

Density through amalgamation? Battling the sticky cadastre

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Abstract:

Continued population growth in Auckland is expected over the coming decades; a new planning framework proposed for Auckland seeks to accommodate most new dwellings in the existing urban area, in part by encouraging higher-density developments on larger parcels of land. Given the size of existing parcels in urban areas, amalgamation and redevelopment will be needed in order to increase dwelling density. Land amalgamation is a fundamental step in the development process that allows for the unpicking of the existing 'sticky' property boundaries. While there is much published research on the amalgamation process as part of urban redevelopment projects, there is little discourse on small-scale amalgamation in relation to residential properties, and no existing analysis/research on amalgamation in Auckland. Through spatial analysis this research identified that between 2004 and 2014 a total of 1,202 residential property amalgamations took place; half of which were located in the former Auckland City Council area. Analysis of ownership, post-amalgamation development, and development typology was also undertaken. Semi-structured interviews with participants in the amalgamation process were sought in order to explore the process and barriers, with findings indicating that undertaking amalgamations can be difficult. If current planning rules have not been conducive to amalgamation, will the proposed rules encourage more amalgamation? Can Auckland get density through amalgamation or are the hurdles too high to overcome?

Introduction

Land amalgamation (also known as land agglomeration or land assembly) is the development process by which larger parcels of land are created by legally merging smaller adjacent parcels. Defined broadly, amalgamation is a fundamental step in the development process and comprises of: land acquisition from landowners, land preparation, planning of streets, open spaces and main services, planning the built form, division of land into building plots, and the delivery of a planned built form (Golland, 2003). Louw (2008) advocates a finer definition, separating land acquisition and division from development. Louw (2008) asserts that the significant aspect of land assembly is that it entails "changes in land ownership through acquisition of the necessary parcels of land to make property development and infrastructure provisions possible". One could think of the amalgamation process as 'reverse subdivision' and view it as an attempt to undo the fragmented nature of the existing cadastral pattern in order to undertake development, through first creating parcels of land that are better suited to a development typology different from that intended for the parcels when they were first created.

Property boundaries once created, are with us for a long time; they are hard to unpick or reverse. Because of this characteristic I propose that the cadastre can be understood as 'sticky'; amalgamation is an attempt to overcome the 'sticky cadastre'. The sticky cadastre is an issue in locations where changes to the layout of an existing urban area is proposed. Land is viewed as a blank slate upon which planning can superimpose itself, but land ownership, size, and configuration play an important role if affecting how changes to an already urbanised area is (re)developed.

Private property rights and ownership structures often complicate undertaking amalgamation; as do issues such as "the holdout problem" (Cadigan et al., 2011, Cunningham, 2013, Menezes and Pitchford, 2004, Miceli and Sirmans, 2007, Plassmann and Tideman, 2007). Even in circumstances that provide a near blank canvas, such as after large scale disasters, overcoming the sticky cadastre has proved to be extremely difficult (Annabell, 2012, Godfrey, 1997, McDonald, 2004, Schencking, 2008, Young, 2008).

Much research on the process of land amalgamation as part of large scale urban renewal projects, mixed use developments, and the undertakings of urban development authorities (UDAs) exists, especially relating to either the voluntary sale of land, or through government acquisition by other means (Azuela and Herrera-Martín, 2009, Balla and Alterman, 2010). Exploration of land assembly and related policy intervention has been well addressed by Agrawal (1999), Carpenter and Ross (2009), Hastings and Adams (2005), Larsson (1997), Lin (2005), Louw (2008), Tang and Tang (1999), Turk (2008) and, Turk and Demircioglu (2013). Discussion of small-scale residential development which entails the amalgamation or assemblage of relatively few parcels, as researched in this project, is scarce.

Context

Auckland's population continues to grow steadily at a faster rate than the rest of NZ; it is expected that 60% of New Zealand's population growth to 2043 will be in Auckland (Ross, 2015). In 2014 external migration alone added 22,500 new residents to the city (Ninness, 2014). In 2010 Auckland's seven local councils and its regional council were merged to form the new Auckland Council. The new council was required to produce a spatial plan for the city (known as The Auckland Plan); this was published in 2012 and set out a high-level development strategy on how the city should accommodate development in the region to 2041. The development strategy is a normative future land use that builds on legacy regional planning approaches that incorporated the compact city model. The Auckland Plan seeks to accommodate 400,000 new residential dwellings, or between 60-70% of dwelling growth, within the 2010 Metropolitan Urban Limits (MUL) (Auckland Council, 2012a).

Despite strong population growth in the last decade, the construction of dwellings in the city has not kept pace, creating what has been termed a "dwelling shortfall" (New Zealand Government and Auckland Council, 2013, Alexander, 2015) resulting in large numbers of new dwellings being required to accommodate the ever increasing population (Lin, 2015). With a vision seeking 60-70% of new dwellings inside the MUL, Auckland Council has focussed on consolidating its various district and regional plans into a single document, the Proposed Auckland Unitary Plan (PAUP). This land use rule book includes three new residential zones that are designed to greatly increase density in parts of the urban area. The Terraced Housing and Apartments, Mixed Housing Urban, and Mixed Housing Suburban zones provide higher-density residential development around town centres and to a lesser degree in existing suburbs; "low density development is discouraged and mid-rise, multi-unit residential living is encouraged" (Auckland Council, 2013). This is done partly by enabling higher dwelling densities where parcels being developed are at least 1200 square metres in size, with a road frontage of at least 20 metres (Auckland Council, 2013).

Analysis of the 212,005 parcels that fall within these three zones shows only 6,443, or 3%, meet the criteria for higher-density development. For higher-density developments to be undertaken at any great scale, the amalgamation of parcels will need to occur. Modelling of the PAUP provisions on existing parcels showed that *at least* 56,023 additional dwellings could be accommodated if sites were redeveloped (Balderston and Fredrickson, 2014). Amalgamation to create larger parcels could potentially contribute *even more* capacity for dwellings (Fairgray, as quoted in Dey, 2015), and will be necessary if the Auckland Plan targets are to be achieved

As Mead and Ritchie (2011) note, in order to meet the Auckland Plan targets, higher-density developments will need to be accommodated, through the redevelopment of existing suburbs and through site amalgamation. This view is shared with council planners who believe that large amounts of amalgamation would occur under the proposed rules, and that developers would be keen to take up this opportunity. But community and political opposition to the intensification of suburban areas, particularly through amalgamation (Brewer, 2013, Fairfax Media, 2013, Orsman, 2013), may stand in the way.

With a framework for increased density proposed, a cadastral pattern that may not allow the levels of intensification desired, and raised expectations on the levels of amalgamation likely to be seen in the future, a need was identified to understand the residential property amalgamation process in Auckland. This paper examines the measurement of amalgamations, details their characteristics – including location, and summarises interviews held with developers to understand the amalgamation process and their views on the PAUP. Lastly discussion of what the findings of the research means for Auckland is provided.

So, can Auckland overcome the sticky cadastre along with political and community opposition, in order to get density through amalgamation?

Spatial analysis methodology

Two spatial models were developed to determine the change in the number of parcels in any given location between two points in time. Four core spatial datasets were identified for use in this modelling:

- 1) Parcel boundaries: Boundaries from 2014 (4 May) were sourced from Land Information New Zealand (LINZ). Historic parcel datasets for Auckland have not been systematically archived, but a few parcel

- datasets were saved by the former Auckland Regional Council. This included a 2004 dataset (date unknown). The range between 2004 and 2014 allowed analysis over approximately a 10 year period.
- 2) Title boundaries: Title boundaries were sourced from LINZ (April 2014). Information stored against the titles includes their issue date.
 - 3) Metropolitan Urban Limits (MUL): The MUL as described in the Auckland Regional Policy Statement (May 2013) defines the boundary to which urbanised area of the city can extend. The area within the MUL is deemed to be urban.
 - 4) Residential zones: The extent of the residential zones sourced from Auckland's operative planning documents.

The first model identifies where two or more parcels have been merged resulting in the net loss of in the total number of parcels. The 2004 parcel polygon dataset was used as a base; these polygons were converted to centroids (using an algorithm ensuring a centroid always fell within the parcel polygon). The 2004 parcel centroids were overlaid on the 2014 parcel polygons, with the count of the number of 2004 centroids that fall within each of the 2014 parcel polygons being assigned to them. Those 2014 parcel polygons that had a 2004 centroid count greater than two, were passed forward in the process, and were overlaid with the MUL and zoning information. Those 2014 parcel polygons that were outside residential zones and the MUL were excluded.

The second model identifies where two or more parcels were assembled under single ownership in order to create a subdivision across their boundaries, creating at least one more parcel than the original number. The 2014 title boundary dataset was used as a base; title boundaries were merged where two or more adjoining polygons had the same creation date, creating an intermediate dataset called 'dissolved title polygons'. Attributes stored against the dissolved title polygons included the number of titles that were dissolved to create it. Those that had a count of one, or an issue date prior to 2004 were excluded from further analysis. Both the 2004 and 2014 parcel polygons were converted to centroids and overlaid; the count of each was tagged against the dissolved title polygons. Dissolved title polygons with a 2004 centroid count of one were filtered out. The dissolved title polygons were overlaid with MUL and zoning information; those outside of these areas were then excluded.

On reviewing the two output datasets it was determined that the modelling did not always return accurate results. Every amalgamation was manually reviewed. Anomalies identified through reviewing were tagged, and then excluded from further use in the study. This created a final dataset of amalgamations that occurred in Auckland's urban area between 2004 and 2014; this is the primary dataset for further analysis.

Further contextual information about amalgamations was added, included: zoning, former council boundaries, public land holdings, and location of building activity. The zoning of amalgamations was identified and used to cross-reference the provisions/rules of the 96 residential zones of the city's legacy planning documents. This helped determine how zone specific rules may have influenced the occurrence of amalgamations. Former council boundaries were used to understand the spatial distribution of the amalgamations. Other datasets were also used and included; the location of recent development information, in the form of building consents (development or building approvals), allowing understanding about what was being built (number of dwellings and type), and; whether amalgamations fell on land that was 'publicly owned' (belonging to the government and its agencies or Auckland Council and its subsidiaries). Once completed the secondary dataset was analysed in order to produce the results of Phase 1 of the study.

Examples of amalgamations that were identified are illustrated in Figure 1 (three parcels were merged together to create a single new parcel) and Figure 2 (three parcels were agglomerated, and subdivided into six smaller parcels).

Figure 1: Example of identified amalgamation

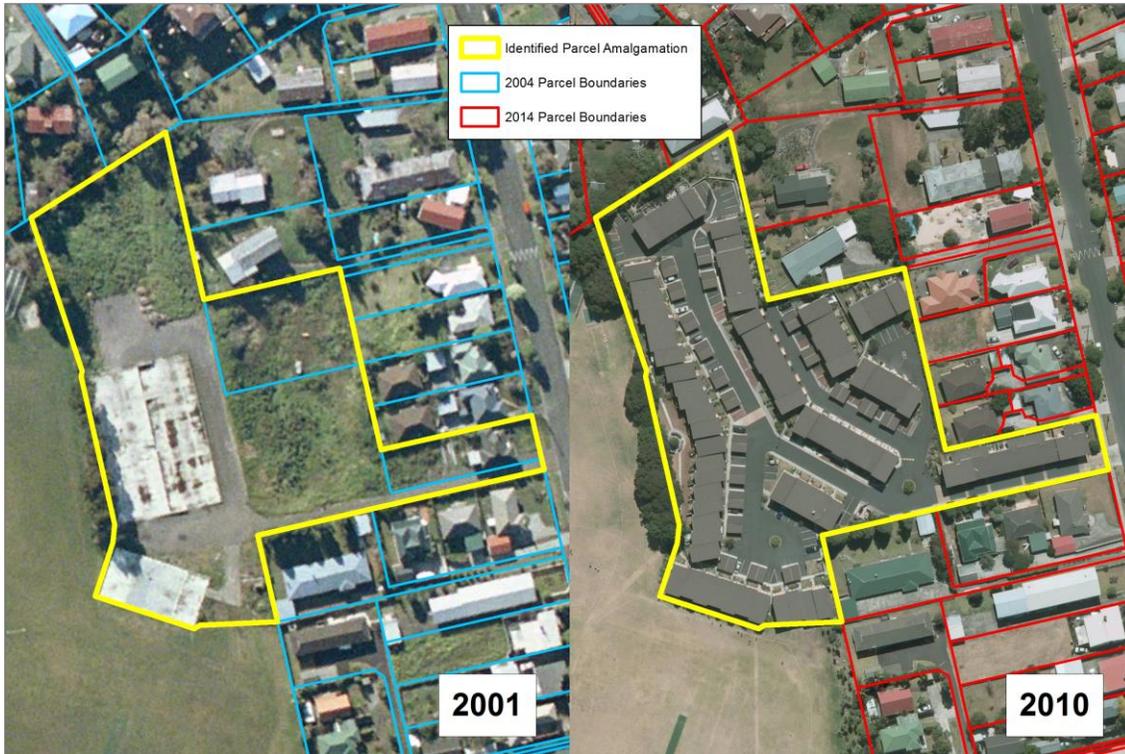


Figure 2: Example of identified amalgamation, with subsequent subdivision



Interviews methodology

Participants in the amalgamation process, such as property owners and residential developers, were sought through property title searches and snowballing, in order to find more about their roles and views on the

amalgamation process. It was hoped that through semi-structured qualitative interviews I could explore the factors that influence decisions regarding amalgamation practices and the experience landowners have of working through the council processes to bring about the development as well as enquire into the role of planning regulations, market forces, and real or perceived barriers to development in their decision-making processes. As well as investigating the influences on the amalgamation process, I wanted to understand what drives decisions about housing development typology on amalgamated sites.

Despite my best efforts to recruit a number of interviewees using numerous methods, I was ultimately only able to garner a single interview. While I had hoped for a greater number of interviewees, after a number of attempts over several months it was decided to abandon this aspect of the research. For completeness my only interview was transcribed and excerpts have been included in the results section of this paper.

Spatial analysis results

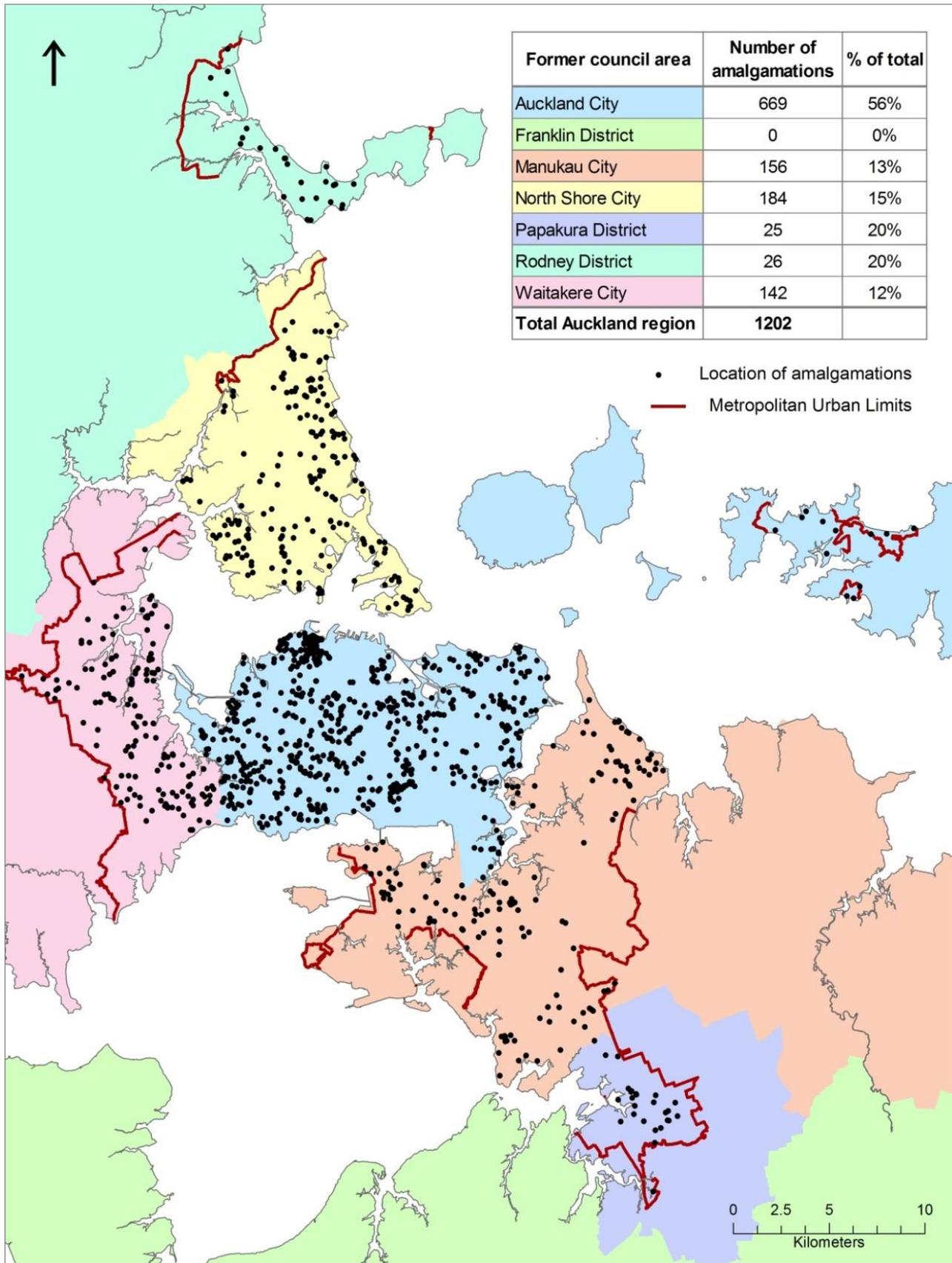
In the period between 2004 and 2014 a total of 1,202 residential amalgamations were identified in Auckland's urban area. The majority of amalgamations (56%) occurred in the former Auckland City area, with smaller numbers seen elsewhere (see Figure 3). Within the former Auckland City amalgamations appear in clusters on the central isthmus, an area viewed by many as desirable. Generally these locations are close to transport links, centres of employment (Nunns, 2015), 'good' schools (Vaughan, 2012, Wilson, 2014) and within proximity to amenities such as; the city centre, new or refurbished malls, trendy and boutique shops (Hamilton-Chadwick, 2014), coastal views, heritage buildings, education opportunities, and the "vibrancy of the city" (Auckland Council, 2012a).

Within the former council areas, the provisions and extents of the existing residential zones have played a major role as to whether amalgamation occurs. Over a quarter (27%) of amalgamations were in the Residential 6a zone of the former Auckland City. This zone covers over half (53%) of the residential area of the former city and promotes medium density housing. The zone has a minimum site size of 400 square metres (subdivision of a vacant site) or 375 square metres (subdivision of a site with a dwelling already present) (Auckland City Council, 1999). Only 43% of the parcels in this zone are large enough to subdivide (to 375 square metres); most properties already have dwellings on which prevents efficient subdivision, leaving amalgamation and redevelopment as one of the few options available to increase dwelling density. This relationship between zoning and parcel size is also seen in the Main Residential zone of the former Manukau City, where 11% of amalgamations occurred. This zone had a minimum parcel size of 400 square metres for subdivision and only 33% of parcels large enough to subdivide under the provisions.

The location of new developments that have been approved (building consents) allows us to measure post amalgamation development. Over the study period 2,673 dwellings were consented on amalgamations. Of these dwellings 69% or 1,857 were stand-alone; 25% or 678 were attached dwellings (units/flats, terraced houses and apartments); the remaining were resited houses. Permission for removal or demolition of dwellings on a property is not required under current legislation in most cases, as such determining the net change in the quantum of dwellings on amalgamations is impossible. Over the study period dwellings consented on amalgamations accounted for 5% of the total of in the urban area.

With proposed planning provisions seeking higher-density developments, it was important to try and quantify the levels of this development type on identified amalgamations. Higher-density development was considered to be where four or more dwellings were on a single parcel and of an attached typology; these developments were identified using council's property valuation data, and verified using aerial photography. From the 1,202 amalgamations, only 19 were identified as accommodating higher-density developments - a very small proportion (less than 2%). It is likely that most existing residential zones require some form of dwelling setback from a property's boundary. This prevents the construction of attached dwellings such as terraced houses, but even in those zones that have no such setback (such as the Residential 6a zone noted above) few attached dwellings were built.

Figure 3: Location of identified amalgamations (2004-2014) within Auckland's urban area



Amalgamations on publically owned land (Auckland Council and subsidiaries and various Crown entities) accounted for 16% of the total. The distribution of amalgamations on publicly owned land was uneven with 61% being in the former Auckland City area; this was driven by Housing New Zealand (HNZ), a Crown agent that provides public housing across New Zealand. In recent years HNZ is undertaking a large number of amalgamations and redevelopment of some of its residential properties in Auckland (Housing New Zealand, 2014a, Housing New Zealand, 2014b). Given this programme, I believe it was important to understand the impact of HNZ's programme on the number of amalgamations. HNZ was shown to be the owner of 181 amalgamations that fell on publicly owned land, or 15% of the total amalgamations measured. Despite only having 15% of the total amalgamations, HNZ properties account for 20% of the total dwellings that have been consented to on amalgamations, showing the perhaps that the redevelopment programme is producing higher dwelling densities than seen from the private sector.

Interviews results

My single interview with a participant in the amalgamation process was with a residential property developer that had undertaken amalgamation throughout the last decade. Themes identified in this interview included the scale of amalgamations and subsequent development, their location, typology of development, barriers to undertaking amalgamation, and views on the current and proposed planning rules.

Greater efficiencies of scale were noted by the interviewee as one of the reasons to undertake amalgamation, with larger pieces of land noted as likely to be "better shaped", but also larger sites offering higher yields of new dwellings, and therefore higher profits. Another driver was the location of potential amalgamations, with higher-value suburbs being preferred, as demand for new dwellings in such locations was likely to be high. The typology of residential development undertaken after amalgamation was also considered a driver. While new dwellings need to fit the location, the interviewee noted that the typology of dwellings constructed (stand-alone, terraced, or apartments) followed what was permitted under zoning rules, and typology and density reflected the desire to maximise profit from the development. The interviewee pointed out that amalgamation was required in order to get large sections of land in the right place, to undertake developments that are going to make a good profit.

A number of barriers to undertaking amalgamations were commented on during the interview. The most significant were the compounding levels of difficulty in agglomerating land as more parcels were needed; amalgamating two sites was hard, three sites difficult, and four or more sites very difficult. The interviewee noted that when purchasing land there are tactics that could be used to try and avoid the "hold out problem", such as the use of conditional sale offers. They also noted that sometimes a premium would need to be paid in order to secure the land required, and while not ideal it was sometimes needed in order to secure the land needed for the most desirable (i.e. profitable) development. Another tactic mentioned was retaining the ability to walk away, or have a 'Plan B', such as a profitable back-up plan for a redevelopment on two sites, if they were unable to secure a third.

Discussion on the ability to undertake amalgamation under Auckland's current planning provisions was noted as difficult and not conducive for intensification in many locations. Provisions from the PAUP were discussed and the participant reflected that the rules would encourage amalgamation and that is a good thing. There was also comment on urban design rules that would need to be adhered to under the PAUP were appropriate, as this could encourage quality developments. The interviewee did think that some tweaks to the provisions should be made to encourage even more density. The interviewee believed that amalgamation is likely to happen *more* under the PAUP, but perhaps even more needed to be done to encourage intensification, with active discouragement of the redevelopment of sites that don't increase the number of dwellings/density.

The interviewee noted that while amalgamation is hard, and takes a lot of work, it can pay off if you have patience.

Discussion

From the results of this study I can conclude that historic levels of amalgamation have been limited - averaging 120 per year over the past decade. Many of the amalgamations have produced stand-alone dwellings on small parcels, rather than higher-density developments, due the current rules prohibiting them.

Increased density through amalgamation under the current planning rules has not been very limited - but do decisions by the development community also play a part?

Finding developers and other participants in the amalgamation process who were willing to be interviewed for this project proved difficult. It appears that currently only a small number of participants actively amalgamate residential parcels for development. Perhaps one reason for low numbers of participants in the process is that many may be discouraged by the potential effort and risk required when amalgamating parcels.

My sole interviewee indicated that often developers build houses that fit with the existing housing stock - which are usually stand-alone dwellings. This is despite the fact that greater density can be achieved through other housing types like low-rise apartments and terraced houses. Are developers building stand-alone houses because that's what they believe people want to buy? Recent research shows that just under half (48%) of people said that they would be happy to live in an attached dwelling, including apartments, if they could afford one within their budget in their preferred location (Yeoman and Akehurst, 2015). This shows that demand for attached dwellings may be higher than the market is currently delivering. Research by CBRE shows that 5,700 new apartments are set to be developed in Auckland by 2018, and many of them are in fringe city and suburban areas (CBRE New Zealand, 2015, Nichols, 2015). This suggests that the housing choice of Aucklanders is changing, and the market is slowly catching on.

Spatial analysis and the interview show that certain locations are favoured by those undertaking amalgamations; central suburbs with their high sales prices (Barfoot & Thompson, 2015) and strong amenity are preferred. Zoning rules such as in Residential 6a and Main Residential which offer subdivision to a smaller site size for stand-alone dwellings are more popular than the zones that favour higher-density developments; perhaps being a reflection of developer choices. The popularity of the construction of stand-alone dwellings on their own small section has in a few examples created perverse built form outcomes, which sees dwellings on properties with outdoor space of little use. Terraced houses or low rise apartments could have produced a better outcome, but are often not permitted by the planning rules. Rules in some of the proposed residential zones allow these different types of housing to be built in locations where they are currently prohibited - will this be enough to see more amalgamation happen given the limited amounts of intensification that has occurred under the current rules?

Under the proposed rules amalgamation of sites would enable large numbers of additional dwellings to be constructed where sites are large enough with the correct amount of road frontage. Assembling enough parcels to meet the requirements in some areas of the city will be extremely difficult. As noted, in some instances you would need to combine at least three 400 square metre parcels, which our interviewee noted could be difficult. Economics will also play a part as to whether levels of amalgamations increase. In many locations across the city the return from amalgamating and redeveloping may be too low for developers to consider, especially if property prices continue to increase at the extremely high rates seen recently (Metherell, 2015). Factors such as increased demand for housing have made the financial gains from amalgamation and development more attractive than they may have been in the past. One good example was recently observed in Sydney, Australia where seven neighbours joined forces to negotiate the sale of their adjoining properties for potential large-scale development (Bloomberg, 2015). Perhaps we will see more of this kind of activity in Auckland in coming years as demand for housing outstrips supply.

Commentary on the PAUP has questioned whether the rules go far enough, with Nixon (2013) suggesting that the plan only provides for larger scale amalgamation projects and "misses the opportunity to provide also for smaller scale projects". Nixon goes on to note that in order to get some of the density being sought by the plan, amalgamation will almost always need to occur first, and that "amalgamation of lots is very difficult" (Nixon, 2013). The New Zealand Property Council, a developer lobby organisation, believes the plan has an over reliance on amalgamation of sites to achieve density - "which may or may not take place depending on a number of factors including owners' willingness to sell and viability. In this respect, we note that terraced housing (which we strongly support) will require amalgamations" (Property Council New Zealand, 2014).

Another hurdle to overcome is the political and community opposition to the increased density. Many groups have raised concerns at the levels of potential change to existing suburbs and what this will mean for the character of these locations (Field, 2013, Burton, 2014, Herne Bay Residents Association, 2014). This opposition is tempered by a response required to address Auckland's current housing problem; a high

demand for homes and a low supply of new dwellings in recent years, which has seen the median house price in Auckland increase by 18% in the year to April 2015 (O'Meara, 2015). As such there are parties who feel that many areas should be intensified further (Singh, 2014, NZME., 2015, Property Council New Zealand, 2015), with council's own chief economist, and the governor of the Reserve Bank of New Zealand calling for more intensification in central suburbs (Grieveson, 2015, Parker, 2015).

An important finding of this research is that it appears HNZ are developing on amalgamations at higher densities than private developers. It is perhaps an area of further research to understand the differences in both drivers and outcomes between these two sectors.

The New Zealand Productivity Commission in a recent report noted that there are no UDAs in New Zealand, and recommend that their establishment be explored (The New Zealand Productivity Commission, 2015). The commission noted that amalgamation of land is a challenge, particularly in Auckland (The New Zealand Productivity Commission, 2015) and sees UDAs as a possible way to compulsorily acquire land for amalgamation and redevelopment (Harris, 2015), but it is not clear if there is Government backing for the concept (Orsman, 2015, Rudman, 2015), or whether legislative changes are required.

Two Auckland Council subsidiaries involved in property development were merged in September 2015 to create a UDA called Panuku Development Auckland (PDA). It is hoped that PDA would have an active role in development, with a mix of residential and commercial development and redevelop areas in partnership with private sector developers, government and possibly iwi (Auckland Council, 2015). Council's housing plan notes that amalgamation of council owned sites, and acquisition of properties adjoining council owned sites in order to deliver greater development potential is something that an agency such as PDA could facilitate (Auckland Council, 2012b).

An UDA could potentially be used to facilitate amalgamation for residential development on a larger scale than has previously been seen in Auckland. Whether or not an entity such as PDA would have either the mandate or the ability to effect large scale changes to the existing cadastral pattern is yet to be fully understood.

Conclusion

There is an expectation that amalgamation will occur and bring about increased dwelling density under new planning provisions. Spatial analysis of residential amalgamations carried out over the last decade under operative planning rules show that there have been low levels of this kind of activity. Analysis shows that much of the development that has occurred post amalgamation has not been of a high density. Qualitative data has indicated that there is support from the development community for the provisions allowing higher-densities, and that they believe these rules will encourage amalgamation. Given this, it is likely that higher levels of amalgamation than those measured in this study would be seen if the new provisions are implemented. Perhaps the proposed provisions alone will not be enough to increase the number of dwellings in the existing urban area to the levels proposed in the Auckland Plan. Consequently, other avenues to facilitate amalgamation, such as through UDAs may need to be investigated as a way to encourage amalgamation to achieve higher densities. This study has illustrated the 'sticky' nature of the cadastre, and suggests that the persistence of suburban built form is in part attributable to this. The study also shows the important role that the existing urban fabric, property boundaries and ownership play on influencing planning outcomes. This is an area that warrants further investigation and should be taken into account by planning practitioners when seeking to formulate and implement urban planning policies.

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