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'Protect the Brisbane backyard!' (Except from subdivision for additional house construction)

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ABSTRACT

Greyfield infill has been widely pursued as a neoliberally guided consolidation policy favouring high amenity, higher density redevelopments in existing residential areas. In the context of rapidly transforming inner-city suburbs, the question becomes whether consolidation can be achieved through *laissez faire* zoning combined with strong market incentives for both large- and small-scale developers. This study draws upon an empirical analysis of property boundary change in Brisbane, Australia to demonstrate that without adequate specification, consolidation policy encouraging infill of greyfield inner-city sites can create perverse outcomes that fragment, rather than consolidate, the existing lot structure. The creation of 'backyard subdivisions' is one outcome in which additional dwellings are built alongside existing houses protected by preservationist statutes. Despite best intentions to retain dwelling character whilst consolidating growth, redevelopment outcomes do not achieve the purported benefits of consolidation. Clear planning controls are required if greyfield infill is to play a role in halting peripheral urban expansion.

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Introduction

Changing inner-city land uses have required new and innovative thinking regarding how best to approach the transformation of the built environment. This is particularly germane in mixed land-use neighbourhoods that once housed the working classes, where neither dense tenement dwellings nor low-density workers' cottages occupying prime lands meet the demands of an increasingly professionalised inner-city workforce (Ong et al. 2018). Though the problems are diverse and contextual, many cities around the world are faced with the same question: How can policy best encourage the redevelopment of these spaces in inner-city areas?

The redevelopment of inner-city Australian neighbourhoods has adopted a range of approaches, with a prevailing theme in liberal democratic systems being a *laissez-faire* neoliberal orientation that privileges market forces in determining the outcomes of urban planning on the built environment (Troy et al. 2020). Within such planning systems, the role of the investor-developer falls under particular scrutiny as the primary agent of change, as transformation of the built environment on a small scale is guided largely by what is allowed, rather than what is desirable, on a large scale (Gurran and Phibbs 2013). This paper aims to better understand 'greyfield infill development' as an approach to consolidating growth of Australian inner cities. Infill development is defined as building additional dwellings within the existing urban area (DILGP 2017). This includes conversion of former industrial sites (brownfield development) and undeveloped land within the existing urban boundary (greenfield development) into residential use, as well as the construction of additional dwellings on existing urban, including residential, sites (greyfield development). Infill in the form of greyfield development has emerged as a means of densifying inner-city neighbourhoods characterised by variegated building stock and rapidly changing land uses (Newton, Meyer, and Glackin 2017). It is distinct from other forms of infill as it aims to utilise residential land more efficiently while capitalising on existing infrastructure servicing the residential population.

In this paper we focus on infill in greyfield areas that involves the subdivision of larger lots containing a single house to create two (or more) smaller lots, with detached houses of a similar size. After explaining our research methodology and case study area in Brisbane in the following sections, we explain how the high level of additional house construction on former backyards, combined with planning schemes that actively encourage this form of infill, highlight a clear preference for low density redevelopments. Our focus on 'backyard subdivisions', as a form of greyfield infill, represents a departure from traditional urban consolidation approaches, which have primarily focused on higher density development such as apartments (Newton and Glackin 2014).

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Background

The term 'greyfield' has grown to apply broadly to underutilised real estate, including existing residences (Newton and Glackin 2014). Despite longstanding application of urban growth boundaries and 'green belts' to restrict residential development outside designated urban footprints (McConnell and Wiley 2010), the planning approach to infill through greyfield development is relatively new, having entered the planning lexicon approximately a decade ago (Newton and Glackin 2014). True to its neoliberal roots, there are several distinguishing features that define its *laissez-faire* orientation along three dimensions, characterised as much by the absence of planning as by its presence. First, infill development assumes a near-complete reliance on private capital and individual property investors, thus *laissez-faire* in terms of *how* they occur (McConnell and Wiley 2010; Phan and Chandra 2008). Though state catalysts are sometimes associated with brownfield infill development – particularly where former industrial estates sit on prime real estate (e.g., waterfronts, inner-city fringe areas) – there are few state-led drivers other than occasional incentive schemes (e.g., tax abatements, expedited planning approvals, graduated zoning allowing more dwellings on larger sites). The pace at which infill development moves is largely a market-dependent phenomenon, which may be rather irreverent to housing affordability, community needs, and/or long-term population pressures (Gurran and Phibbs 2015; Troy et al. 2020).

Second, infill development approaches are *laissez-faire* in terms of *where* they occur. Although targets are set at the city-scale, the macro approach to planning means that developers can, and often do, prioritise profitability over the nexus of concerns that feed into planning documents, such as housing diversity and affordability. In other words, property development becomes a zero-sum game with financial objectives, rather than an exercise with net benefit (England and McInerney 2017; Troy et al. 2020). Third, and perhaps most important to this analysis, is the fact that infill development is often guided by a loose set of statutory codes defining *what* can be built, meaning that for planning purposes a multi-storey apartment block is given the same priority as an equivalent number of new dwellings achieved by subdividing existing lots. A quantitative focus on 'dwelling targets' supersedes considerations such as aesthetics and amenities and ignores infrastructure considerations almost entirely.

The Australian context

Australia is a highly urbanised country, with approximately 64% of its population residing in the metropolitan regions of its five largest cities (ABS 2017a). Most population growth continues to occur in greenfield suburban subdivisions on the fringe of major cities (Coleman 2016). In response, all major metropolitan regions in Australia have adopted urban growth policies that aim to contain new dwelling construction to the existing urban footprint. These targets are set by state governments to avoid further low-density peripheral growth (DILGP 2017; Glackin and Newton 2019), while simultaneously utilising existing infrastructure and services (Bolleter 2016) and improving housing diversity and affordability (DILGP 2017). Infill targets typically range from 50% to 70%, over 20–30-year timeframes, yet no planning instrument outlines how the target is derived or how it should be measured (DILGP 2017; Newton and Glackin 2014).

Greyfield infill

Infill, particularly in the form of greyfield development, is largely regulated through land use zoning embedded in municipal government planning schemes (Duckworth-Smith 2015). Generally, land use zones are altered to facilitate infill by (a) increasing allowable densities (upzoning) to encourage construction of higher density buildings on existing lots, (b) reducing minimum land size requirements to encourage subdivisions for additional dwelling construction, and/or (c) providing density bonuses for developments on large sites, encouraging the assembly of smaller lots to create larger sites for higher density redevelopment (see, for example, BCC 2020a). Greyfield development is generally typified by the redevelopment of properties in inner and middle ring suburbs with high land-to-building value ratios and under-utilised buildings, either due to failing residential dwelling stock (either physically, technologically or environmentally) or energy, water and communications infrastructure that requires regeneration (Newton and Glackin 2018). Greyfield infill across Australia's major cities is generally piecemeal, fragmented, and undertaken by small scale developers. Studies of Melbourne (Phan and Chandra 2008), Adelaide (Sivam, Karuppannan, and Mobbs 2012) and Perth (Duckworth-Smith 2015) demonstrate that small scale construction of one or two extra dwellings is the most common form of infill. This unplanned approach has meant that many cities struggle to meet their consolidation targets (Newton and Glackin 2018).

The Brisbane backyard

Brisbane is the capital of the state of Queensland and located at the heart of the South East Queensland (SEQ) metropolitan region, a sprawling metropolis

Figure 1. High-rises and character houses in West End.

stretching 200 km from north to south. Brisbane is unique in that it has a unified municipal government, Brisbane City Council, making it the most populous municipal government in Australia, covering 1,342.7 km^2, with 463,601 dwellings and 1,131,155 residents at the 2016 Australian Census (ABS 2017a). Brisbane is decentralised and dispersed in its urban form, with low density housing bordering the city centre (Figure 1). Seventy-five percent of Brisbane residents live in a detached house, compared to 68% in Melbourne and 57% in Sydney (ABS 2017a).

One of the most distinctive features of Brisbane, and Australian cities more broadly, is the backyard. Evolving from the disused space at the rear of a detached house, the backyard has become an expectation of most Australians. English cultural origins, including an anti-urban tradition, and ready land supply, created this suburban housing form (Hall 2010). In recent times the quintessential backyard has been shrinking, both due to smaller backyards in new greenfield developments and backyard subdivisions of older suburbs (Hall 2010). This reduction of private greenspace can be partly attributed to changing consumer demand, and a growing acceptance of smaller lot sizes (Sivam, Karuppannan, and Mobbs 2012) but is also a result of urban consolidation policy. Planning schemes encourage lot subdivision for infill and allow increases in building footprints that eliminate backyards (Hall 2010).

A ban on multiple dwellings (townhouses, rowhouses or apartments of any size) exists in more than 60% of the city's residential area, after all 26 Brisbane City councillors, across political parties, voted unanimously to ban multi-dwelling developments in low density areas (BCC 2020b). Previously, developers were able to consolidate lots in low density zones for medium to high-density developments if the block size was over 3,000 m^2. At the same time, thousands of properties across the city were rezoned as Character Residential (Table 1), one of various mechanisms employed by Brisbane City Council to protect the city's 'cultural identity' (BCC 2020a). This rezoning restricts the redevelopment of these properties, as Character Residential houses must be retained, and any new development must be of a similar scale (Table 1). Character houses were typically constructed in the pre-1946 period on lots as large as 900 m^2, with the house generally covering 30% of the lot (Hall 2010; see Figure 2). The planning scheme is clear, however, that it 'does not seek to maintain the status quo … [the] City Plan 2014 anticipates that land in the zone may be developed.' (*Smout v Brisbane City Council* [2019] QPEC 10, [24] per Williamson QC DCJ). This also means that new developments are not required to be consistent with existing built form, leading to irregular streetscapes (Figure 1), with original small cottages neighbouring new, large contemporary houses that often cover the entire lot (Figure 3).

Table 1. Definitions of land use zones, acceptable outcomes, and minimum lot sizes under the City Plan 2014 (BCC 2020a).

Land Use Zone	Description	Acceptable Outcome	Front Lot (m^2)	Rear Lot (m^2)
Low Density Residential	Single occupancy house.	Detached house of 1–2 storeys.	300 or 450*	600
Character Residential (Infill)	Infill housing is acceptable only if it retains pre-existing houses built before 1946 and is compatible in low density scale.	Detached house of 1–2 storeys.	300	450
Low to Medium Density Residential	Dual occupancy houses, townhouses and low-rise apartment buildings.	Townhouse, row house or low-rise apartment of less than 2 or 3 storeys, depending on precinct.	180 or 260 or 350**	350
Medium Density Residential	Medium rise apartment buildings.	Low-rise apartment of less than 5 storeys.	800	800
High Density Residential	Medium to high-rise apartment buildings.	Apartment of less than 8 or 15 storeys, depending on precinct.	800	800
Centres	Variety of uses in established urban centres including residential, administrative, community, cultural, entertainment and professional.	Tailored to specific locations.		
Mixed Use	Variety of uses including residential, tourism, services, low impact industrial and retail.	Tailored to specific locations.		

*Depending on proximity to a 'centre' e.g., shops.
**Depending on the number of storeys of the building.

Figure 2. Transformation of one lot at Fraser Terrace, Highgate Hill. Image source Google Maps and Streetview.

Brisbane's planning framework

In Queensland, State legislation provides a framework for state, regional and municipal level planning. Both regional and city planning operate within the State's 'performance-based' planning system, first developed through the Integrated Planning Act 1997 but retained through subsequent versions of Queensland's legislation (Sustainable Planning Act 2009, superseded by the current Planning Act 2016). Performance based planning aims to encourage flexibility and efficiency by assessing development on its merits, rather than using prescriptive zoning (Frew, Baker, and Donehue 2016). The planning framework is a hybrid system where decisions are merit-based but assessed against a criterion developed by municipal governments in their planning schemes (England and McInerney 2017). In each planning scheme a municipal government develops codes that specify performance outcomes for each land use zone. If a development is compliant with the performance outcomes of the code, it must be approved. For example, the overall outcome of the Character Residential zone code is to 'provide for low density suburban and inner-city living through the development of predominately 1 or 2 storey dwelling houses …' (BCC 2020a, para 6.2.1.5). Theoretically, development of a single storey house in this zone will be approved. If the development does not comply, it can still be approved if the development can show compliance with other codes, as 'it is not legitimate to regard departure from the acceptable solution as necessarily indicating non-compliance …' (*SDW Projects Pty Ltd v Gold Coast City Council* [2007] QPELR 24, per Judge Rackemann at [48]).

Queensland's framework is contentious and has been criticised as being counter to its aims due to the uncertainty created by merit-based development approvals (Frew, Baker, and Donehue 2016). Central to this planning system is the elimination of 'red tape', with a framework that privileges private developers as the key deliverer of new housing (Ruming and Davies 2014; Troy et al. 2020). This neoliberalisation of planning systems across Australian states has been led by governments of all political persuasions (Troy et al. 2020). It has been criticised for prioritising economic growth over other planning goals such as sustainability and liveability (England and McInerney 2017; Ruming and Davies 2014).

Consolidation policy

Contemporary policy seeks to achieve urban consolidation through two interrelated statutory planning frameworks: first, an overarching, macro-level statutory planning scheme (instituted at a State government level in Queensland's SEQ Regional Plan), which (a) defines an existing urban boundary where, theoretically, most new development is to be contained within, (b) sets dwelling targets by municipal government area, and (c) outlines desired settlement patterns; and second, a micro-level planning scheme (instituted by the municipal government, Brisbane City Council's City Plan 2014), which utilises land use zoning to regulate the kind of development that can occur within its authority area (Figure 4).

The focus of three iterations of the SEQ Regional Plan (2005, 2009, 2017) were, and continue to be, on changing the balance between consolidation and peripheral urban expansion (DILGP 2017). Mandated

Figure 3. Backyards lost for additional houses on Kingfisher Lane, East Brisbane. Image source Google Earth.

infill targets for Brisbane grew from 80% (2005–2026) to 88% (2009–2031) to 94% (2017–2041). The Queensland Government aims for infill development to deliver high quality development that increases residential density inside the urban footprint while also 'delivering a mix of housing types' (DILGP 2017, 40), specifically acknowledging the need for greater supply of medium-density dwellings. At the same time, the Queensland Government increased the size of the urban footprint of SEQ by 19,980 hectares, 'to minimise the risk of land supply constraints placing upward pressure on housing prices' (DILGP 2017, 38). The additional land now included in the urban footprint (and therefore technically contributing to urban infill targets) is comprised primarily of low density subdivisions of detached houses, on former rural or undeveloped land, 40–50 km from Brisbane's city centre (DILGP 2017).

While state powers to control the planning of development have gradually increased over the last 20 years, it is municipal governments that generally retain responsibility for land use planning and the approval (or refusal) of development applications (England and McInerney 2017). As such, the practical implementation of infill development largely occurs at a municipal government level. The latest iteration of Brisbane's planning scheme, the City Plan 2014, seeks to densify existing residential areas through multiple means, including the upzoning of certain areas to higher density, increasing the allowable height for buildings in the High-Density Residential zone and reducing the minimum lot sizes across all low to

Figure 4. Planning framework applicable to Brisbane.

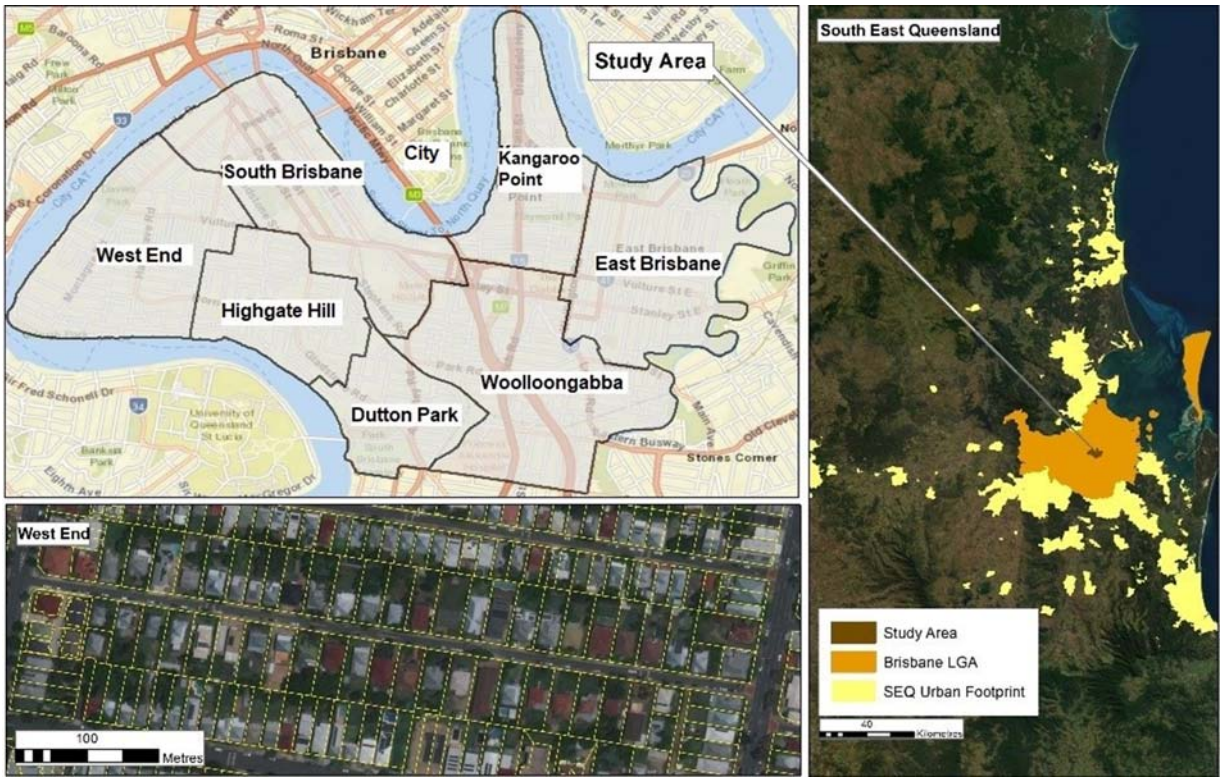

Figure 5. (a) Study area; (b) Study area in Brisbane and SEQ; and (c) Typical street and lots in West End.

medium residential zones. The planning scheme seeks to locate higher density development 'predominately within the Growth Nodes on Selected Transport Corridors' (BCC 2020a, para 3.2.1). These growth nodes are located along Brisbane's major public transport infrastructure, being its network of almost 400 km of railway lines and segregated busways, which radiate from the city centre (BCC 2020a). For lower density residential land, minimum lot sizes were substantially reduced to encourage infill development, with minimum lot sizes in the Low to Medium Density Residential zone decreased from 600 m^2 to as little as 180 m^2 (Table 1). As a result of these changes, the median lot size across Brisbane reduced from 601 m^2 in 2007 to 434 m^2 in 2017 (Tilley 2018).

Methodology

Study area selection

The study area includes seven suburbs immediately south of the Brisbane city centre: West End, South Brisbane, Highgate Hill, Woolloongabba, Kangaroo Point, East Brisbane and Dutton Park (Figure 5). The study area is a major target for infill development, with all residential lots zoned for infill development of various densities. Kangaroo Point, Highgate Hill and West End are three of Brisbane's top five densest suburbs. The study area also still contains a substantial number of detached houses (4,963 occupied houses in 2016) and, since 2011, Brisbane City Council has approved an average of 1,800 new dwelling units in the study area each year (ABS 2020), accounting for almost 30% of Brisbane's total required infill target (DILGP 2017). Such large numbers of dwelling approvals are attributed to apartment construction in the former industrial areas of West End and South Brisbane, with over 4,000 new dwelling units built between the 2006 and 2016 Australian censuses, mostly in the form of high-rise apartments (ABS 2017a; 2017b). Yet, at the same time, the study area lost 609 detached houses and detached houses, as a proportion of occupied dwellings, fell by 6% (compared to 4.5% in Brisbane and 2% in Australia) (ABS 2017a, 2017b). It was therefore anticipated that greyfield infill would be observed more frequently in these suburbs.

Data and analysis method

This paper adapted the 'centroid alignment' method developed by Frederickson, Fergusson, and Wildish (2016) to identify residential lots that had experienced property boundary change to facilitate new infill development (Figure 6). We obtained property boundary data from the Queensland Government's Digital Cadastral Database, the spatial representation of every lot in Queensland, dated 2007 and 2017. Using satellite imagery and the applicable planning scheme, we excluded non-residential lots from the 2007 data, and using ESRI's ArcGIS software we converted 2007 lot polygons to centroids, and overlaid the

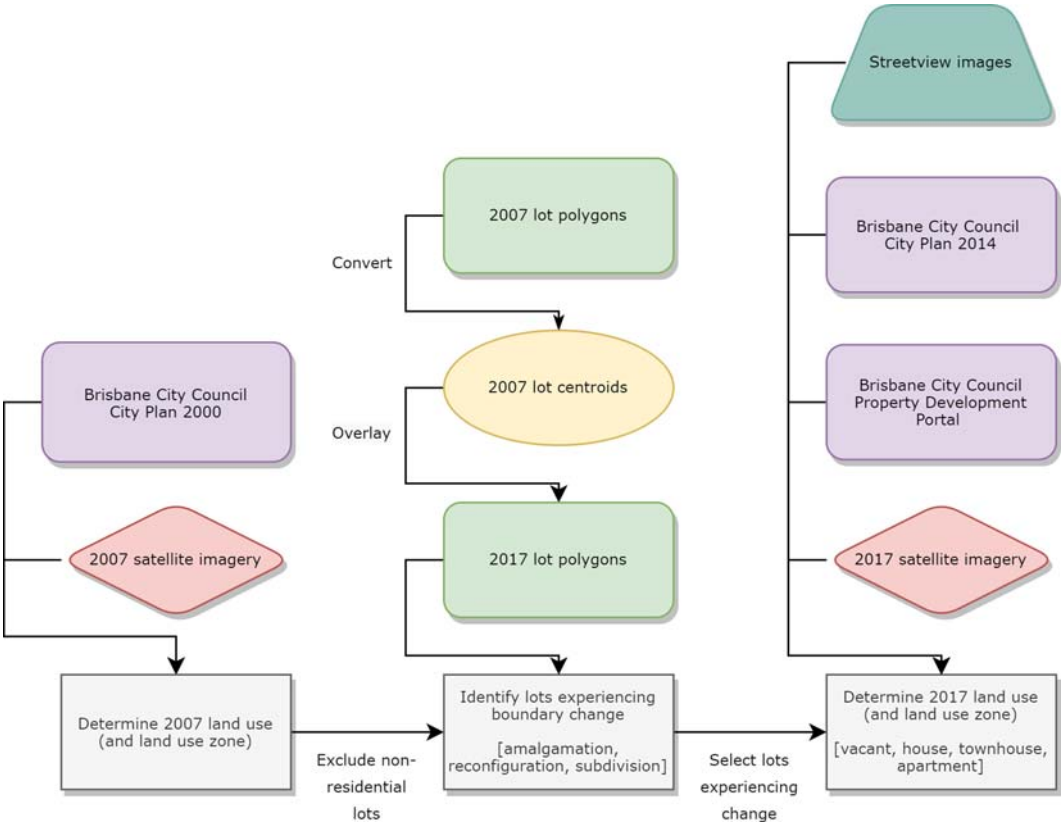

Figure 6. Flow chart of methodology.

2007 centroids with the 2017 lot polygons to identify what changes to property boundaries occurred through the processes of amalgamation, subdivision and/or reconfiguration (Table 2). ArcGIS was utilised to calculate change in lot polygon size over the 10-year period. Satellite imagery and street view photography, site checks and Brisbane City Council's property development portal (containing all development approvals from 2004 onwards) were also used to determine the type of dwellings subsequently constructed (Table 3). Brisbane City Council's property development portal also outlines the relevant land use zone (Table 1) of the individual lot, and the name of the landholder. The land use zoning allows us to ascertain whether the resulting dwelling is consistent with the acceptable outcomes in the planning scheme for new residential development, and the name of the landholder provides an understanding of the type of developer, be they an individual, family trust, proprietary company, or a major development firm. Given the study area's close proximity (2-kilometres at its outer edge) to Brisbane's city centre, large areas of higher density residential zones and relatively high infill levels (BCC 2020a), our analysis focused on exploring the frequency of backyard subdivisions for additional house construction when compared to land assembly to consolidate multiple lots for higher density development.

Table 2. Types of property boundary change identified in this study.

Change Type	Output of analysis	Description
Amalgamation	Two or more centroids in one polygon.	Two or more lots merging into one lot.
Reconfiguration	Any other type of change.	Any other form of change that results in additional dwelling construction.
Subdivision	Centroid no longer in centre of one polygon and no centroid inside adjacent polygon.	One lot is divided into two or more lots.

Results

A large proportion of greyfield infill dwellings delivered through a small number of densified lots

Over a 10-year interval from 2007 to 2017, a total of 121 redevelopments occurred in the study area following a change to lot boundaries. Of these, most resulted from subdivision (52% of cases), followed by land assembly through amalgamation (30%). The

Table 3. Categories of new dwellings.

Dwelling	Definition
House	1 detached dwelling.
Duplex	2 dwellings that mimic detached housing but share a common wall.
Townhouse	2 or more dwellings that mimic detached houses but are attached in a multi-dwelling complex.
Apartment	Multiple dwellings in a multi-dwelling complex of any height with common areas such as hallways.

Table 4. Changes observed from 2007 to 2017.

Year	Number of Lots	Average Size of Lots	Average Lot Size (Subdivided Lots)	Average Lot Size (Amalgamated Lots)	Number of Total Dwelling Units
2007 (pre-redevelopment)	202	634.4 m^2	762.9.2 m^2	582.5 m^2	209
2017 (post redevelopment)	222	577.2 m^2	340.2 m^2	1410.9 m^2	2,356

remainder of properties (18%) experienced a reconfiguration that changed the shape or size of lots but did not alter the number of lots. In total, 202 lots in 2007 became 222 lots in 2017, out of a total of 12,509 lots within the entire study area in 2017 (Table 4). The 222 lots identified in our study covered a total land area of 128,138 m^2—just 1% of the total study area—indicating that only a very small number of lots were 'reshaped' to facilitate greyfield infill. The number of total dwelling units on the 222 identified lots grew from 208 to 2328 between 2007 and 2017 (2120 additional dwellings). Between the 2006 and 2016 Australian censuses (similar timeframe to this study) occupied dwellings in the study area grew by 4788, inferring that a substantial number of these new dwellings were supplied through greyfield infill which required a change to lot boundaries. Newly constructed apartments accounted for 90% of new dwellings, yet houses maintained their dominance in terms of urban form, with 57% of the lots identified in our study containing a detached house in 2017.

Backyard subdivisions are preferred

While the predominant form of new dwellings were apartments in high-rise buildings, most lots were subdivided rather than consolidated (52%). Sixty out of 63 subdivisions resulted in additional house construction. The remaining three lots were vacant, but, given the size of the new lots and their low-density land use zone, additional house construction is the only redevelopment outcome consistent with the planning scheme. Figure 7 illustrates a typical subdivision resulted in one additional dwelling on the new lot. A total of 21,680 m^2 of open space was removed to facilitate the construction of additional dwellings, with the median lot size in 2017 being 45% smaller than the original 2007 lot (see Table 1). A typical example of backyard subdivision is shown in Figure 8.

Although the most common boundary change was the 'backyard subdivision', an additional 36 properties were developed into apartment buildings. Given that the average new apartment yielded 59 additional dwellings, this was the most significant means of delivering additional dwellings. Almost all apartment buildings were constructed following land assembly through amalgamation of multiple lots (92%). The typical amalgamation involved two lots, as illustrated in Figure 9, with the houses demolished and replaced with an apartment building. Our results demonstrate that the *status quo* in dwelling types persists, with redevelopments resulting in subdivisions and additional house construction or amalgamations for high-rise apartments, with little evidence of the creation of medium-density dwellings. Townhouse development is the least common form of greyfield infill (15 out of 121) we identified, with census data confirming that the proportion of townhouses, rowhouses and other medium-density dwellings in the study area did not change during this 10-year period (ABS 2017a, 2017b).

Small scale developers most prevalent

The proponents of greyfield infill are generally small-scale developers. Two (on amalgamated lots of 2242 and 1228 m^2) out of 121 sites were developed by the same largescale, Brisbane-based development company, with all other sites (119) owned by discretionary and family trusts, small proprietary companies, and individuals. No backyard subdivisions were undertaken by largescale development companies. Table 5 outlines the types of buildings constructed on each property following the redevelopment, and the applicable zoning of the property under the City Plan 2014. Character Residential (Infill) was the most common zoning observed (57 out of 121), indicating that in many instances the original house was protected. Almost all new detached houses were constructed on land zoned as Character Residential (Infill) and Low-Medium Density Residential, and most apartments were constructed on land zoned as High Density Residential (15 storeys), with a small number constructed in high density zones of lower height limits or mixed use or commercial zones. Despite the Centres and Mixed-Use zones allowing for a combination of residential and commercial uses, no mixed-use developments were observed. The results show that developers followed the planning scheme to construct the types of dwellings prescribed as acceptable outcomes in each zone.

Discussion

Our results demonstrate that there is a disconnect between State-level policy and municipal-level implementation. The existing planning system works to ensure that additional houses built in former

Figure 7. Subdivision for detached house construction at 64–66 Lisburn St, East Brisbane. Image source Google Earth and Streetview.

backyards remain Brisbane's preferred form of greyfield infill on an absolute basis, when compared to land assembly for higher density development. 'Backyard subdivision' is pursued as the simplest form of infill, as it does not require negotiation with multiple landholders to assemble larger lots for higher density developments ('land assembly') (Gallagher, Liu, and Sigler 2019). Each development is also considered individually, rather than analysing the impact to the whole street (or neighbourhood) if multiple lots are subdivided (Figure 3). Land assembly of smaller lots (Gallagher, Liu, and Sigler 2019) or coordination of redevelopment for high quality, precinct-level greyfeld infill is inherently difficult and there is a lack of exemplary high-quality residential developments to encourage more innovative and creative approaches

Figure 8. Amalgamation for apartment building construction at 23 Potts St, East Brisbane.

Figure 9. Loss of backyard at 18 Emily Street, Highgate Hill. Image source Google Earth.

Table 5. The dwelling types and relevant zoning in 2017 of redevelopments.

Zoning Category	House	Apartment	Townhouse	Vacant	Duplex	Total
Other	0	1	0	0	0	1
Medium Density Residential	0	3	0	0	0	3
High Density Residential (8 storeys)	0	3	0	0	0	3
Centres	1	3	0	0	0	4
Mixed Use	2	2	0	0	0	4
High Density Residential (15 storeys)	0	19	1	0	0	20
Low-Medium Density Residential	16	4	6	1	2	29
Character Residential (Infill Housing)	41	1	8	6	1	57
Total	**60**	**36**	**15**	**7**	**3**	**121**

to infill (Glackin and Newton 2019). Thus, individual owners can reap the financial benefits of lot-scale intensification without having to navigate the complexities, and costs, associated with larger developments.

Despite a State policy promoting urban consolidation through mixed use and transit-orientated development, the Queensland Government continues to release peripheral land for development in fear of urban containment unduly impacting house prices (DILGP 2017), despite limited economic evidence to support this (Gurran and Phibbs 2013). If the limited number of greyfield infill continues to be dominated by new house construction, the promised benefits of compact urban form, such as affordable housing and services, shorter commutes, and healthier lifestyles, will remain aspirational for a large (and growing) number of residents (Newton, Meyer, and Glackin 2017).

While consumer preference for well-located medium and high density development is growing (Glackin and Newton 2019; Kelly, Weidmann, and Walsh 2011), there are powerful interests' groups who seek to shape the direction of housing policy in Australia, with government perspectives heavily influenced by the development industry (Gurran and Phibbs 2015). Dwelling yields on both greenfield and brownfield sites are significantly higher than those created by greyfield development, and, while this land remains available, it will continue to be the preference of largescale developers (Newton, Meyer, and Glackin 2017) as greyfield infill projects do not have attractive profit yields for professional developers (Sharam, Bryant, and Alves 2015). Currently, government intervention in infill is limited to the injection of funds for required infrastructure to encourage urban renewal, with inner-city redevelopment almost always concentrated on brownfield sites (Gallagher, Sigler, and Liu 2020), or the rezoning of large greenfield or brownfield sites for residential development. This approach cannot last indefinitely, as both brownfield and greenfield sites are finite. Adding to the challenge of densification is the overwhelmingly negative depiction of urban consolidation in local media, with high-rise apartments and townhouses viewed as an 'assault' on the traditional suburban ideal of a detached house with a yard (Raynor, Matthews, and Mayere 2017). Development policy in Australia is highly political, with many local politicians elected on 'anti-development' platforms, and there is significant evidence of government decisions being contrary to expert advice and evidence, due to political pressure from constituents (Raynor, Matthews, and Mayere 2017), or lobby groups (Gurran and Phibbs 2015).

While researchers (see, for example Kelly, Weidmann, and Walsh 2011; Newton and Glackin 2018) continue to explore attempts at 'good' infill, in many jurisdictions there is a growing mismatch between preferred housing and existing stock (Kelly, Weidmann, and Walsh 2011; Sharam, Bryant, and Alves 2015). It is well established that allowing the private market in Australia to drive the urban development agenda, with little input from the community, has led to a dichotomy of new dwelling construction: high-rise apartments and detached houses (Sharam, Bryant, and Alves 2015), often on brownfield and greenfield sites respectively (Gallagher, Sigler, and Liu 2020). This is supported by the results of our study, which shows both a low uptake of greyfield infill, and a lack of new medium-density developments. The market has failed to provide the improvements in housing diversity or affordability promised by consolidation policy, with the delivery of medium-density thwarted by perceived risk, due to both the uncertainty of the existing neoliberal planning system and capital constraints (Sharam, Bryant, and Alves 2015).

Conclusion

In Australia, the neoliberal, market-based approach to urban consolidation leaves the most important decision about our cities—the urban form—to be determined by individuals seeking financial gain through piecemeal and *ad hoc* redevelopment. Neoliberal planning frameworks aim to facilitate and sustain growth mean that markets seek out the best financial return, rather than being influenced by broader considerations such as liveability or the environment (Troy et al. 2020). This approach yields mixed results, particularly on greyfield sites where redevelopments favour a lowest-common denominator approach and allows for 'backyard subdivisions' to emerge as the most common form of greyfield infill. Our results

indicate that the outcome of poor policy implementation is that Brisbane's low-density housing character is inadvertently retained, but through the loss of backyards that Brisbane City Council purports to 'protect'. We find that low density infill attempts to balance consumer preference for detached houses with meeting infill dwelling targets, but in effect creates a compressed suburbia that fails to deliver many of the core promises of consolidation, including improved housing diversity or affordability, or a halt to peripheral urban sprawl (McConnell and Wiley 2010; Newton, Meyer, and Glackin 2017). Further research might leverage a growing body of research in Australia that explores the role of small lot housing in reaching urban consolidation goals (see, Duckworth-Smith 2015; Swapan et al. 2020), yet the lack of focus on high quality greyfield infill represents a missed opportunity for our cities.Notes on contributors

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