercial and economic interests – what makes the best economic sense for the corporation. In this scenario, the remediation of claypits is not a community or governmental responsibility. In some ways this privatisation can be considered positive in that the cost of remediation is born by the entity which has profited from the exploitation of the land. However, the privatisation also means that the site never enters the public realm – either in terms of the debate and decision-making around re-use, or in actual terms as publically accessible space. Uses such as public parks, sports facilities, water bodies, school outdoor spaces are unlikely to occur. Functions such as Brunswick’s CERES environmental park, or sporting groups like the Trugo Club which take advantage of land with little value to support a community or not-for-profit enterprise would be unlikely to be included.

The claypit examples described in this paper can be placed in a broader context against the research and debate around the remediation and sustainable management of mining sites over time in a national and global context.<sup>6</sup> The focus on sustainable management of mining sites is in part to ensure that adequate funds are set aside by mining companies to ensure remediation post closure, but also to implement best practices during the life of mines to reduce environmental effects over time. In the example of Wollert, the owning company’s self interest in the future of the site ensures that adequate funding is available, and that destructive practices are avoided – both positive factors for the rehabilitation of the site in environmental terms. A potential unintended side effect of this process however, is to privatise the decision making and to curtail the public possibilities afforded by these unusual and differently valued sites.

The privatisation of post-industrial sites also has the potential to affect patterns of open space in a wider and more systemic way. Older suburbs such as Brunswick and Preston on the burgeoning fringe of Melbourne developed in an unplanned manner and therefore benefited from the reclamation of post-industrial sites to provide a variety of open space public amenities which were otherwise not envisaged. The resultant pattern of solid and void, in which open space is interspersed in multiple locations and at differing sizes throughout the suburb, produces a particular type of urban form and experience, linking the patterns of urban use in the suburb intrinsically to its history, the logic of industry and the underlying logic of geology. The transformation of these sites in a piecemeal way over time also provides places for change at different time periods – in the most recent iteration this potential for change has allowed Brunswick to participate in the supply of medium and high density development which is required throughout Melbourne at a wider scale.

The urban patterns of newer urban fringe suburbs are unlikely to take advantage of or reflect the industrial processes of the past. This is partly because of the direct transformation of industrial sites to housing (like the Wollert Australia site) but also because newer suburbs are now subject to a planning process, in which the open space and public needs are considered by planners before urbanisation occurs. There are many positives which results from the remediation of industrial sites by companies themselves, as well as from the consideration and zoning of industrial sites which is now carried out by planners. However it is worth analysing and learning from the unintended but still positive effects of

<sup>6</sup> This paper refers to the work of the Centre for Mined Land Rehabilitation at the University of Queensland and in particular the report from the Managing Mining Legacies forum 2012.

past processes of post-industrial reuse, and considering how such qualities might be introduced or planned for in newer suburbs under development.



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