Residential Property Amalgamation and Aggregation in Auckland, 2004-2014

January 2016

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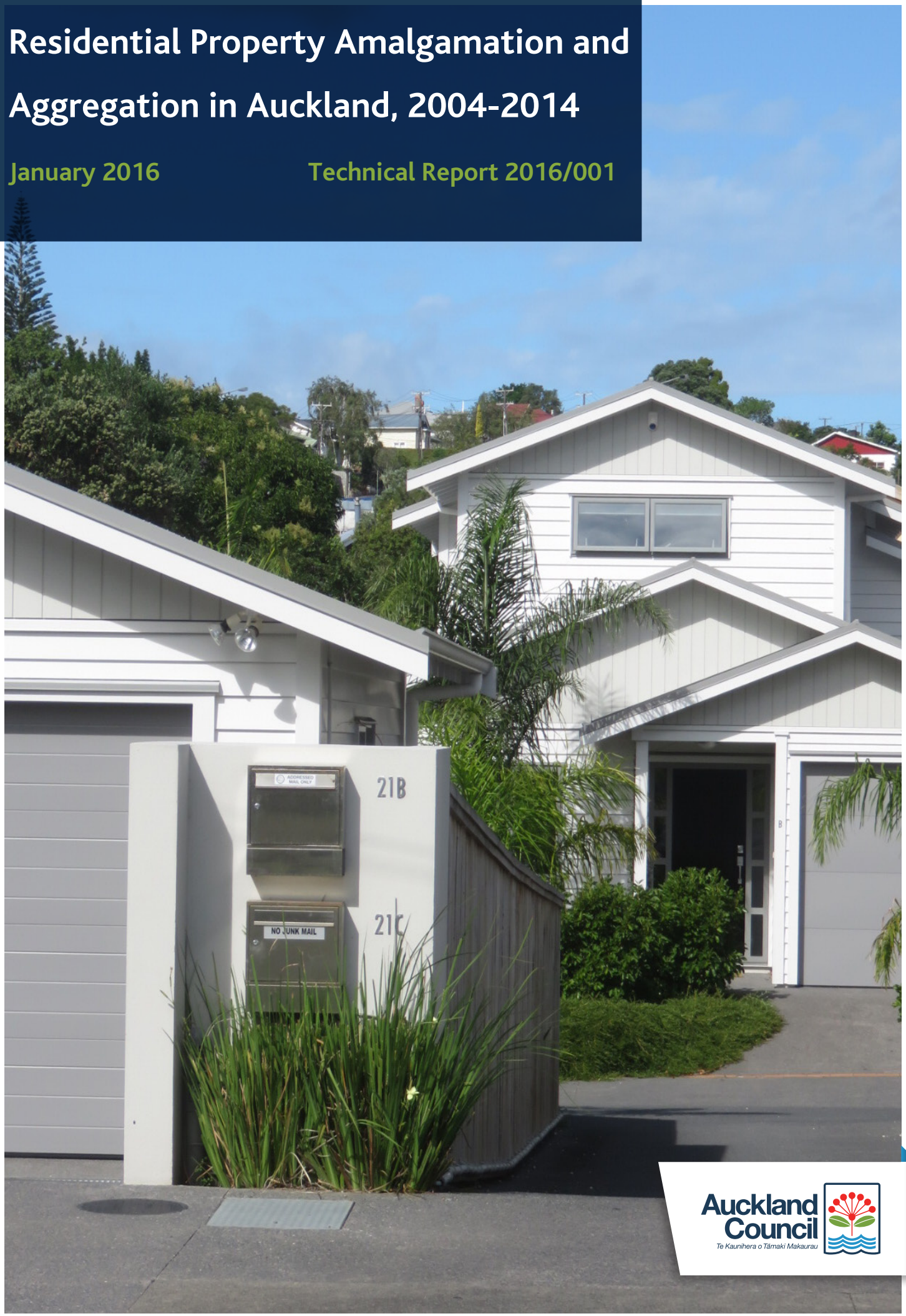

Auckland Council

Te Kaunihera o Tāmaki Makaurau

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Residential Property Amalgamation and Aggregation in Auckland, 2004-2014

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Executive summary

Land amalgamation is a fundamental step in the development process; it allows for the unpicking of the existing 'sticky' property boundaries to create larger sites

Provisions outlined in the *Proposed Auckland Unitary Plan* (PAUP) encourage higher-density developments on larger parcels of land. Given the size of existing residential parcels in the urban area, the amalgamation or aggregation of properties will be required in order to facilitate redevelopment on these sites at higher-densities. Higher-density developments are essential in order for the vision of the PAUP to be delivered.

There is much published research on the amalgamation process as part of urban redevelopment projects, but there is little discourse on the smaller-scale amalgamation of residential properties of the type that the PAUP incentivises. There is also no existing analysis or research on the past levels and nature of amalgamations in the Auckland urban area. As a response to this knowledge-gap, this study was initiated.

In order to determine the number and location of amalgamations and aggregations in Auckland, a number of spatial datasets were sourced and two spatial models were developed to determine the change in the number of parcels in any given location between two points in time. The first model identifies where two or more parcels have been merged resulting in the net loss in the total number of parcels, which we have called 'amalgamations'. 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 – known in this study as 'aggregations'. Further contextual information about amalgamations was analysed, including: zoning, former council boundaries, public land holdings, and location of building activity.

The study identified a total of 1202 residential property amalgamations and aggregations in Auckland's urban area which occurred between 2004 and 2014. Of these, 402 were amalgamations, with 800 being aggregations. The former Auckland City area had over two-thirds of amalgamations and close to half the number of aggregations. The highest proportion of both amalgamations and aggregations are in the Residential 6a zone of the former Auckland City; this zone covers 53 per cent of the former Auckland City and promotes medium density housing. Using building consents to measure post amalgamation or aggregation development showed that over the study period 2673 dwellings were consented on such sites. Of these dwellings 69 per cent or 1857 were stand-alone; 25 per cent or 678 were attached dwellings (units/flats, terraced houses and apartments); the remaining were resited houses. Higher-density development (four or more dwellings on a single parcel and of an attached typology) occurred on only 19 of the 1202 sites identified – a very small proportion (less than two per cent). Amalgamations or aggregations that occurred on publicly owned land accounted for 16 per cent of the total, with almost all being owned by Housing New Zealand at the time of the analysis.

Given the zoning rules of the current operative plans do not encourage higher-density development across much of the urban area it is not surprising that we observed low levels of amalgamation and aggregation measured over the study period. Will the provisions proposed in the *Unitary Plan* be enough to encourage increased numbers of amalgamations and aggregations, and therefore

increase density? Some commentators believe that the provisions do not go far enough to encourage amalgamation of properties, and state that high levels would need to be seen in order to reach the *Auckland Plan* targets.

Analysis showed that redevelopment of Housing New Zealand properties through amalgamation and aggregation netted higher dwelling densities than other developments; this may be an additional area of further research to see what contributes to the difference.

Since this research was undertaken the proposed provisions allowing higher-density residential developments on sites 1200 square metres or larger, with at least 20 metres of road frontage in the Terraced Housing and Apartments, Mixed Housing Urban, and Mixed Housing Suburban zones have been amended. Higher-density developments will be allowed on properties 1000 square metres in size or larger, and the 20 metre minimum road frontage rule has been removed. While these amended rules potentially enable greater amounts of higher-density development across urban Auckland, this may mean that the incentive to amalgamate properties has been reduced.

Through initiating this project we challenged views and assumptions on residential amalgamation. The methodology developed in this study will allow the repetition of analysis. This can be can be used to assess whether the rules that are made operative have indeed had an effect, and also be used to see what the level and nature of that effect has been.

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1.0 Introduction

1.1 Why are we undertaking the study?

Auckland's population continues to grow steadily at a faster rate than the rest of NZ; it is expected that 60 per cent 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 sets out 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 per cent of dwelling growth, within the 2010 Metropolitan Urban Limits (MUL) (Auckland Council, 2012).

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 per cent 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).

The PAUP 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). At the time this study was initiated this was to be carried out 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 6443, or three per cent, 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 by council planners who believed that large

numbers of amalgamations would occur under the proposed rules, and that developers would be keen to take up this opportunity

The term ‘amalgamation’ is generally used as a catch-all phrase within the planning and development communities to describe any sort of agglomeration, amalgamation, aggregation, assembly or consolidation of land/property in order to net a higher number of parcels and/or dwellings than would be possible if the individual parts were developed separately. Conditions on the amalgamation, and potential subsequent subdivision, of titles adjoining each other are set out in the Resource Management Act 1991, and its amendments.

From initial exploration of the topic, it is evident that little or no work has been done on this subject in New Zealand. More specifically, there has been no work to-date on this topic in an Auckland context. Auckland Council has no data or monitoring information on where, when, how, why and by whom amalgamations and aggregations occur.

1.2 Purpose of the research

There were two overall aims of this research project:

- To identify the location and extent of amalgamations and aggregations through the analysis of spatial datasets (Phase 1).
- To discover the drivers and motivations of those undertaking amalgamations and aggregations (Phase 2).

Phase 1 aimed to answer the following questions:

- Which parcels have historically been part of amalgamations or aggregations, and what are their properties? Have the amalgamations or aggregations been small or large?
- Where have amalgamations taken place within the region, in what district plan zones and in which suburbs?
- What has been the development type on the amalgamations and aggregations, and how does this compare to elsewhere in the region? What proportion of regional development was through amalgamation or aggregation?
- In what years have amalgamations and aggregations taken place?

Phase 2 aimed to explore the ‘who’ and ‘why’ behind these processes, and to investigate these questions:

- Who has undertaken the processes of amalgamation or aggregation, and what were their motivations for embarking on this sort of development?
- How did developers go about undertaking this process?
- What are the ideal conditions to do this, and where is the best place to do it?
- Would they do it again?
- Are there barriers to undertaking amalgamation?

- What would make it easier to do?
- Do they believe provisions of the *Proposed Auckland Unitary Plan* will encourage more amalgamations and aggregations, and if so, why or why not?

Description of the methods used are outlined later in this report.

1.3 Scope

It is important to note what has been included in this study's scope.

Inside study scope:

- Residential zoned property (parcel/title) amalgamation and aggregation.
- Urbanised areas within the current Metropolitan Urban Limits (MUL), as at May 2013.
- The period of investigation is between 2004 (exact date unknown) and May 2014[1].

Outside study scope:

- Non-residential zoned (including business and rural) property (parcel/title) amalgamation and aggregation.
- Urbanised areas outside of the MUL, namely rural towns.
- Standard subdivision of property, which is where a single property is subdivided in to more than one parcel/title.
- Properties where title boundary shifts have occurred resulting in no net change to the number of parcels/titles.
- Amalgamation and aggregation of parcels in peri-urban areas that have been rezoned to residential from another zoning; typically greenfield development areas with large-scale subdivision plans.

1.4 Why is it important to know about these things?

It is important to understand the metrics, context and drivers of this process in relation to the current planning framework of Auckland. This can then help inform planners and decisions makers how amalgamation and aggregation could potentially play out under the provisions proposed under the *Proposed Auckland Unitary Plan*.

By conducting this research, we will be able to outline the conditions and drivers of amalgamation and aggregation of residential property. This will allow council to consider whether the correct

[1] Historic parcel datasets for Auckland that can be used for analysis 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

policies and conditions are in place to encourage this process in the desirable locations, helping achieve strategic objectives in council's guiding documents such as *The Auckland Plan.*

Amalgamation and aggregation of residential properties may be required in some areas to foster and encourage residential development, especially where the land is fragmented and held by multiple owners. It may also be required to foster development in areas where the market might currently not be active, particularly places which are logical to intensify, such as around town centres and transport hubs (Auckland Council, 2012, p. 346).

1.5 Report structure

Section 1 introduces the report.

Section 2 of this report provides context and background to amalgamation and urban development globally and in a New Zealand context.

Section 3 frames the terms of 'amalgamation' and 'aggregation', as developed and used in this study.

Section 4 details the methods used to conduct the spatial analysis (phase 1).

Section 5 reports the results of the spatial analysis undertaken, including the geographic distribution, zoning, and other attributes of amalgamations and aggregations.

Section 6 expands on the results in Section 5 by further investigation of post- amalgamation or aggregation building activity, amalgamation or aggregations in relation to: publicly owned land, sales prices and Capacity for Growth Study results.

Section 7 outlines the method and reports the results from phase 2 (interviews with industry participants) of the study.

Section 8 provides conclusions and areas of discussion as a result of this work.

Section 9 contains a glossary of the technical terms used in this report.

1.6 Outputs of the study

The primary output of the Residential Amalgamation and Aggregation Study is this technical report, but also produced are two spatial datasets. These datasets show the location and extent, and attributes, of amalgamations and aggregations that have been identified in the spatial analysis phase of this study.

2.0 Definitions of amalgamation and aggregation

2.1 What is an amalgamation?

Amalgamation, or more correctly the 'amalgamation of allotments' (New Zealand Government, 1991), is the process of combining two or more adjacent allotments into a single allotment.

In simple terms, this is where two properties that are next to each other are combined into one single new property. The CT for each of the properties included in the amalgamation is replaced by a new CT issued for the single new title.

Amalgamation is where properties (two or more (n)) (parcel/title) have been combined to create a net decrease (at least n-1) in the number of parcels or titles.

Two examples of amalgamations are illustrated in Figure 1 and Figure 2; we can see current parcel boundaries (2014) in red and the 2004 parcel boundaries in blue.

In Figure 1 two parcels with a shared driveway have been dissolved into a single parcel. It appears that the two parcels were being used as a single property, with the parcel without the dwelling on it serving as the back yard.

Figure 1: Example of amalgamation of two parcels

Figure 2 illustrates the amalgamation of three parcels into a larger parcel, using 'before' and 'after' aerial photography from 2001 and 2010. As seen in the 2010 photo, the new larger parcel has been developed, with a large complex of 80 terraced houses.

Figure 2: Example of property amalgamation (three parcels) resulting in the net loss of two parcels: development of site with higher-density residential

2.2 What is an aggregation?

Aggregation, as defined for the purposes of this study, is where two more parcels/titles are assembled under single ownership in order to create a subdivision across these properties (at a higher density), creating at least one more parcel/title than the original number. The aggregation of properties is a popular way of accumulating enough land to create a subdivision with a larger number of lots than would be able to be yielded if the individual parts were subdivided by themselves – in fact the component properties are often too small to be subdivided in their own right.

Aggregation is where properties (two or more (n)) (parcel/title) have been combined to create a net increase (at least n+1) in the total number of parcels.

Examples of aggregations are illustrated in Figure 3 and Figure 4. In both of these examples we can see how two parcels (Figure 3) and three parcels (Figure 4) were assembled and then subdivided to create three new parcels, and six new parcels respectively.

Figure 3: Example of property aggregation (two parcels) resulting in the net gain of one additional parcel: development retaining existing dwellings

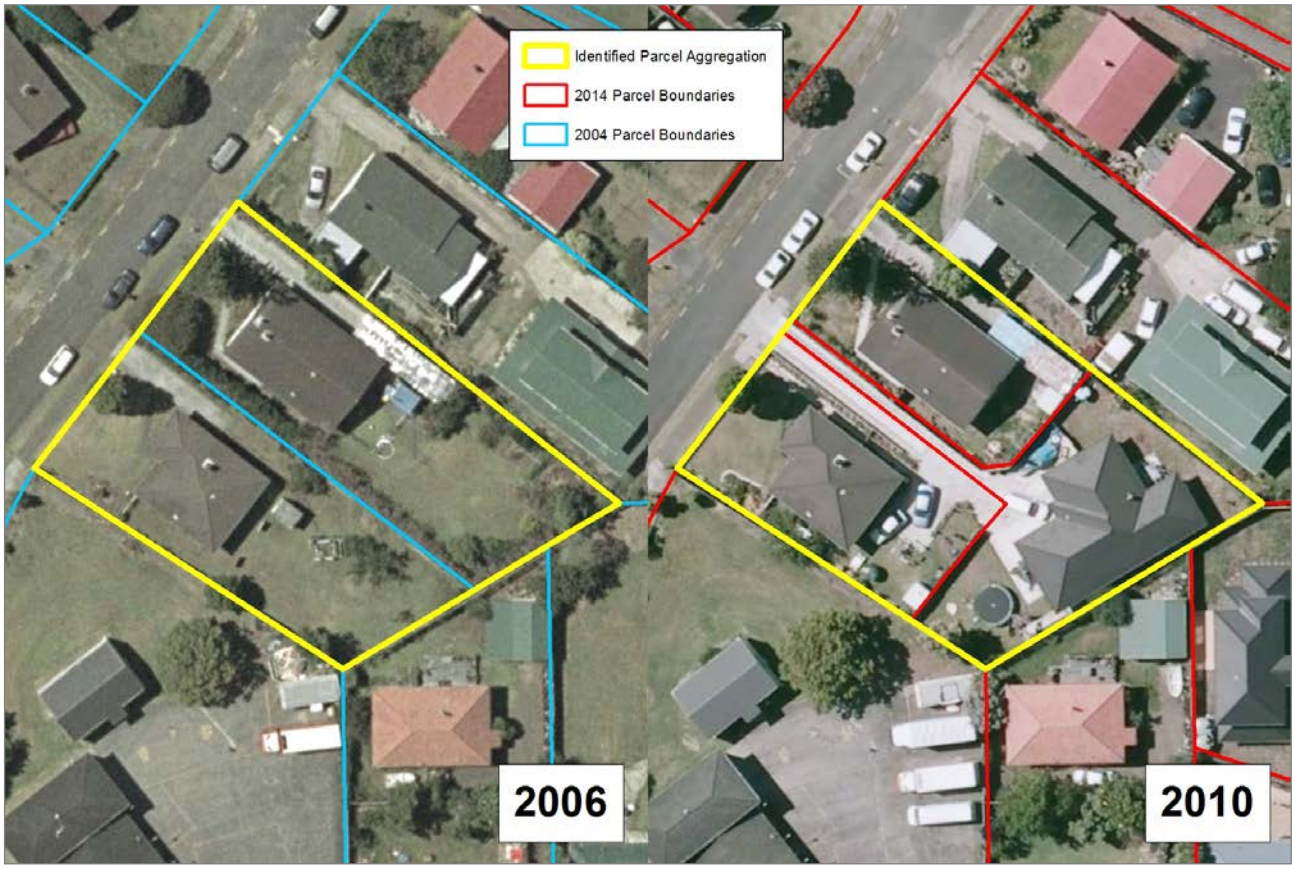


Figure 4: Example of property aggregation (three parcels) resulting in the net gain of three additional parcels: redevelopment of entire site including the removal of original dwellings

2.3 Why are we measuring both amalgamations and aggregations?

The term ‘amalgamation’ is often used as a catch all for any assembly of property under single ownership for development, whether that involves combining them into a single new property, or subdividing them into a number of new properties.

Due to their differing nature, potential motivations and drivers, and built form outcome, as outlined in the previous sections, it is important that we look at both of these development types.

The methodology used to undertake the spatial analysis to measure both amalgamations and aggregations is detailed in Section 4.0, with the results of this analysis found in Section 5.0.

3.0 Context and background

In this section of the report we look to provide some context and background information about urban development and property amalgamation around the world and in New Zealand.

Urban redevelopment is a globally widespread process and appears to be a major driver of property amalgamation mentioned in literature that we have reviewed. Urban redevelopment is, more often than not, done on a large-scale, entailing mixed uses (residential commercial/business). The nature of amalgamation examined in this project however, is at a much smaller scale, and only includes residential development.

3.1 Urban redevelopment around the world

Most commonly, other countries employ the term 'land assembly' to describe this process of property agglomeration and amalgamation. The definition of this term is unclear, having been conceptualised differently across dynamic institutional contexts. As explicated by Golland (2003), there is unanimity around land assembly being a constituent of the development process as a whole, however the scope varies. Defined broadly, it is a fundamental step in the development process comprising 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 planned built form (Golland, 2003). Louw (2008) advocates for 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". Therefore land assembly can be understood as a specific stage in the property development process in which certain actors either acquire land temporarily to deliver the legally required infrastructure or acquire land with the intention of making a profit through development.

Land assembly typically occurs voluntarily through purchasing or through government acquiring private property to be used for the benefit of the public, what is termed as eminent domain (United States, the Philippines), compulsory purchase (United Kingdom, New Zealand, Ireland), resumption (Hong Kong), resumption/compulsory acquisition (Australia), or expropriation (South Africa, Canada). The latter is overwhelmingly flagged as an unfavourable option, only employed as a last resort because of strong social resistance, increasing costs, and shifting roles of governments embracing liberal economy politics (Azuela and Herrera-Martín, 2009; Balla and Alterman, 2010). The most significant issue surrounding the former is the 'holdout problem'. This is defined by Miceli and Sirmans (2007, p.310) as 'a form of monopoly power that potentially arises in the course of land assembly. Once assembly begins, individual owners, knowing their land is essential to the completion of the project, can hold out for prices in excess of their opportunity costs. When individual parcel owners become aware that they can enforce considerable costs on the developer, they are positioned to pursue prices well above their true value. Much of the literature on land assembly is in relation to this "holdout problem", discerning models to understand and remedy the issue (Menezes and Pitchford, 2004; Miceli and Sirmans, 2007; Plassmann and Tideman, 2007; Cadigan, Schmitt, Shupp, and Swope, 2011; Cunningham, 2013).

Other than purchasing and expropriation, there are four main approaches for land assembly related policy intervention addressed in the literature. The first approach is utilising government powers to expropriate land for private sector investments, recognised as controversial and potentially infringing private property rights (Carpenter and Ross, 2009). Second is land readjustment, used for developing new areas as well as restructuring existing urban land use. Land readjustment, also referred to as land pooling or land consolidation, is a 'tool for the coordinated implementation of land assembly' (Louw, 2008) whereby ownership becomes redistributed between the current landowners who receive serviced building plots, while the land dedicated to public space (roads, parking etc.) becomes publicly owned (see Larsson, 1997; Lin, 2005; Turk, 2008). Land readjustment is advocated as a potential means to solve the holdout problem and is used extensively in Germany as well as Japan and other Asian countries (Agrawal, 1999). Third is rearranging the land title strata to terminate rights (see Hastings and Adams, 2005) and fourth is employing market-based incentives, such as higher densities on larger sites, to boost private sector interest in land assembly (see Tang and Tang, 1999; Turk and Demircioglu, 2013). Additionally, another recognised practice, most commonly employed by the state as opposed to private sector, is that of land banking; the process of acquiring sites in advance and retaining them for future use.

By way of brief summary, relevant international literature focusses on large-scale developments, tensions between state and private-sector involvement in the land assembly process with attention paid to efficiency and barriers, particularly the holdout problem. Discussion of small-scale residential development which entails the amalgamation or assemblage of relatively few parcels is scarce.

3.2 Urban redevelopment in New Zealand

Currently, neither the New Zealand Government nor a local or regional council has a large-scale development agency to act on its behalf in property acquisition and development in the manner often seen in overseas jurisdictions. As such much of the urban redevelopment is done on a project-by-project basis, or by private developers, though there are a few examples of agents in New Zealand acting in the urban redevelopment field.

Up until recently, Auckland Council had two agencies that operated in the property field. Waterfront Auckland led the strategic development across the waterfront; they were a development agency with a mandate to execute and implement projects (Waterfront Auckland, 2015). Auckland Council Property Ltd. was a property asset management body, and was charged with undertaking all property acquisitions and disposals for Auckland Council and Auckland Transport (Auckland Council Property Limited, 2015). In November 2014, Auckland Council's Governing Body agreed to support the development of an urban development agency (Auckland Council, 2014b). It was proposed that the agency would work with its existing land holdings, as well as other neighbours, to create larger blocks of land that could be redeveloped (Town, 2014). Auckland Council Chief Executive, Stephen Town (2014) noted that the agency would not be involved in the development on the land, but rather take charge of the master planning and infrastructure coordination. The new merged organisation called Pānuku Auckland Development started operations on the 1 September 2015.

The other agency that is currently operating in New Zealand working on urban redevelopment is the Canterbury Earthquake Recovery Authority (CERA).

Housing New Zealand (HNZ) has in recent times become a major driver of residential amalgamation and urban redevelopment in New Zealand. For HNZ, much of the focus is on some of its extensive land holdings in Auckland, including Tāmaki/Glen Innes and western Auckland (Housing New Zealand, 2014a, 2014b)

3.3 Historical context: Disasters and opportunities for amalgamation

It is also relevant to look at some historical opportunities for amalgamation and how they evolved. The best and perhaps the most extreme opportunities for property amalgamation have risen after natural disasters. There is little literature about smaller-scale residential amalgamation; as such most of the examples outlined in this section cover opportunities of larger-scale urban redevelopment.

London has twice had the prospect of rebuilding substantial portions of its urban area on a large scale; after the Great Fire of London (1666) and later after The Blitz (1940-1941). Despite destruction presenting the opportunity for improvements, including the straightening of streets, widening of alleys and correction of awkward shaped parcels (Young, 2008), few changes to the urban layout and property boundaries occurred (Young, 2008; Annabell, 2012). This transpired despite Sir Christopher Wren's and much later Sir Patrick Abercrombie's plans to reorganise the structure of the city (Abercrombie, 1944; Annabell, 2012; British Library, 2015).

After the San Francisco earthquake (1906), Great Kanto earthquake (Tokyo/Yokohama) and Santa Barbara earthquake (both 1925), private property owners resisted government efforts to make changes to improve the layout of the cities, through changes to property boundaries through compulsory acquisition or other means. Pressure from the public and property owners to start rebuilding, coupled with the financial pressures of disaster recovery prevented much of the planned reorganisation of the cities taking place (Godfrey, 1997; McDonald, 2004; Schencking, 2008).

In more recent times, Christchurch, which suffered large-scale damage following earthquakes in 2010 and 2011, was also presented with the opportunity to restructure the layout of parts of the city. A 'master plan' for the city's central area was proposed, which included the need to amalgamate properties together to create space for what was called the 'CBD frame' and anchor projects/precincts such as one for health and another for justice and emergency services (Cairns, 2012). Much of this has been achieved through the compulsory acquisition powers of CERA (New Zealand Government, 2011; Canterbury Earthquake Recovery Authority, Unknown), but it has not been without issues, criticisms and deviations from the original plans (Mead, 2012; O'Neill, 2012; Greenhill and Cairns, 2013; Hutching, 2015; Stylianou, 2015).

Despite these cities having the opportunity to agglomerate property holdings in order to improve the layout of the city, and create properties that were perhaps better fashioned to accommodate modern developments, this did not happen to the extent that was proposed by planners. In the case of Tokyo, even though a blank canvas was presented, with much of the city reduced to burnt-out rubble, private owners' desires for their properties were one of the hurdles that were too difficult

to overcome (Schencking, 2008). Some property amalgamation did occur in these cities. In the case of London, this was in the form of large-scale residential developments following The Blitz, with Churchill Gardens in Pimlico being an example (Young, 2008; Hui Lan Manley, 2013), but there seem to be no documented examples of the small-scale type of amalgamation and development being looked at as part of this study.

3.4 Legislative context for amalgamation and aggregation in New Zealand

Currently a number of pieces of legislation govern the amalgamation and aggregation process. This section provides an overview of these Acts to help better understand the legal context of these processes.

3.4.1 Resource Management Act 1991

The amalgamation and subdivision of parcels are both undertaken under provisions of the Resource Management Act 1991 (RMA), and its amendments, including the Resource Management (Simplifying and Streamlining) Amendment Act 2009. Amalgamations are not subdivisions (i.e. the division of a parcel of land into smaller parcels), but they are undertaken using the same legal process (Tasman District Council, 2015).

Both amalgamations and subdivisions require the application for subdivision resource consent under s223(1)(b) and s139 of the RMA (Quality Planning, 2013). Subdivision consent would include the submission of a subdivision plan (also known as a scheme plan) to the relevant authority (local council); for an amalgamation this would indicate the removal of the existing boundaries between the affected parcels, and later the issuing of a new title.

3.4.2 Building Act 2004

Under the Building Act 2004 it is prohibited to build a structure or building over property boundaries, unless a certificate is issued by the relevant territorial authority (city or district council) tying the two parcels of land together (New Zealand Government, 2004). This in effect binds the parcels together without undertaking a legal amalgamation.

3.4.3 Local Government (Rating) Act 2002

Prior to undertaking in-depth investigations into the drivers of amalgamation, it was thought that one of the factors leading to amalgamations, especially in residential areas, was to ‘tidy-up’ properties that consisted of two titles. In many cases these properties had a main parcel and a smaller adjacent parcel each of which was on its own title. From the start of July 2003 the base unit of liability for the purposes of rating became known as the rating unit. A rating unit is based on a Certificate of Title (CT) – one CT equals one rating unit (Department of Internal Affairs, 2002). Without further reading of the act, it could be perceived that having a residential property in two

titles means one could be rated for each title. This would mean that in some cases the Uniform Annual General Charge[2] would be required to be paid twice. Despite this presumption a later clause in the Local Government (Rating) Act 2002 notes the following (New Zealand Government, 2002):

> *Two or more rating units must be treated as 1 unit for setting a rate if those units are—*
>
> *(a) owned by the same person or persons; and*
> *(b) used jointly as a single unit; and*
> *(c) contiguous or separated only by a road, railway, drain, water race, river, or stream.*

In summary this means that if two titles are owned and used as a single entity then they should be treated as one, and as such, this may not be a driver of amalgamation as first thought.

3.4.4 Public Works Act 1981

In theory, the Public Works Act 1981 could be used to conduct urban redevelopment and through this conduct amalgamation of properties. This is enabled through provisions in the Public Works Act that operate in conjunction with the Local Government Act 2002, and allows local councils to undertake 'urban renewal'. These provisions are not well understood or tested; they are seldom, if ever, used (Sustainable Urban Development Unit, 2008). Urban renewal was defined in the Local Government Act 1974 (s644A) as being 'the conservation, repair, or redevelopment of any land, or of any building on any land, within any urban part of the district, the standard of which should in the opinion of the council be improved; and includes the improvement, reconstruction, extension, development, and redevelopment of the utility services, roading, the landscape, and community and social facilities and services within that part' (New Zealand Government, 1974).

3.5 Permanency of property boundaries: The problem of the sticky cadastre

Once property boundaries have been created they are difficult to unpick or reverse and are fixed in place. But why is this problematic? Further subdivisions generally take place along existing boundaries. Once something is subdivided, or fragmented, for the most part the property boundaries stay in place. An illustration of this situation is shown in Figure 5. The figure shows the property boundaries as they were in 1932 when the Robertson Road area of Mangere was rural and dominated by smallholdings and market gardens. Fast-forward to 2014; the area is now heavily urbanised and has been subdivided comprehensively to accommodate stand-alone residential dwellings. The property boundaries that were in place in 1932 are still in place over 80 years later; further development has been restricted to take place within the existing cadastral pattern.

[2] A Uniform Annual General Charge (UAGC) is a fixed charge applied to each separately used or inhabited part of a property (Auckland Council, 2015).

Figure 5: Example of the permanency of property boundaries; comparison of the 1932 and 2014 property boundaries adjacent to Robertson Road, Mangere (1932 map sourced image from Sir George Grey Special Collections, Auckland Libraries, NZ Map 7939, Airey, 1932)

The only way to overcome the constraint of existing property boundaries is through amalgamation or aggregation – in effect 'reverse subdivision'. This is it as an attempt to undo the fragmented nature of the existing cadastral pattern in order to undertake redevelopment, through first creating parcels of land that are better suited to a different development typology. If the cadastre is fragmented this may foreclose future opportunities for redevelopment.

Fragmentation of the cadastre can become an issue where urban renewal or redevelopment is proposed to take place. Amalgamation or aggregation is required to amend property boundaries in order for redevelopment to take place.

A peri-urban area in Auckland that could be faced with such an issue is the Hingaia Peninsula (Karaka), near Papakura. In the last few decades, it has been a popular location for the development of very low-density residential properties. The yellow highlighted area of Figure 6 shows an example of these very low-density residential properties. The average size of these very low-density residential properties is 9579 square metres; this contrasts with the sizes for the newly developed urban area just to the north and north east where the average parcel size is 643 square metres.

This area has been proposed to be urbanised for a number of years in a number of council plans (Papakura District Council, 2002; Auckland Council, 2012, 2013). It would be very hard to achieve

a ‘desirable’ urban form with through-streets working within the property boundaries as they currently exist. The fragmented ownership of the properties in this area is barrier to creating a quality urban form; council or developers to deal with the owners of each of the properties.

Figure 6: Hingaia (Karaka), near Papakura, showing an example of very low-density residential properties; an example of how ‘sticky cadastre’ could become an issue for future urban development

Subdivisions over existing property boundaries, measured as ‘aggregation’ as part of this study (see definition in Section 2.0), and the amalgamation of properties, only takes place after neighbouring properties have come into common ownership. Even when this happens, the boundaries of this overall area still remain the same, so while a small area of the urban fabric may have been undone, at a larger scale the pattern remains the same.

From the review of literature and our own observations of the permanency property boundaries we propose that the cadastre can be understood as ‘sticky’; amalgamation and aggregation is an attempt to overcome the ‘sticky cadastre’. It is hoped that this research project will shed some light on how the potential problem of the ‘sticky cadastre’ could be overcome, particularly relating to additional density provisions on the *Proposed Auckland Unitary Plan*.

3.6 Summary

Key points to note on the context and background to residential amalgamation and aggregation include:

- Amalgamation doesn’t appear to happen easily, and often compulsory acquisition is required and/or central/local government intervention needed to facilitate its occurrence.
- Review of literature shows that there is little information or research on the topic, especially in the New Zealand context.
- Unpicking property boundaries and ownership is difficult, even in extreme situations where disasters have essentially offered a ‘blank slate’; once in place, the cadastre is sticky.
- Amalgamation of privately owned land is often difficult. Review of related literature shows that it is problematic for public entities to amalgamate land, even when they have special powers. Given this how much harder is it for private land owners to undertake effective amalgamation and aggregation?
- These difficulties should be taken into account when looking at potential and/or barriers for amalgamation of land.

4.0 Phase one: Spatial analysis methodology

This section outlines the processes undertaken to identify the location and extent of amalgamations and aggregations that occurred in the period between 2004 (exact date unknown) and May 2014. The period between 2004 and 2014 was chosen for two reasons, the first being that this time period covered roughly 10 years, the second being that we were constrained by the availability of historic parcel datasets. 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, the exact date of which is unknown.

As there was no existing dataset that could show us where amalgamations and aggregations had occurred across the urban area of the city, a series of geospatial queries had to be built into a model in order for us to identify them.

The following subsections outline the data used to undertake the analysis, the process undertaken to identify the sites, as well as noting how exceptions and errors have been dealt with in order to come to the final result. While similar, the method used to identify amalgamations was different from that to identify aggregations; these processes are detailed separately.

The spatial analysis was undertaken in November and December 2014.

The results and findings of this spatial analysis can be found in Sections 5.0.

4.1 Data sources used in analysis

A number of spatial datasets were used to identify the location and nature of amalgamations and aggregations in the urban area. A list and description of the data used as well as their sources are outlined in Table 1.

Sections 4.1.1 and 4.3 note which of the datasets listed have been used in each stage of the analysis.

Table 1: List of data, descriptions and sources used to identify amalgamation and aggregations

Data	Description	Organisation; source
2004 parcel boundaries	Polygonal cadastral land parcel boundaries. Exact date of dataset unknown.	Auckland Council; Auckland Regional Council archived dataset
2014 parcel boundaries	Polygonal cadastral land parcel boundaries. Data extract taken 4 May 2014.	Land Information New Zealand; LINZ Data Service
Titles	Polygonal title land boundaries. Data extract taken April 2014.	Land Information New Zealand; LINZ Data Service
Metropolitan Urban Limits (MUL)	Metropolitan urban limits of Auckland, as at May 2013.	Auckland Council; SDE

Aerial ortho-imagery	Ortho-rectified aerial imagery of the Auckland urban area. The primary images used were captured in 2010/2011. Other image datasets from 2008, 2006 and 2001 were also used.	Auckland Council; SDE

Zoning	Extents of zoning defined by polygons for the operative district plans of the Auckland region, collected for and used as part of the Capacity for Growth Study 2012:
	• Auckland City District Plan
	  • Central Area Section 2005
	  • Isthmus Section 1999
	  • Proposed Hauraki Gulf Islands Section (Decision Version) 2009
	• Franklin District Plan 2000
	• Manukau City District Plan 2002
	• North Shore City District Plan 2002
	• Papakura District Plan 1999
	• Rodney District Plan 2011
	• Waitakere City District Plan 2003
		Auckland Council; SDE

Note: SDE refers to Auckland Council's ArcGIS geospatial repository

4.1.1 District plans and zoning

The seven operative district plans (as listed in Table 1) that provide the current planning rules for Auckland were used for analysis as part of this study. The analysis and reporting of the results by zone are based on the extents of the district plan zones at the time of the study. Because the extents of zones may change where a plan change has taken place, there is no way to assess what the zoning of a parcel/title was at the time that an amalgamation or aggregation took place.

The rules and zones that exist in the current operative district plans are different to those rules and zones that are proposed in the new *Auckland Unitary Plan*. These rules are and zones are still being developed through the hearings process being undertaken by the Auckland Unitary Plan Independent Hearings Panel.

4.2 Identifying amalgamations

The following section outlines the process undertaken to identify the locations and nature of amalgamations which occurred between 2004 and 2014 in the urban area of Auckland. The analysis was done in two stages:

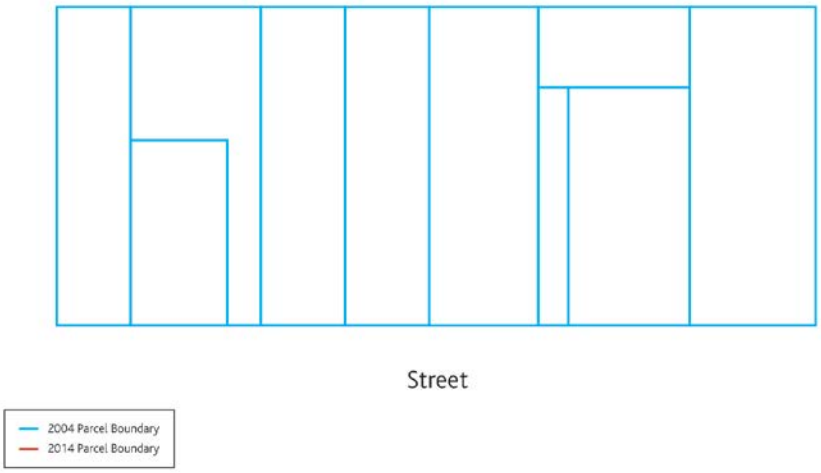
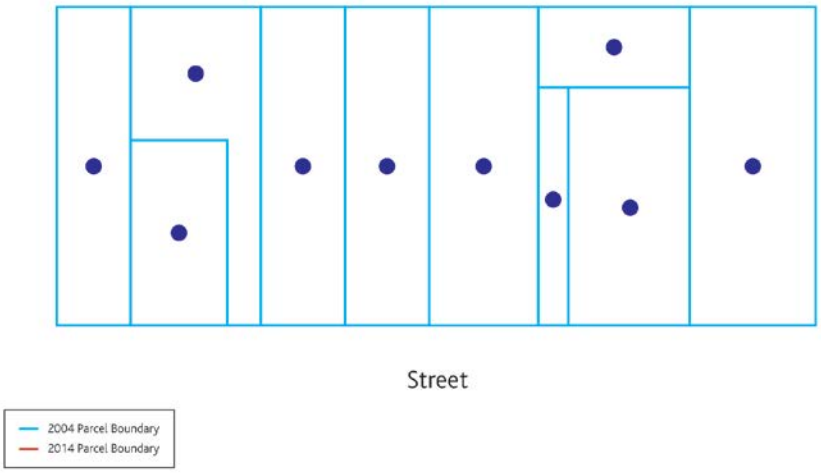
1) The creation of an amalgamation base dataset, using spatial analysis, and
2) Manual checking of this base dataset for errors, followed by filtering of the results.

4.2.1 Amalgamation base dataset creation

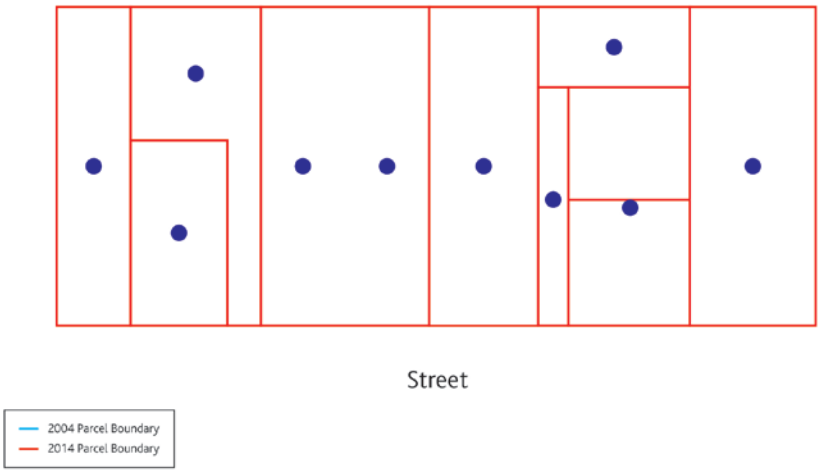
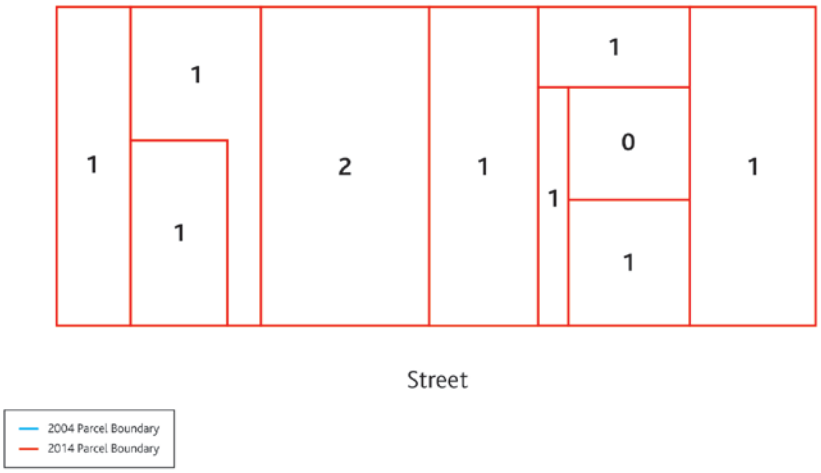
A simplified overview of how the amalgamation base dataset was created is outlined in the diagrams and process steps in Table 2.

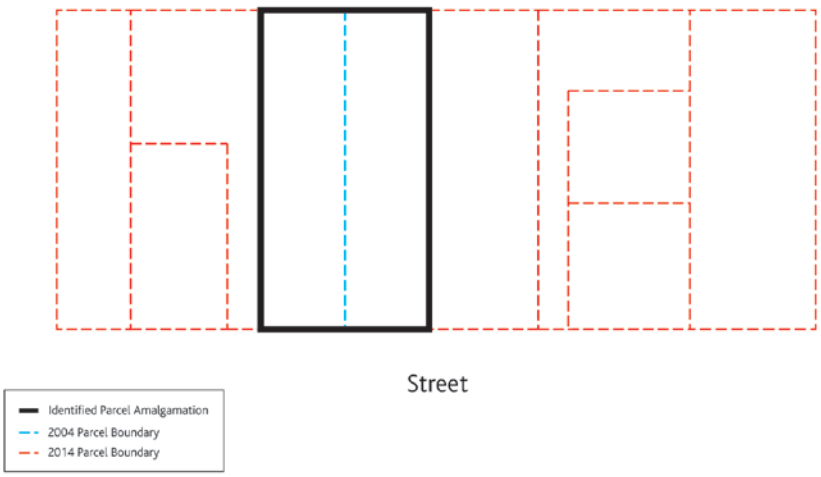
The amalgamation base dataset was created in a software programme called FME[3]. A copy of the FME workbench schematics, which detail the two spatial queries used to generate the amalgamation base dataset, can be found in Appendix A.

Table 2: Process overview of amalgamation base dataset creation

Step	Image
Step 1: Use the 2004 parcel polygon dataset as a base.	
Step 2: Convert the 2004 parcel polygons to centroids. Note that an "inside point replacer" transformer is used in FME to ensure that the parcel centroid always falls within the polygon.	

[3] FME is a software product that incorporates an integrated collection of tools for spatial data transformation and data translation, and is published by Safe Software Inc. of Surrey, British Columbia, Canada. FME is considered to be a GIS (Geographic Information Systems) utility that enables conversion between data formats and processes and is able to manipulate and generate data geometry and attributes.

Step 3: Overlay the 2004 parcel centroids with the 2014 parcel polygons.	
Step 4: Count the number of 2004 parcel centroids that fall within each of the 2014 parcel polygons, and assign this count to the polygons.	

Step 5: Identify 2014 parcel polygons that have an assigned 2004 centroid count of two or more. Filter out all other 2014 parcel polygons.	

The results of this analysis were outputted to an ArcGIS feature dataset in a geodatabase. This base dataset was then manually checked for errors and amalgamations that were out of scope. This portion of the analysis is discussed in the following sub-section.

4.2.2 Manual checking of errors and filtering

This large-scale analysis of all potential residential amalgamations in the urban area using the above method does not always return accurate results. When checking the modelling outputs for issues, there appears to have been a number of properties identified in the process that were not in fact amalgamations. Because of this, manual checking of the amalgamation base dataset was required.

Manual checking of the base dataset was undertaken in ArcGIS mapping software and involved reviewing each of the potential amalgamations, overlaid with the 2004 and 2014 parcel boundaries and historical aerial photography as a reference. Text fields were added to the data table that is associated with the base dataset, these fields included 1) categorisation of the error type and 2) additional notes on the error and amalgamation polygon.

The manual checking discovered that a number of amalgamations were actually errors, and were the result of what appears to be the resurveying and the correction of the location of parcel boundaries, between the two parcel datasets (2004 and 2014). This error is more pronounced in rural areas, and so the effects on this urban focused study are limited. An example of this kind of error is seen in Figure 7. Here you can see that the general shape, location, and number of parcels remains the same, but the location of the parcels are slightly offset between the datasets. These amalgamations were deemed to be errors and were tagged as such.

Figure 7: Example of change in parcel boundary locations between 2004 and 2014

The second, more prevalent, non-amalgamation found when undertaking the manual checks was where a parcel (and associated title) had undergone some sort of boundary adjustment. Boundary adjustment is the shifting/realigning of the edges of two or more existing parcels. In moving the parcel boundaries there is no increase in the total number of parcels; for example if two parcels have their boundaries shifted, there are still two parcels after the shift. While in some cases this realignment may increase the development potential of the parcels, it has been considered out of scope and excluded from this analysis. This is because we were using the measure of net decrease in the number of parcels (amalgamation) or net increase in the number of parcels (aggregation) as measures. Figure 8 and Figure 9 show examples of parcel boundary adjustments on two properties.

Figure 8: Example of parcel boundary adjustment, resulting in no gain in the number of parcels, between 2004 and 2014

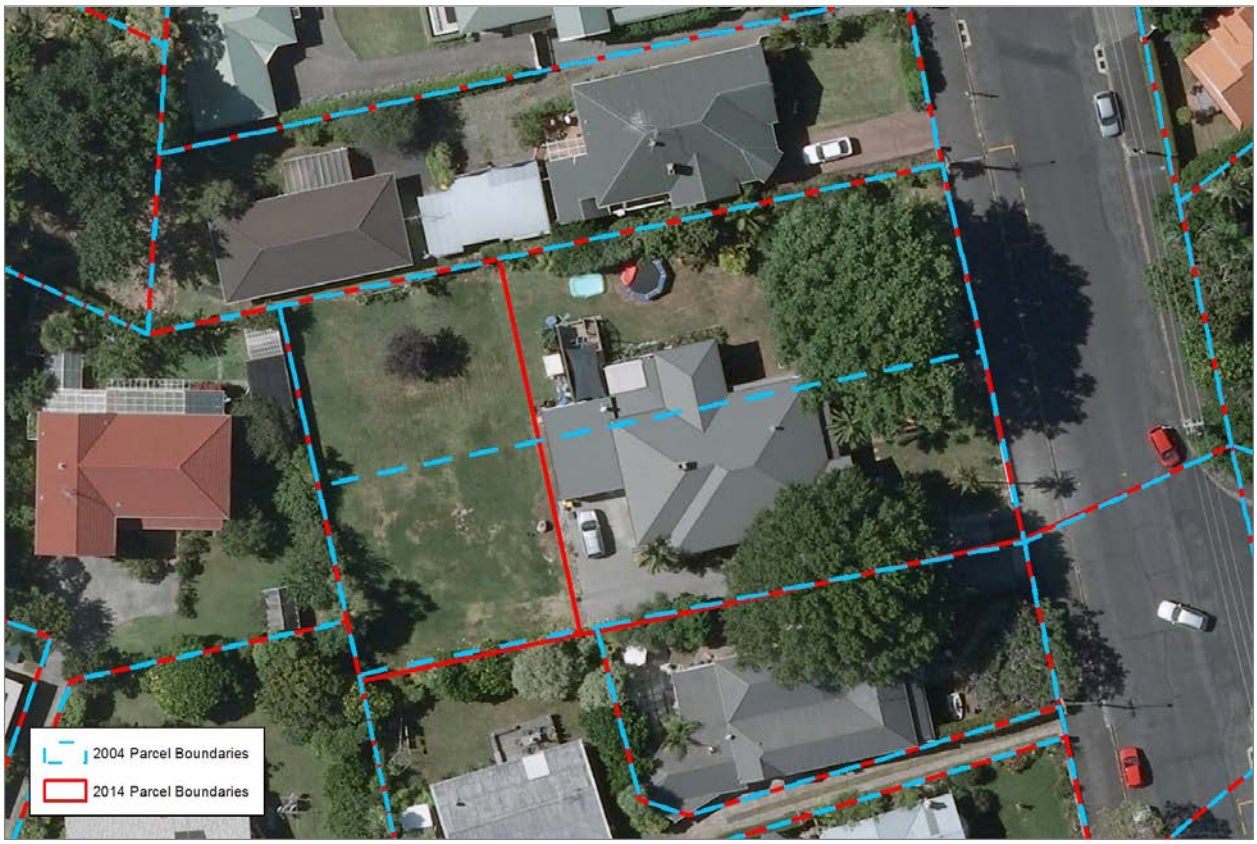


Figure 9: Example of parcel boundary adjustment, resulting in no gain in the number of parcels, between 2004 and 2014

Once the manual checks were completed, those deemed to be errors, and those that lay outside of the MUL were filtered out.

In total, 750 potential residential amalgamations included in the base amalgamation dataset were surveyed and checked. Of this, a total of 402 were deemed to be valid amalgamations; 348 were considered to be errors or out of scope of the study.

4.3 Identifying aggregations

The following section outlines the process undertaken to identify the locations and nature of aggregations which occurred between 2004 and 2014 in the urban area of Auckland. The analysis was done in two parts

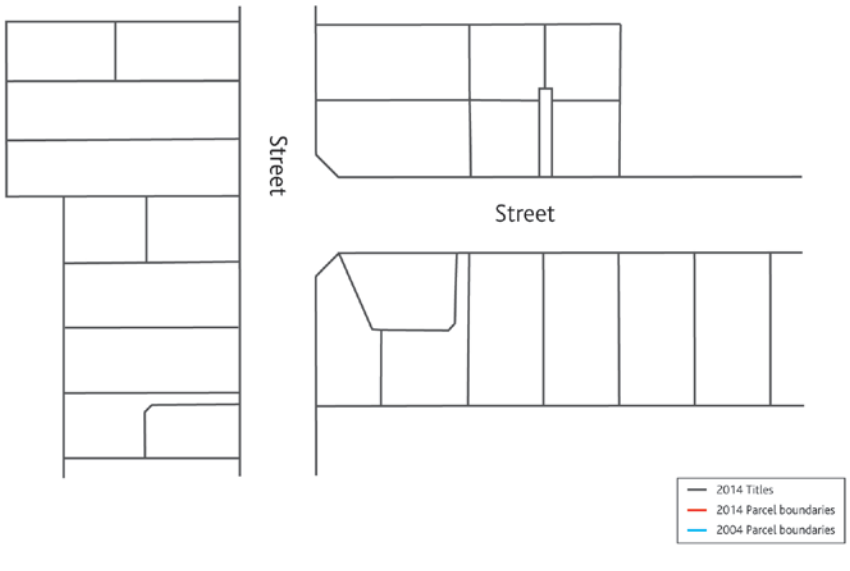
1) The creation of an aggregations base dataset, using spatial analysis, and
2) Manual checking of this base dataset errors, followed by filtering.

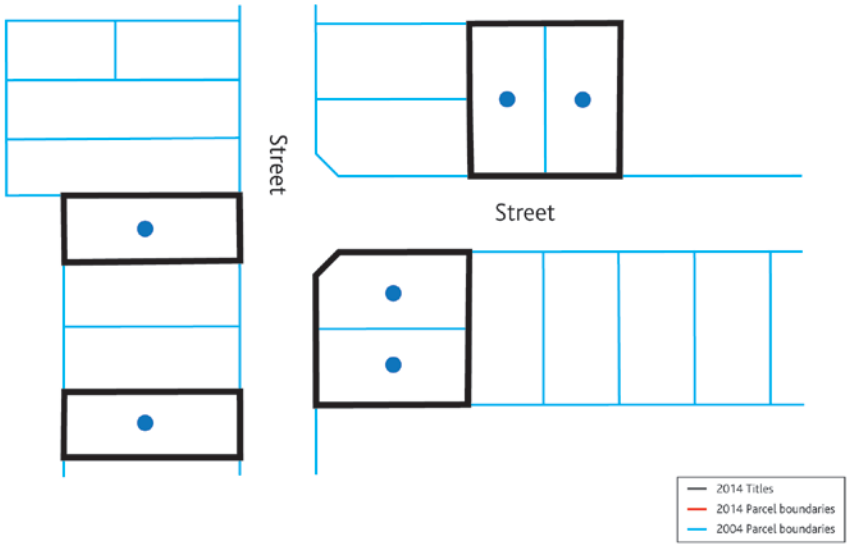
4.3.1 Aggregation base dataset creation

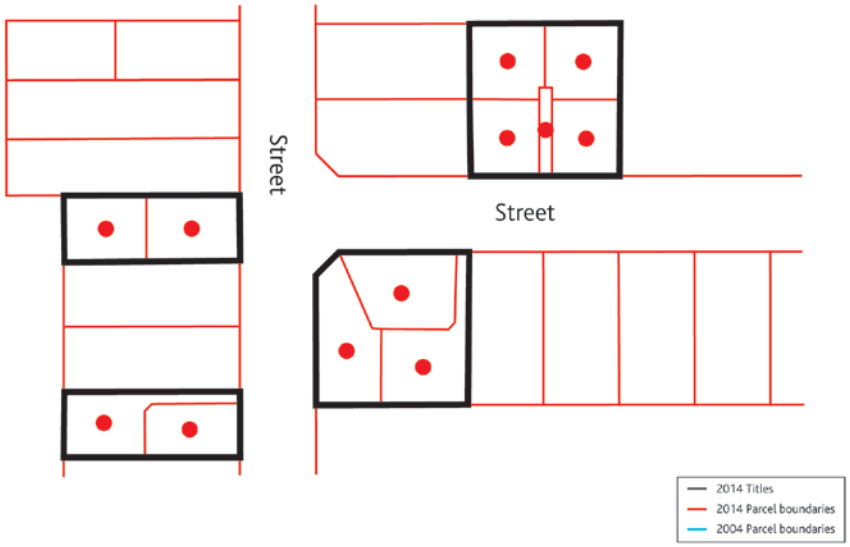
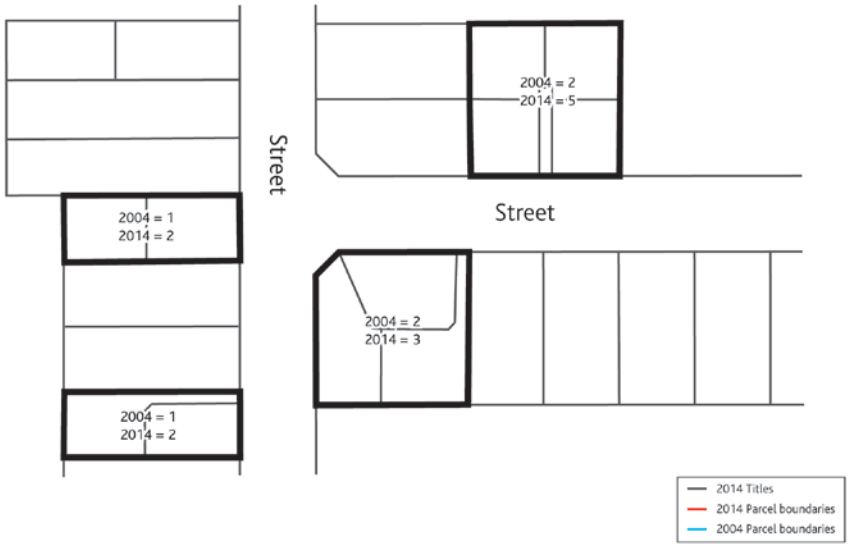
A simplified overview of how the aggregation base dataset was created is outlined in the diagrams and process steps in Table 2.

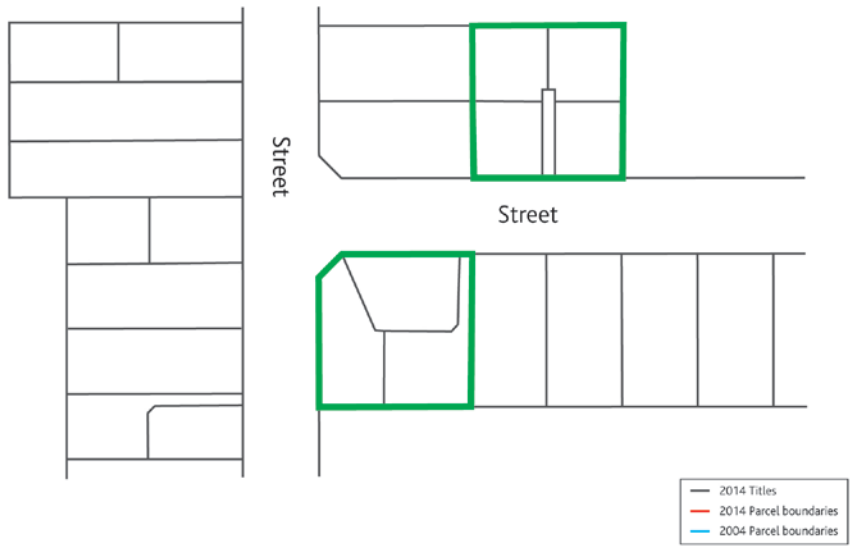
The amalgamation base dataset was created in a software programme called FME. A copy of the FME workbench schematics, which detail the two spatial queries used to generate the aggregation base dataset can be found in Appendix A.

Table 3: Process overview of aggregation base dataset creation

Step	Image
Step 1: Use the 2014 title polygon dataset as a base.	

Step 2: Create merged polygons based on the creation date and time of the title polygon data ('dissolved title polygons'). Where two adjoining titles have the same issue date and time they are merged to create a new single polygon.	
Step 3: Convert the 2004 parcel polygons to centroids, where they fall within a dissolved title polygon.	

Step 4: Convert the 2014 parcel polygons to centroids, where they fall within a dissolved title polygon.	
Step 5: Count the number of 2004 and 2014 parcel centroids that fall within the dissolved title polygon dataset, assign these counts to the dissolved title polygon dataset.	

Step 6: Identify dissolved title polygons that have a 2004 centroid count of two or more, filtering out the rest. Dissolved title polygons that have less than two 2004 parcel centroids are basic subdivisions, and are out of scope of this study.	

The results of this analysis are outputted to an ArcGIS feature dataset in a geodatabase. This base dataset is then manually checked for errors, which is addressed in the following section.

4.3.2 Manual checking of errors and filtering

Manual checking for errors was undertaken on the aggregation dataset, as per the method used for amalgamations, detailed in Section 4.2.2.

The most prevalent error in the base aggregation dataset created was the inclusion of what were basic subdivisions of a single parcel into one or more new parcels, but were picked up in the analysis due to an associated vehicle access parcel associated with the title. It should be noted that a single title may have more than one parcel associated with it. In many cases, a parcel used by more than one residential property for vehicle access will have more than one owner, and be included on the CT for more than one property. Because of the common ownership of this parcel, CTs of the residential properties associated with vehicle access have ‘an equal and undivided share’ in the ownership. Figure 10 shows an example of a basic subdivision of a parcel that has an associated vehicle access parcel on the CT. These were identified through the checking process and the aggregation was tagged in order to be removed by filtering.

Figure 10: Example of basic subdivision of a single parcel, where a title has a part share in a vehicle access parcel.

The inclusion of developments that are the subdivision of parcels in peri-urban areas which have been rezoned to residential from another zoning, typically greenfield development areas, were also picked up in the manual checking stage. An example of this large-scale subdivision is shown in Figure 11. It shows the larger parcel boundaries were associated with previous rural-based parcels, and the newer parcels from 2014 show the gradual subdivision of the land. The aerial photos used in this figure are from 2010/2011 and clearly show the land's rural nature. This type of development, while fulfilling the criteria of an aggregation, is considered to be out of scope. As such, these were tagged in order to be removed by filtering.

The last error that was frequently picked up on in the checking process was where a new parcel had been created to correct a boundary issue. Often this has been where a building was built too close to, or over, an existing parcel boundary. As a consequence a new parcel was required, after which it was transferred from one title to another; an example of which is shown in Figure 12. In this case it appears that the house was in fact situated across the property boundary, and a portion of the neighbouring parcel has been subdivided in order to create a new parcel that reflects single ownership. This sort of parcel creation does not increase the potential for development on either of the original parcels, so they were also tagged to be removed from further analysis.

Figure 11: Example of larger-scale greenfield subdivision type excluded from study (outside scope)

Figure 12: Example of creation of a new parcel in order to correct a boundary issue

In total 1176 potential residential aggregations that were included in the base aggregation dataset were surveyed and checked. Of this total, 800 were deemed to be valid aggregations; 376 were deemed to be errors or out of scope of the study.

5.0 Phase one: Results of spatial analysis

This section reports the results on the geographic location and characteristics of amalgamations and aggregations identified, including zoning, size and time. The results have been reported for both the legacy territorial authority areas and the current Auckland Council local board areas. The legacy territorial authority areas have been used as they are areas to which the current operative district plans apply. Local board areas have been analysed to provide a more current context, relevant to the current administration of Auckland. Maps showing the extent of the legacy territorial authorities and the local board areas can be found in Appendix A and Appendix B.

5.1 Overview

The spatial analysis undertaken as per the methodology outlined in Section 4.0 resulted in the identification of 402 amalgamations and 800 aggregations in Auckland's urban area in the period between 2004 (exact date unknown) and May 2014. Together these total 1202.

Across the time period, the total average of amalgamations and aggregations is 116 per year[4]. Amalgamations averaged 40 per year while aggregations averaged 77 per year.

Table 4: Count of the number of amalgamations and aggregations that have occurred between 2004 and 2014 in Auckland's urban area

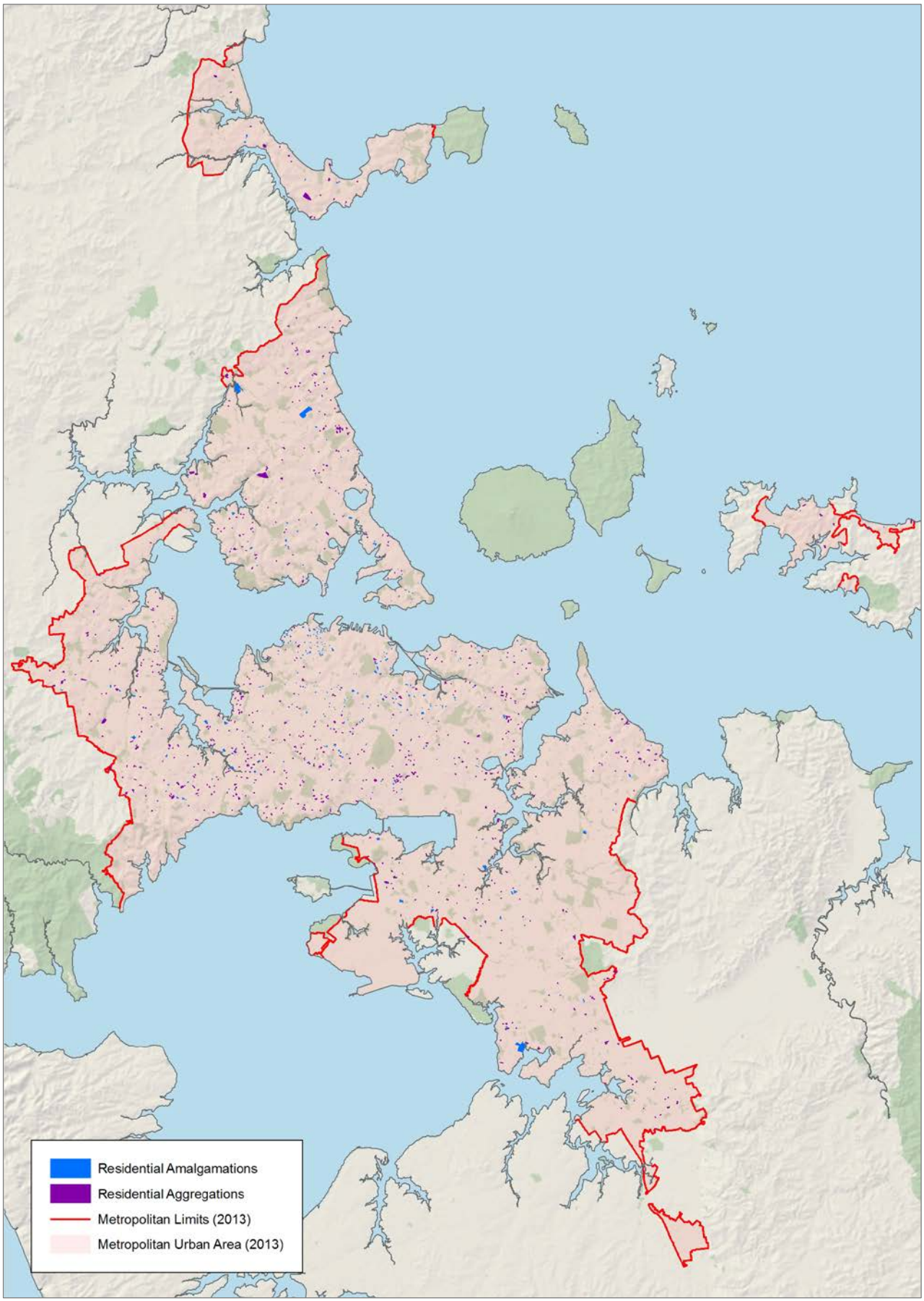
Type	Count	Average per year
Amalgamations	402	40
Aggregations	800	77
Total	**1,202**	**116**

5.2 Geographic distribution

This section looks at the geographic distribution of amalgamations and aggregations across Auckland's urban area. Sub-sections look at the distribution by district plan area (former territorial authority area) and by current local board areas. The location of sites that were identified as being amalgamations or aggregations in Auckland's urban area over the study period is illustrated in Figure 13.

[4] The time period used for these calculations is based on 10.33 years, or 10 years and 4 months. For the purposed of this study has been presumed that the 2004 parcel dataset is at 1 January; the actual date of this dataset is unknown.

Figure 13: Location of residential amalgamations and aggregations that have occurred between 2004 and 2014 in Auckland's urban area



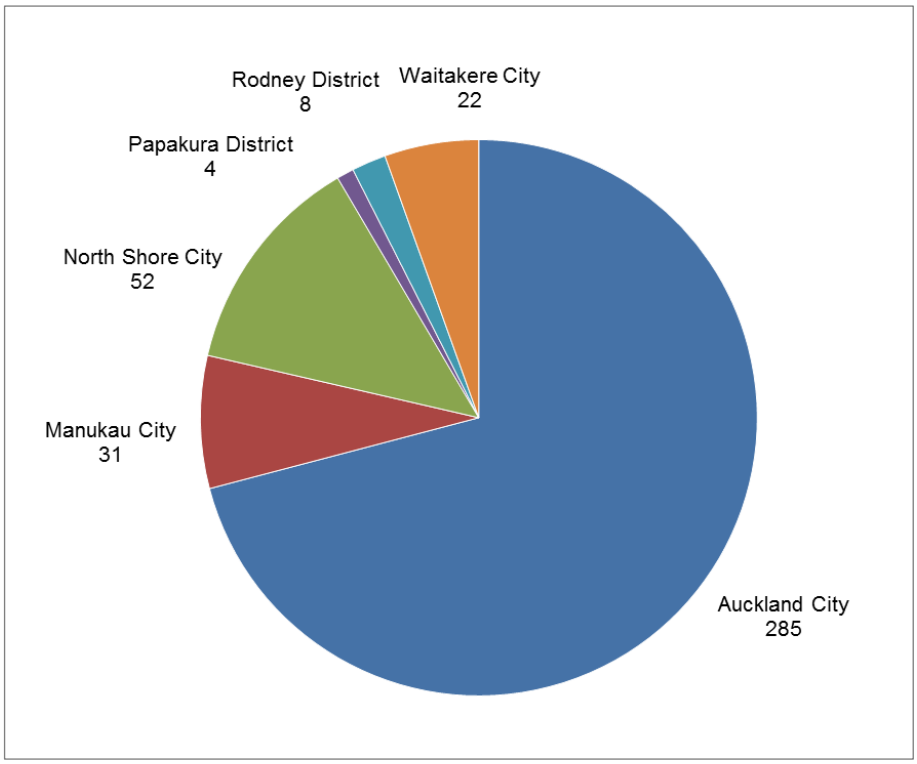
5.2.1 Results by legacy district plan area (Auckland's former territorial areas)

This section presents results by Auckland's legacy council areas. The urban area used for analysis was based on the extent of the Metropolitan Urban Area. As this area does not extend into the former Franklin District, results for this area, for both amalgamations and aggregations, is nil.

5.2.1.1 Amalgamations

The former Auckland City area had the vast majority of amalgamations over the study period, accounting for nearly three-quarters (285, or 71 per cent) of all that occurred in the urban area. The next most popular area was North Shore city with 15 per cent (52). Proportional distribution of amalgamations by district plan area is illustrated in Figure 14.

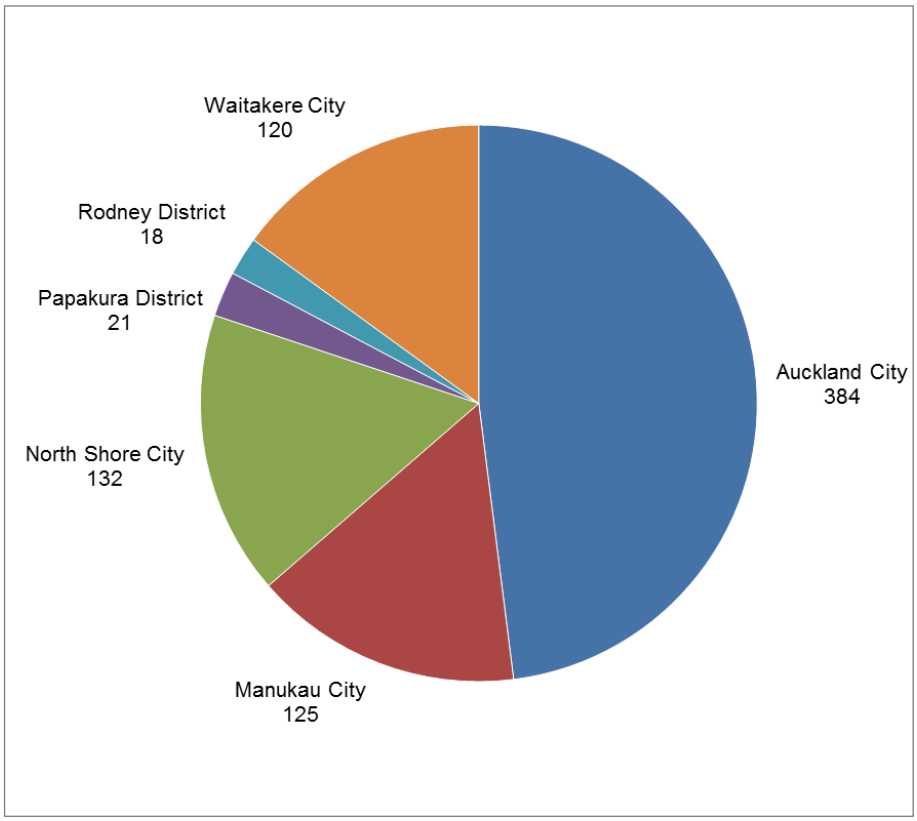
Figure 14: Location of residential amalgamations by legacy district plan area



5.2.1.2 Aggregations

When looking at aggregations, Auckland City has the largest share with nearly half (48 per cent, or 384) of the total. Manukau City, North Shore City and the Waitakere City areas accounted for a sixth of the total each (16 per cent, 16 per cent and 15 per cent each respectively – between 120 and 132). Proportional distribution of aggregations by district plan area is illustrated in Figure 15.

Figure 15: Location of residential aggregations by legacy district plan area

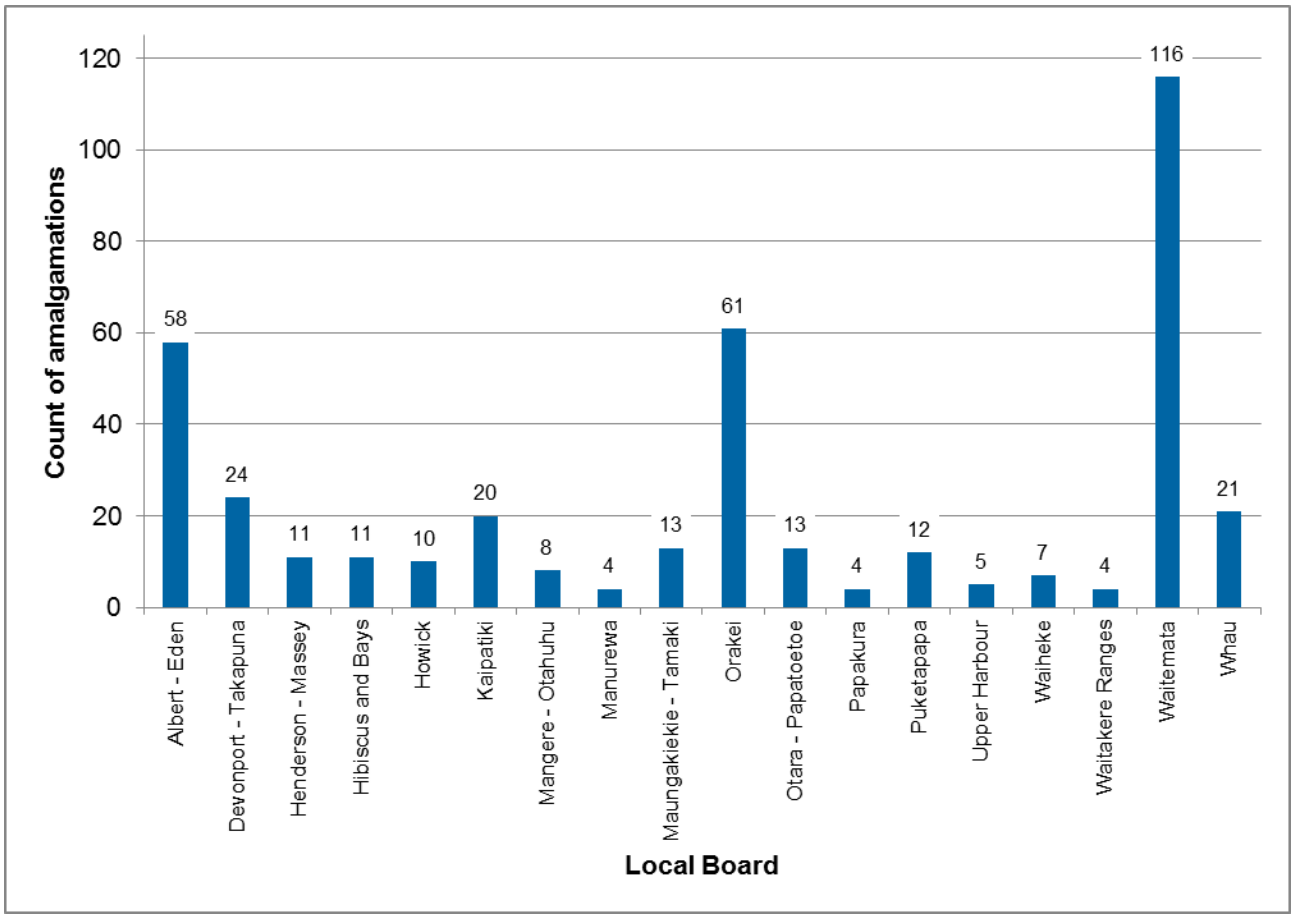


5.2.2 Results by local board area

5.2.2.1 Amalgamations

Analysis of the amalgamation data by local board area is shown in Figure 16, which shows that 29 per cent of amalgamations (a count of 116) occurred within the Waitematā Local Board. This is nearly double the number seen in the Ōrākei Local Board (61, or 15 per cent) and Albert-Eden Local Board (58, or 14 per cent). All three of these local boards are located on the Auckland isthmus, and as such fall within the boundaries of the former Auckland City.

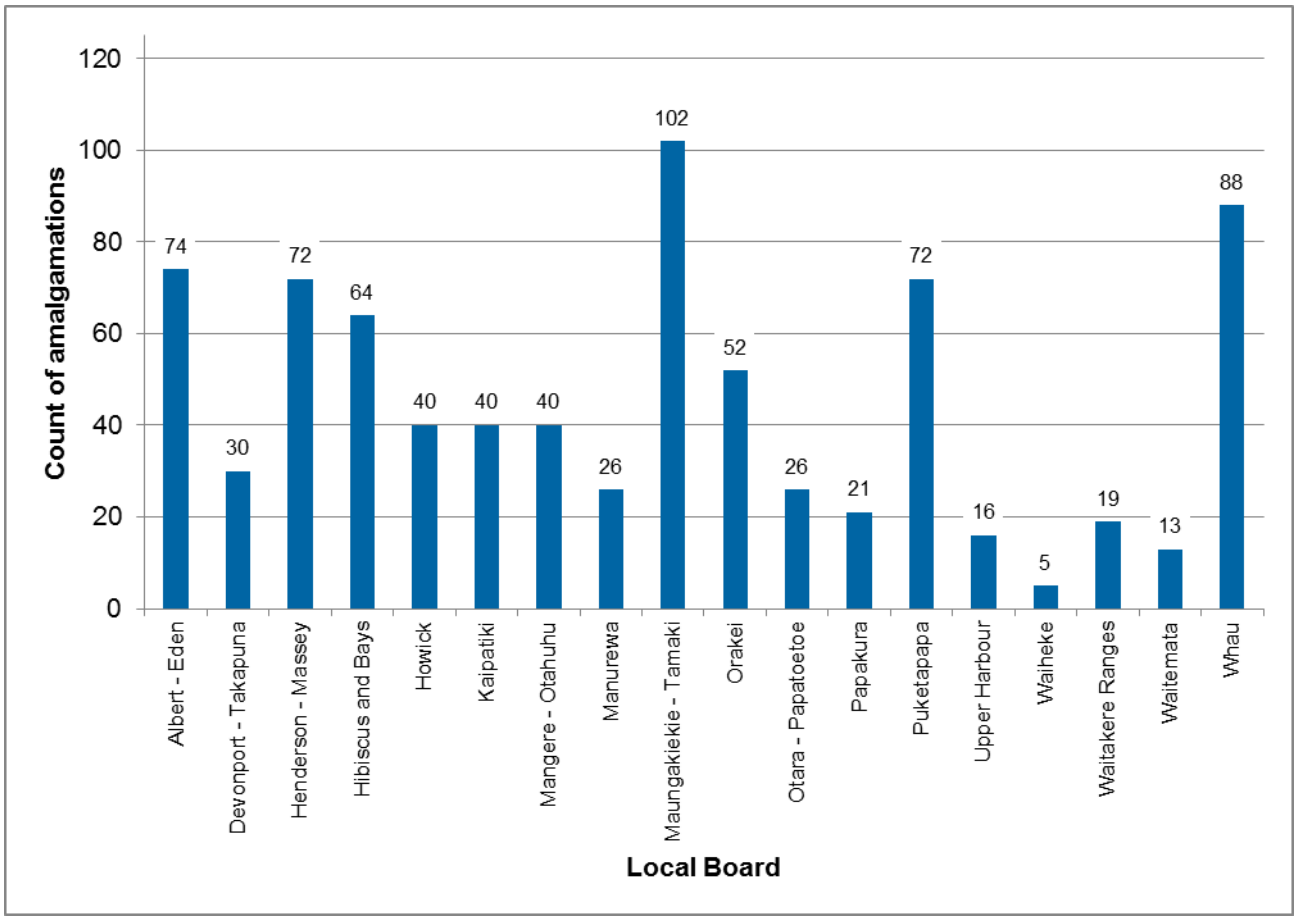
Figure 16: Location of residential amalgamations by local board area



5.2.2.2 Aggregations

The distribution of aggregations by local board area, as seen in Figure 17, is quite different to what we see for amalgamations, with Maungakiekie-Tāmaki containing 101, or six per cent of the total identified. Whau Local Board contained the second highest proportion (five per cent) of amalgamations, with 88; Albert-Eden, Henderson-Massey, and Puketapapa local boards each had four per cent of the total.

Figure 17: Location of residential aggregations by local board area



5.3 Zoning

5.3.1 Amalgamations

The majority (71 per cent) of amalgamations occurred in the former Auckland City area, particularly in the following three zones: Residential 1 (23 per cent of the total); Residential 6a (18 per cent), and Residential 5 (10 per cent). Refer to Table 5 for a full list of the number of amalgamations within different zones.

Table 5: Count of amalgamations, including percentage of total, by district plan zone

District plan area	Zone name	Count of amalgamations	Per cent of total amalgamations
Auckland City	Island Residential 1	2	0%
	Island Residential 2	5	1%
	Residential 1	94	23%
	Residential 2a	5	1%
	Residential 2b	32	8%

	Residential 3a	2	0%
	Residential 3B	1	0%
	Residential 5	39	10%
	Residential 6a	71	18%
	Residential 6b	8	2%
	Residential 7a	13	3%
	Residential 7b	10	2%
	Residential 7c	1	0%
	Residential 8b	2	0%
Manukau City	Main Residential	26	6%
	Residential Heritage 1	1	0%
	Residential Heritage 6	1	0%
	Residential Heritage 7	3	1%
North Shore City	Residential 1	2	0%
	Residential 2b	8	2%
	Residential 3a	8	2%
	Residential 3B	1	0%
	Residential 3C	6	1%
	Residential 4A	15	4%
	Residential 4B	9	2%
	Residential 5	2	0%
	Residential 6a	1	0%
Papakura District	Residential 1	2	0%
	Residential 2	2	0%
Rodney District	Residential Eastern Peninsula	1	0%
	Residential High Intensity	1	0%
	Residential Landscape Protection	1	0%
	Residential Medium Intensity	5	1%
	Residential Eastern Peninsula	1	0%
Waitakere City	Living	9	2%
	Living 1	5	1%
	Living 2	7	2%
	Living 5	1	0%

So why have such a large proportion of amalgamations been in these three particular zones? Location is most likely a factor, with the Auckland isthmus being popular; this is reflected in the high number of amalgamations in the old Auckland City area. Generally speaking, suburbs on the isthmus are popular for a number of reasons, including:

- Close to transport links; this incudes roads and motorways, rail, walking and cycling paths, and ferries.
- Close to centres of employment (Nunns, 2015).
- Close to what some people consider "good" schools, a large number of which are located in central Auckland (Vaughan, 2012; Wilson, 2014).
- Proximity to other 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, 2012).

The desirability of the isthmus suburbs makes property in these locations relatively more valuable; this perhaps makes it more economically feasible for the development community to undertake amalgamation and redevelopment in these areas. The location of amalgamations and aggregations in relation to house sale prices is explored in Section 5.9.

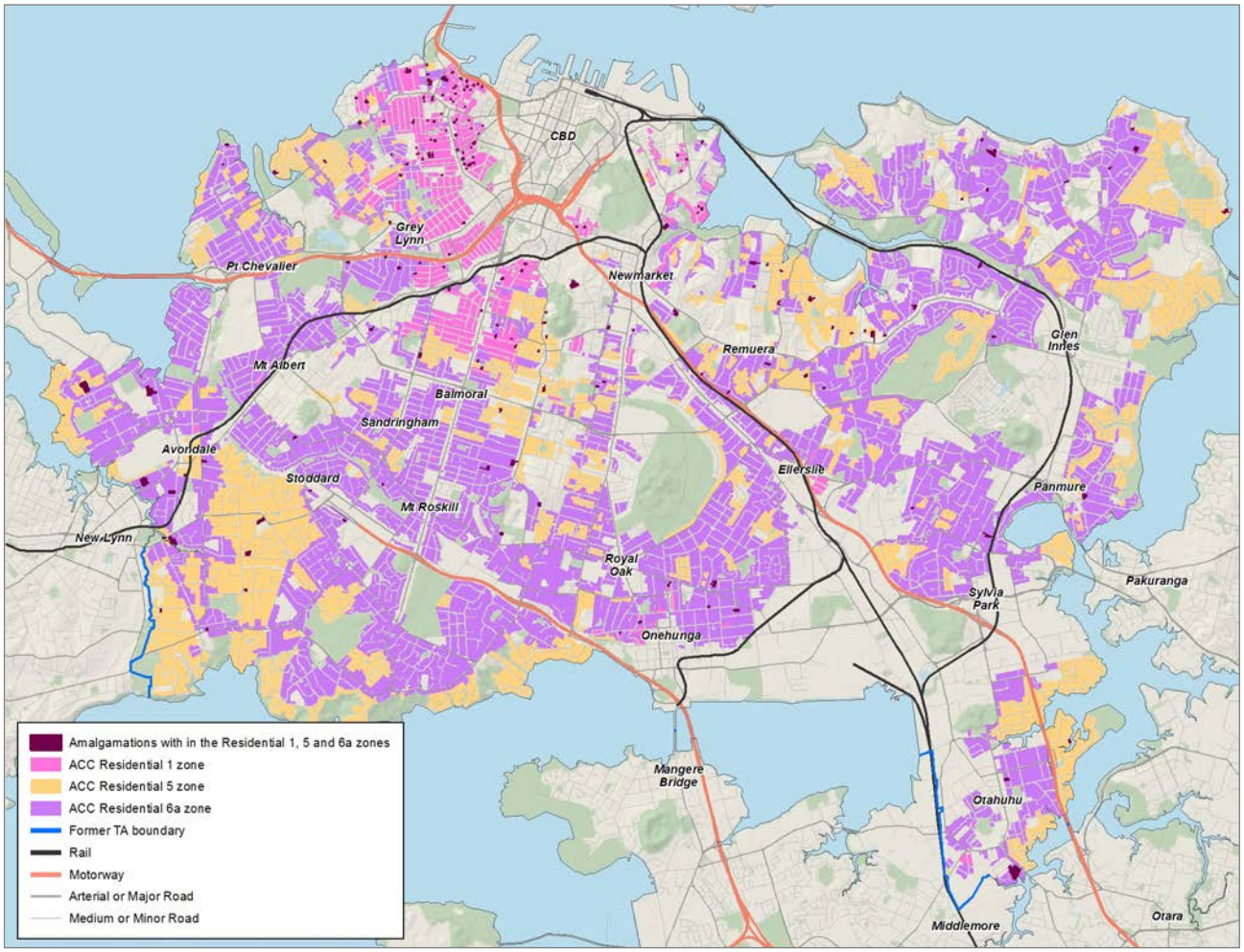
Another reason that these three zones have a higher number of amalgamations is that the extents of these zones are relatively widespread in the old Auckland City area. Residential 1, Residential 5, and Residential 6a zones are described in Table 6 and together make up the vast majority of the residential area in the former city, as seen in Figure 18. The general characteristics of these three zones are outlined in Table 6.

Table 6: Residential zone description and number of units per square metre (Auckland City Council, 1999)

Zone name	Description	Residential unit per square metre (m^2)
Residential 1	Largely, Victorian/Edwardian housing, with some modification and infill. Much of Ponsonby, and parts of Mt Eden	1 per site
Residential 5	Low intensity, areas characterised by detached homes, sites with relatively generous areas of open space to accommodate landscaping and leisure activities	500
Residential 6a	Medium intensity, less spacious and often more diverse in form than the Residential 5 zone, have aesthetic conditions which set them apart from higher intensity areas and are often characterised by favourable aspect.	375[5]

[5] Note that under rules for of the relevant district plan the provisions allow one (1) dwelling per 400 m^2 when subdivision of a vacant site takes place, but the density rules allow a minimum site size of one (1) per 375 m^2 in cases where an existing site is being subdivided.

Figure 18: Location of amalgamations that occurred within the extents of the Auckland City Council Residential 1, Residential 5 and Residential 6a zones



5.3.2 Aggregations

Nearly a third (248 or 31 per cent) of all aggregations were in the Residential 6a zone of the former Auckland City; this zone had the highest number of any zones across the region. The Main Residential zone in Manukau City was the second most popular zone for aggregations with 109 or 14 per cent of the total. Counts and percentages of the aggregations by zone are presented in Table 7.

Table 7: Count of aggregations, including percentage of total, by district plan zone

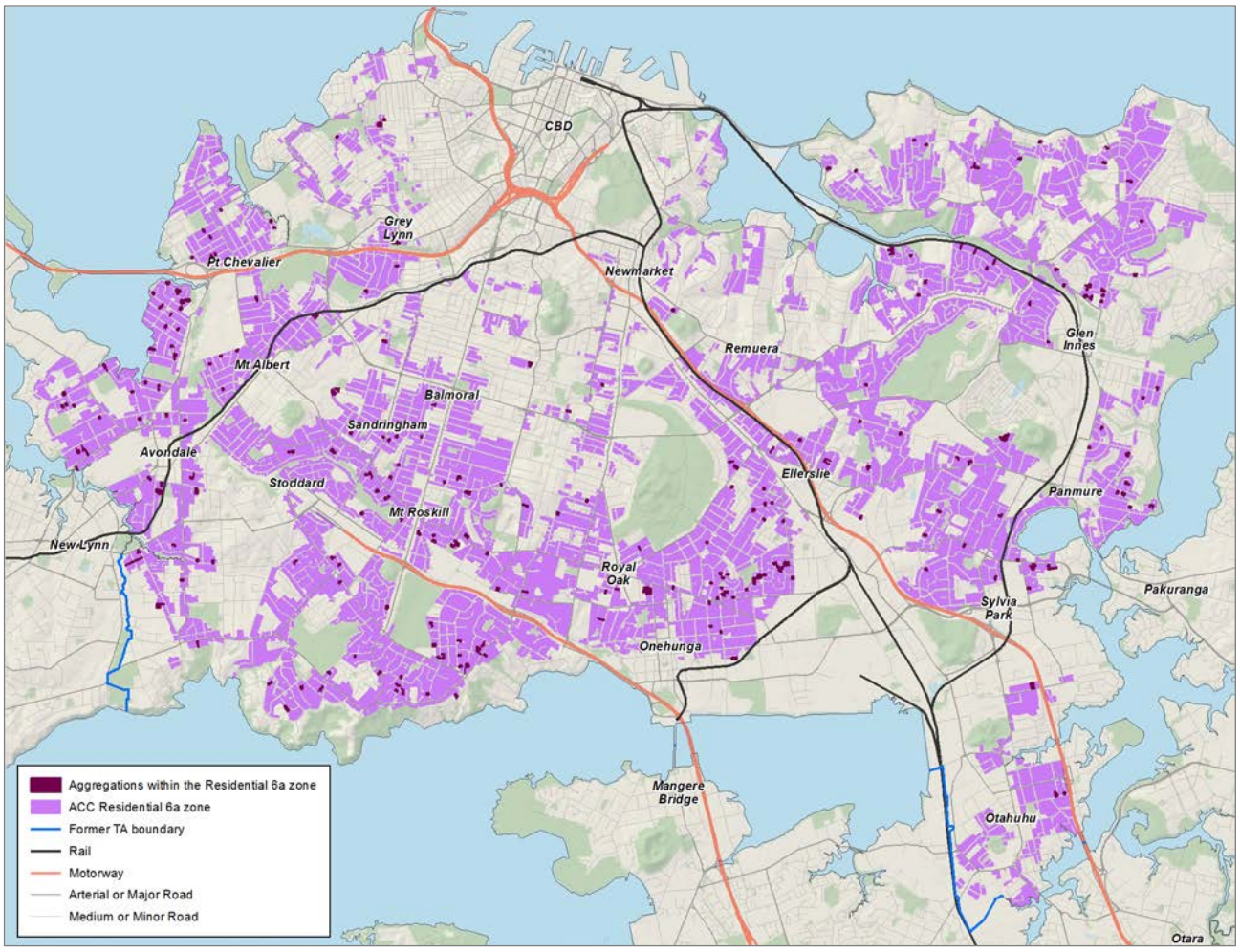
Territorial authority	Zone name	Count of aggregations	Per cent of total aggregations
Auckland City	Island Residential 1	1	0%
	Island Residential 2	4	1%
	Residential 1	3	0%
	Residential 2A	1	0%
	Residential 2B	10	1%

	Residential 5	93	12%
	Residential 6a	248	31%
	Residential 6b	10	1%
	Residential 7a	3	0%
	Residential 7b	1	0%
	Residential 8a	5	1%
	Residential 8b	5	1%
Manukau City	Main Residential	109	14%
	Residential Heritage 6	2	0%
	Residential Heritage 7	14	2%
North Shore City	Residential 1	3	0%
	Residential 2A	3	0%
	Residential 2A1	1	0%
	Residential 2B	16	2%
	Residential 3A	1	0%
	Residential 3C	1	0%
	Residential 4A	44	6%
	Residential 4B	56	7%
	Residential 5	4	1%
	Residential 6A1	1	0%
	Residential 6B1	1	0%
	Residential 6C	1	0%
Papakura District	Residential 1	17	2%
	Residential 2	4	1%
Rodney District	Residential Eastern Peninsula	2	0%
	Residential High Intensity	3	0%
	Residential Landscape Protection	1	0%
	Residential Low Intensity	1	0%
	Residential Medium Intensity	11	1%
Waitakere City	Living	53	7%
	Living 1	34	4%
	Living 2	32	4%
	Living 6	1	0%

Why have the aggregations been popular in these zones? It is likely that similar reasons of location and amenity noted earlier (Section 5.3.1) in relation to amalgamations is a driving factor for aggregations also. Another driver could be the characteristics of the existing parcels in these two most popular zones.

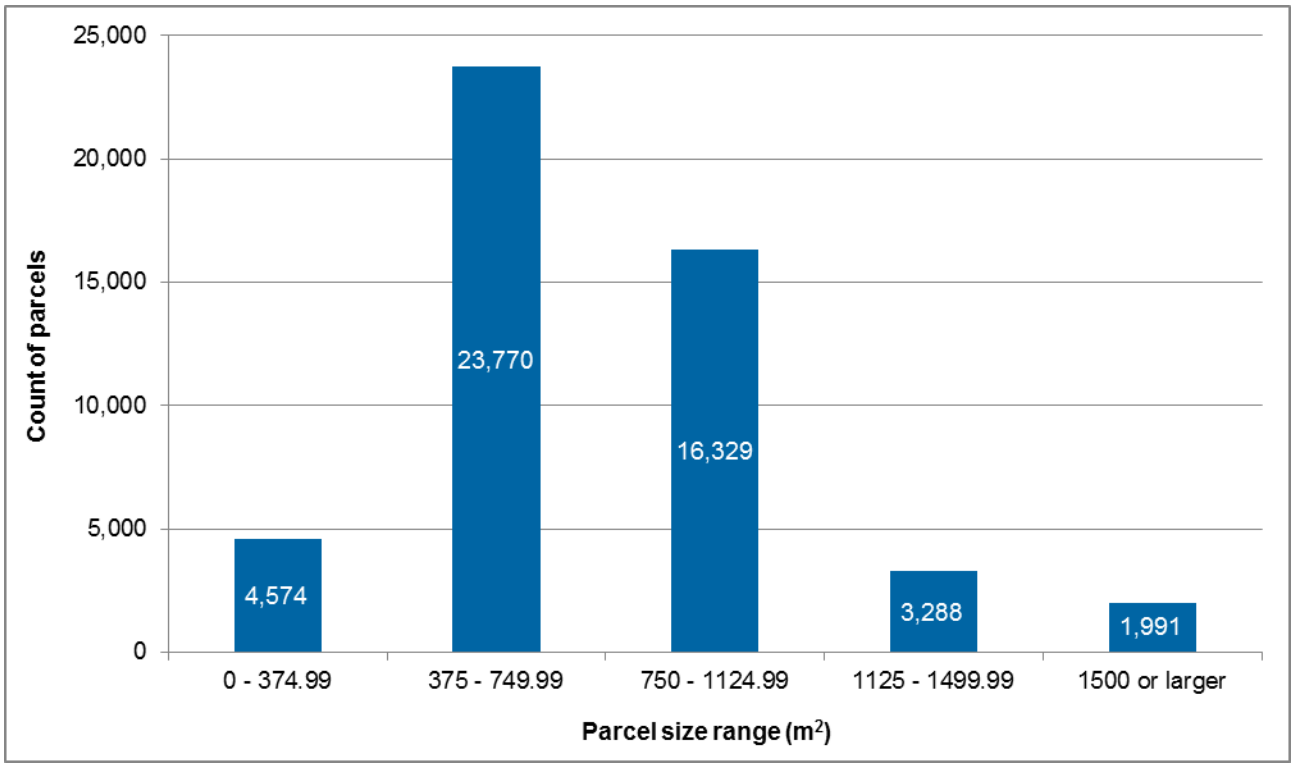
The most popular zone for aggregations was the Residential 6a zone from the former Auckland City. Shown in Figure 19 are the extents of the Residential 6a zone and the location of aggregations identified as part of the study that fall in this zone.

Figure 19: Location of aggregations that occurred within the extents of the Auckland City Council Residential 6a zone



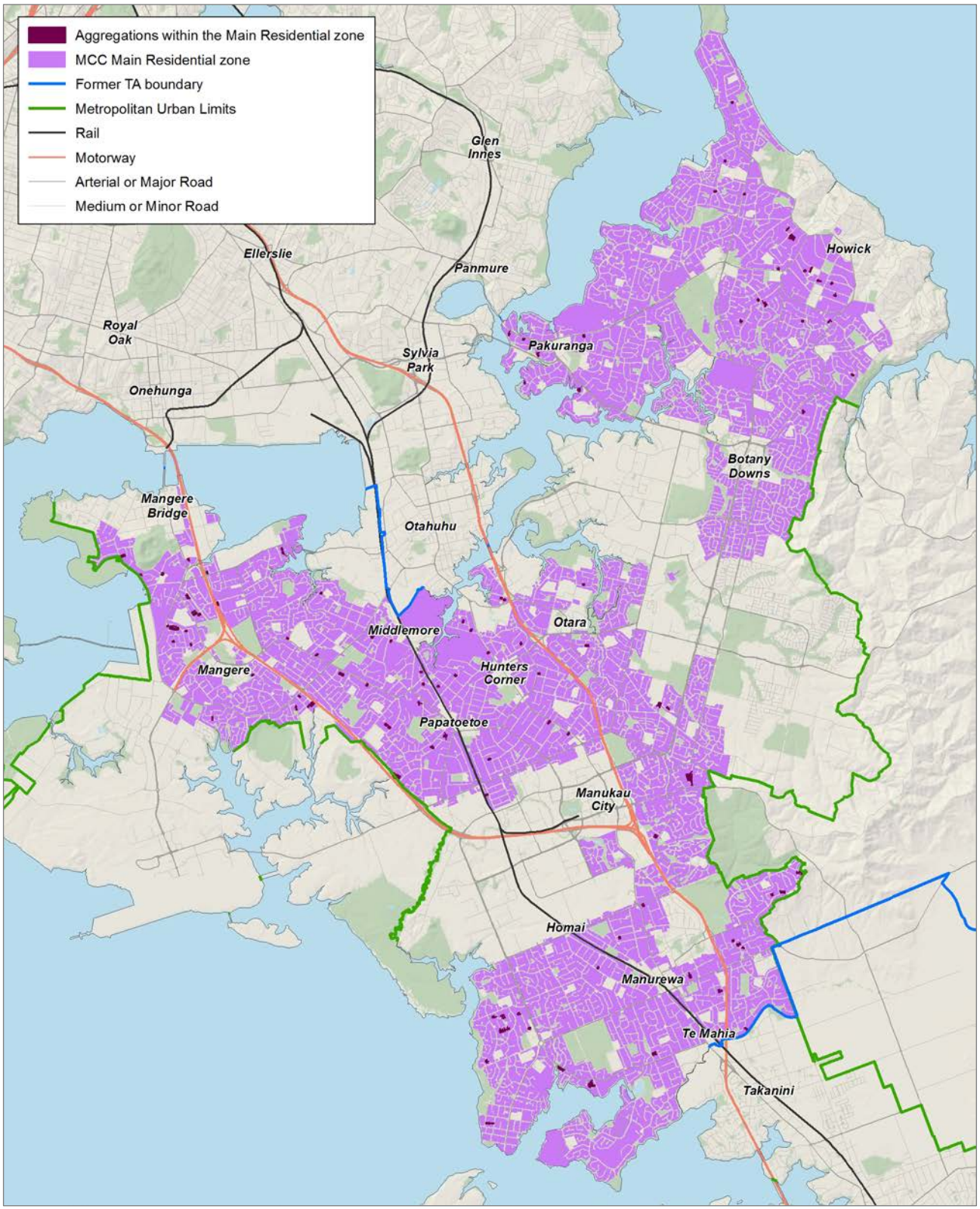
The minimum lot size for development in this zone is one dwelling per 375 square metres. In Figure 20 the area of all parcels within the Residential 6a zone have been graphed into five size ranges; this shows that 48 per cent of the parcels are in the 375 to 749.99 square metres size range, and overall 57 per cent of the parcels in this zone are too small to subdivide. With this in mind, often the only way to undertake some sort of development through subdivision is through the amalgamation of adjoining properties.

Figure 20: Count of parcels, by size range in the Auckland City Council Residential 6a zone (as at May 2012)



Observations of the second most popular zone in the urban area for aggregations show a similar picture. The extent of the former Manukau City's Main Residential zone are shown in Figure 21; along with the location of aggregations identified. The minimum lot size for this zone is 400 square metres.

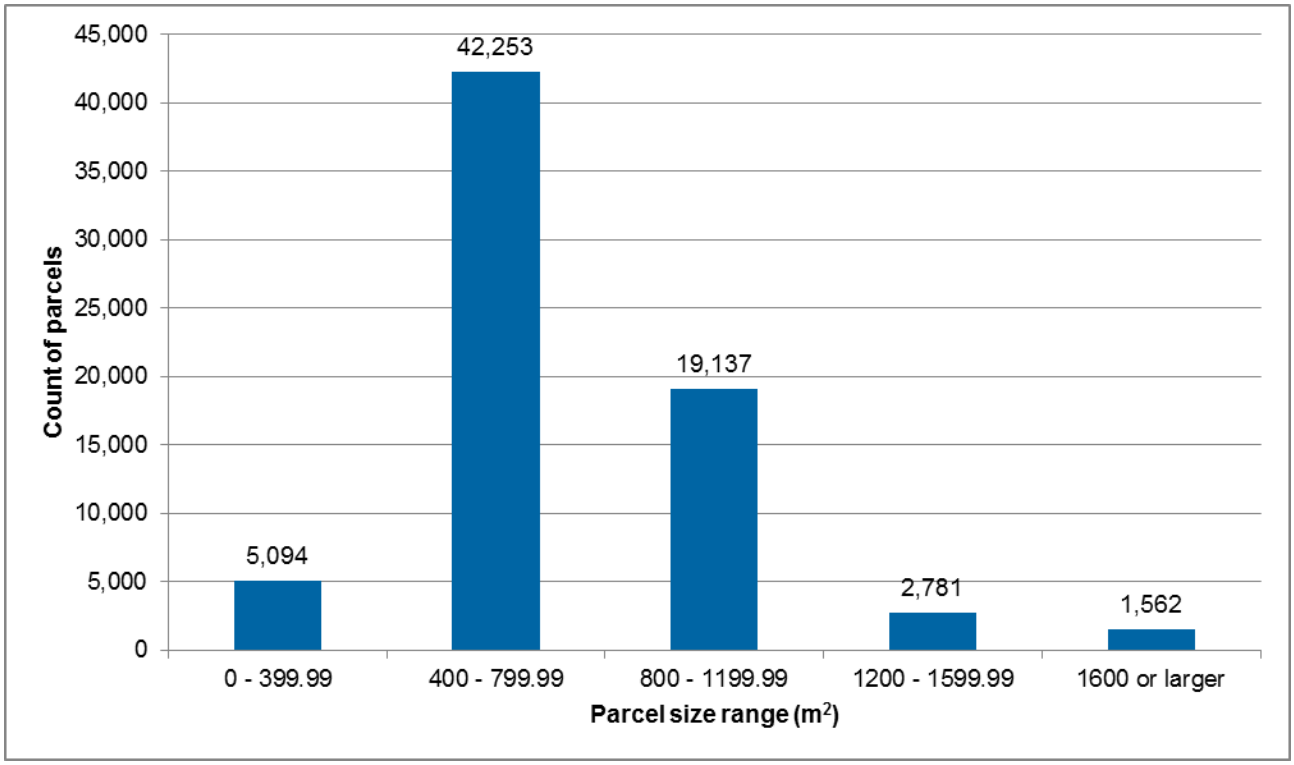
Figure 21: Location of aggregations that occurred within the extents of the Manukau City Council Main Residential zone



Again, graphing all the parcels within the zone by grouping them into size ranges indicates that 60 per cent of parcels in this zone are in the 400 to 799.99 square metre size range, and 67 per cent of the parcels in this zone are too small to subdivide. The only way to undertake some sort of

development through subdivision on 47,253 parcels in this zone is through the amalgamation of adjoining properties.

Figure 22: Count of parcels, by size range in the Manukau City Council Main Residential zone (as at May 2012)



5.4 Parcel numbers and characteristics

5.4.1 Number of parcels

As the amalgamation process is about actively reducing the number of parcels/titles through merging them together, it is not surprising to see the number of parcels decrease between 2004 and 2014. A total of 968 parcels was reduced to 402 by the amalgamation process between 2004 and 2014, a 59 per cent reduction.

Conversely, as aggregations are the process of creating parcels through the subdivision of more than one parcel, the number of parcels increased from 1902 in 2004 to 4201 in 2014 – an increase of 2299, or 121 per cent.

Table 8 shows the average number of parcels used to increase amalgamations and aggregations were both 2.4. The average number of parcels created by aggregations was 5.3.

Table 8: Number of parcels used and created as part of the amalgamation and aggregation processes

Type	Parcels used	Parcels created	Change in number of parcels	Per cent (%) change	Average number of parcels used	Average number of parcels created
Amalgamation	968	402	-566	-58.5%	2.4	1
Aggregation	1,902	4,201	2,299	121.0%	2.4	5.3

5.4.2 Characteristics of parcels used and created by amalgamations

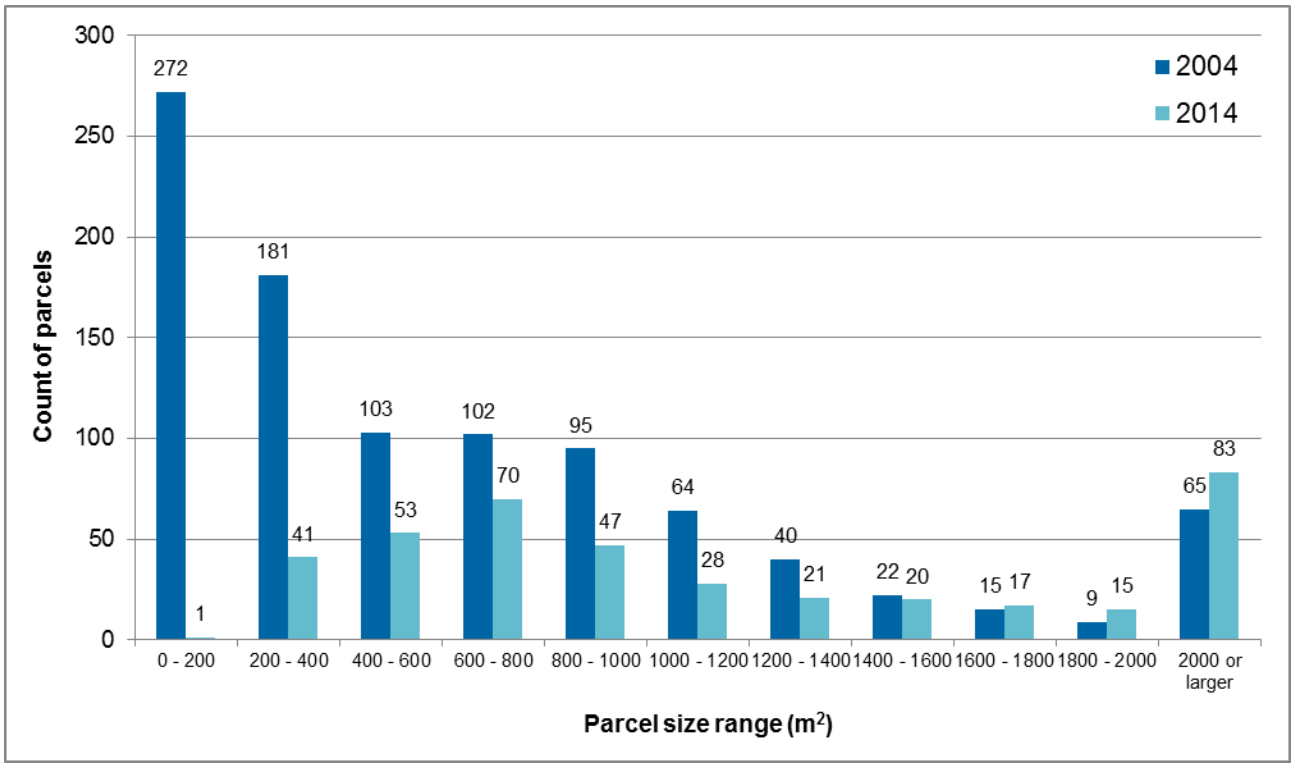
The sizes of parcels that were used in amalgamations varied greatly, ranging from one square metre to just over 16 hectares; this is shown in Table 9. The median parcel size created by the amalgamation process was 936 square metres.

Table 9: Characteristics of parcels used in (2004) and those created by (2014) amalgamations

Type	Minimum parcel size (m^2)	Maximum parcel size (m^2)	Average parcel size (m^2)	Median parcel size (m^2)
Parcels used in amalgamation (2004)	1	163,179	1,258	458
Parcels created by amalgamation (2014)	101	159,287	2619	936

Parcel size possibly plays an important part in residential property amalgamations. Figure 23 shows the parcels that were used in and created by amalgamations, grouped into a series of ranges. Figure 24 shows that 28 per cent of parcels used were smaller than 200 square metres and nearly half (47 per cent) were less than 400 square metres in size. Comparing the 2004 ‘input’ parcels with the 2014 ‘output’ parcels shows that the amalgamation process has not only reduced the number of parcels, but reduced the proportion n smaller parcel range groups.

Figure 23: Count of parcels used in and created by amalgamations, by size range (2004 and 2014)



5.4.3 Characteristics of parcels used and created by aggregations

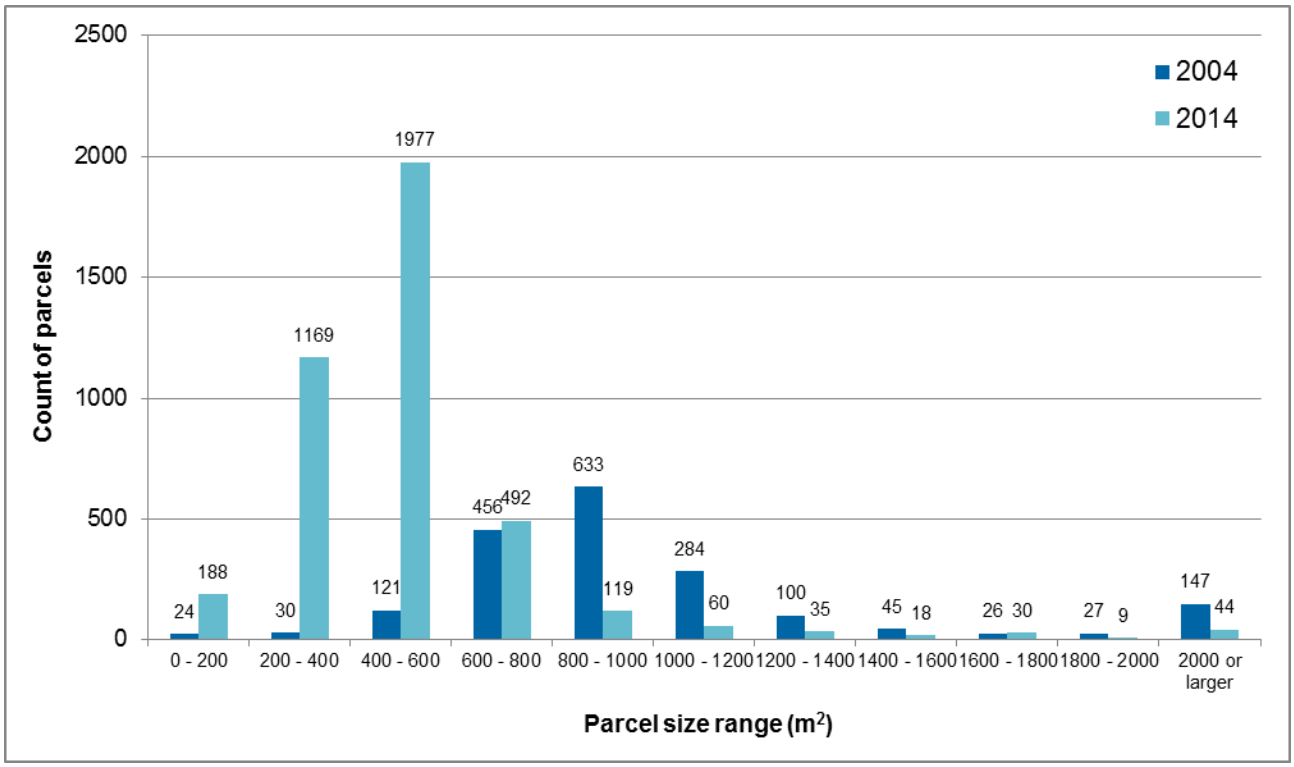
The characteristics of parcels created by amalgamation and aggregations are shown in Table 10; parcel sizes used in aggregations ranged from two square metres to over 5.6 hectares. The median parcel size created by the aggregation developments was 449 square metres.

Table 10: Characteristics of parcels used (2004) and those created (2014) by aggregation

Type	Minimum parcel size (m^2)	Maximum parcel size (m^2)	Average parcel size (m^2)	Median parcel size (m^2)
Parcels used in aggregation (2004)	2	56,240	1,222	842
Parcels created by aggregation (2014)	1	43,450	535	449

As illustrated in Figure 24, the aggregation process has created a large number of parcels of smaller sizes than those going into the process. Over 80 per cent of parcels created were smaller than 600 square metres; with 33 per cent created being smaller than 400 square metres.

Figure 24: Count of parcels used in and created by aggregations, by size range (2004 and 2014)



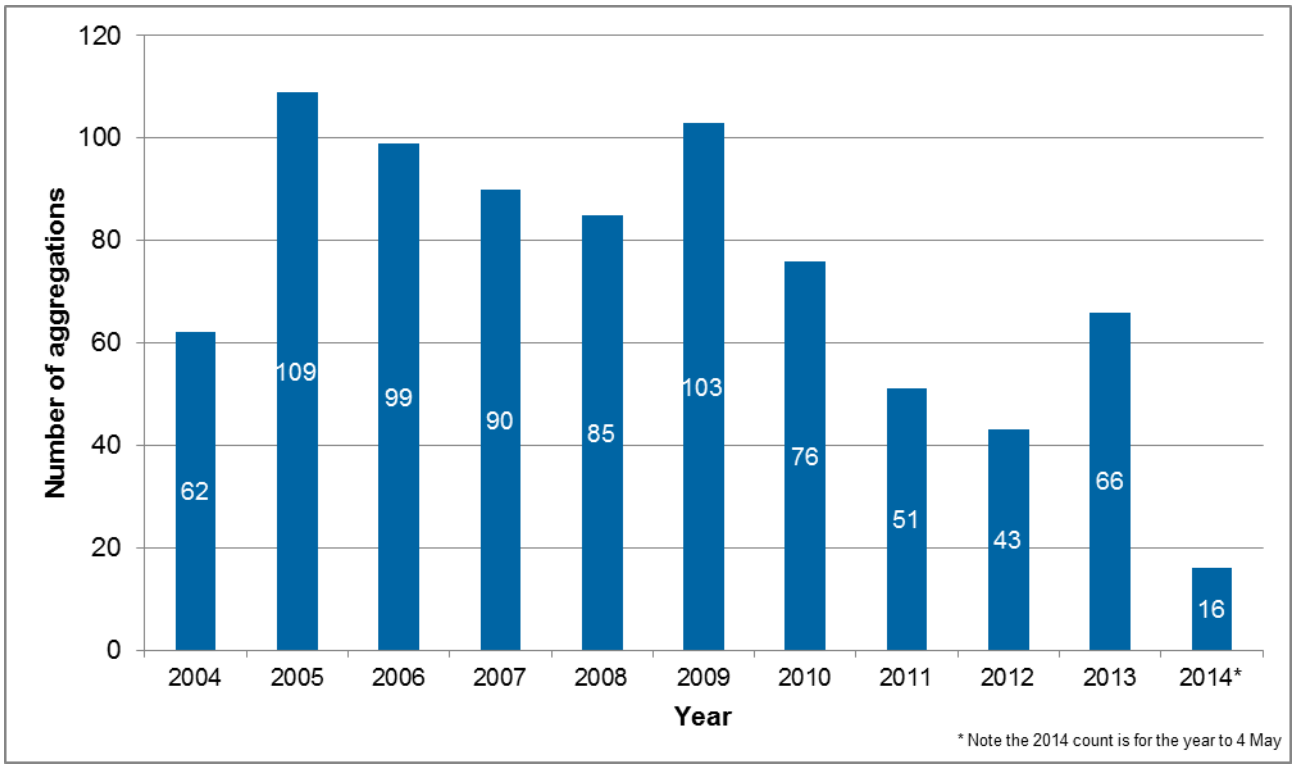
5.5 Aggregations by year

This section looks at when aggregations have occurred over the study period. We can determine and analyse the dates that aggregations have occurred, on this occasion by calendar year, as we know the date the titles for these were created.

It was not possible however, to determine the date that amalgamations took place. An attempt to match amalgamations' title data, including issue date, was made but it appeared that some of the amalgamations have retained the original title issue date of one or both of the original titles. As such, this analysis was not undertaken for amalgamations.

As shown in Figure 25, over the study period (around 10 years), the number of aggregations by year varied greatly, reaching a peak in 2005 with 109 undertaken, with 2009 close behind with 103. The over-all trend between 2005 and 2013 has been for a decreasing number of aggregations. From the low seen in 2012, when only 43 aggregations occurred, the number rose strongly in 2013 to 63; while the number for 2014 is only 16, it should be noted that this was only for the first four months of the year, and the total for the entire year would be higher.

Figure 25: Number of aggregations in Auckland's urban area, by year of creation



5.6 Residential development on amalgamations and aggregations

Building consent data sourced from Statistics New Zealand and allows the measurement of development across Auckland. Spatial analysis that overlays the amalgamations and aggregations identified as part of the study with the building consent data allows us to show the amount of development that has taken place in these locations, and compare this with the level of development in other parts of Auckland.

Each month building consent data which originates from Auckland Council is supplied to Statistics New Zealand and is processed and collated into a standardised format, which is then used for official statistics reporting. The Research and Evaluation Unit obtains a copy of this processed data from Statistics New Zealand and further processes it into map format, which allows us to undertake the kind of analysis used in this section.

5.6.1 Dwellings consented on identified amalgamations and aggregations

Statistics New Zealand applies a standard consent typology to all building consents. This allows us to know what type of consents have been issued, for example, whether it was for a residential dwelling, a commercial office block, or an industrial factory.

As part of this analysis we have looked at the type and numbers of new dwellings that were consented to on amalgamations and aggregations.

Table 11 shows that the majority of new dwellings consented on amalgamations and aggregations were 'new (and pre-built) house, unit, bach, crib, beach cottage, town house, etc.' (stand-alone

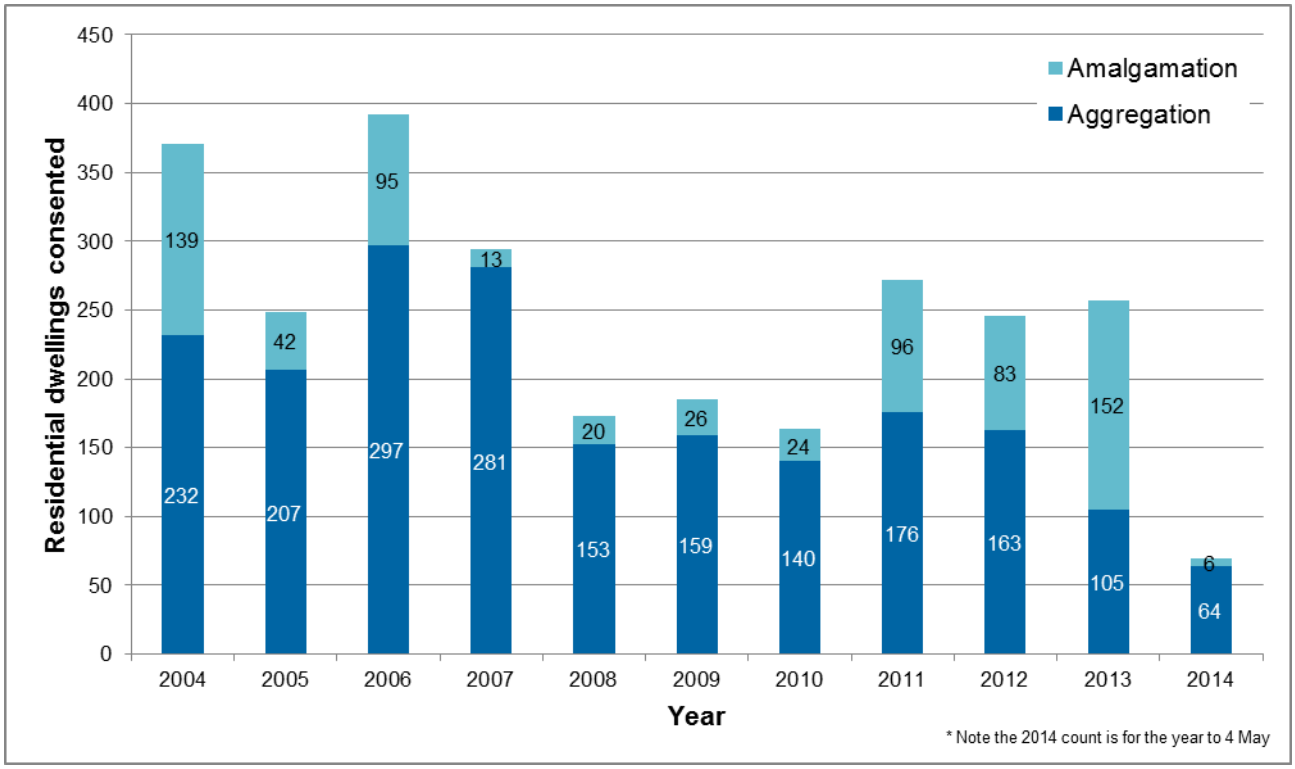
dwellings), accounting for 69 per cent of that total. When looking at dwellings that were consented amalgamations only, the standalone dwellings only accounted for 17 per cent; this contrasts strongly to the 88 per cent seen on aggregations. This is likely to be a function of the purposes for undertaking these two processes; larger developments such as terraced housing or apartment blocks (which fall under the 'new flats' category) require larger pieces of land, which would be created through amalgamations, whereas aggregations tend to create new parcels suitable for standalone dwellings.

Table 11: Residential dwellings consented between 2004 and May 2014, by building consent type, on identified amalgamation and aggregation sites

Building consent type	Amalgamation	Per cent of amalgamation total	Aggregation	Per cent of aggregation total	Total	Per cent of total
New (and pre-built) house, unit, bach, crib, beach cottage, town house, etc.	119	17%	1,738	88%	1,857	69%
New flats	564	81%	114	6%	678	25%
Resited houses	13	2%	125	6%	138	5%
Total	**696**	**26%**	**1,977**	**74%**	**2,673**	**100%**

Building consent data includes the date on which the consent was issued. This can be used to break down information by the year that consent was issued. Figure 26 shows the number of dwellings consented on amalgamations and aggregations, by year. The highest number of dwellings consented, by year, was seen in 2006 where a total of 392 were approved.

Figure 26: Number of dwellings consented between 2004 and May 2014, by amalgamation and aggregation



The building consent category 'resited houses' also features in Table 11. The relocation of an existing dwelling, despite not being a new build, requires a building consent (ConsumerBuild, 2015). This consent is necessary for a dwelling's new location (New Zealand Government, 2004) – this may be on the same site, or a different location all together[6]. By looking at the location of these consents where they occurred on amalgamations or aggregations it can be seen that houses have often been moved on the site to accommodate development. Figure 27 shows an example where a house has been moved on a site in order to facilitate additional development at the rear. In comparing the 2006 and 2010 photos you can see that the centre of the three original houses has been moved a few metres to the south west in order to place a driveway to access the rear of the development. In a second example (Figure 28) you can see that all three houses on the original parcels have been moved on the site in order to facilitate urban development.

[6] If a dwelling is less than three storeys, a demolition consent for the removal of the house is not required (New Zealand Government, 2004; Auckland Council, 2014a).

Figure 27: Relocation of an existing dwelling on a site in order to facilitate redevelopment of site post aggregation (Example 1)

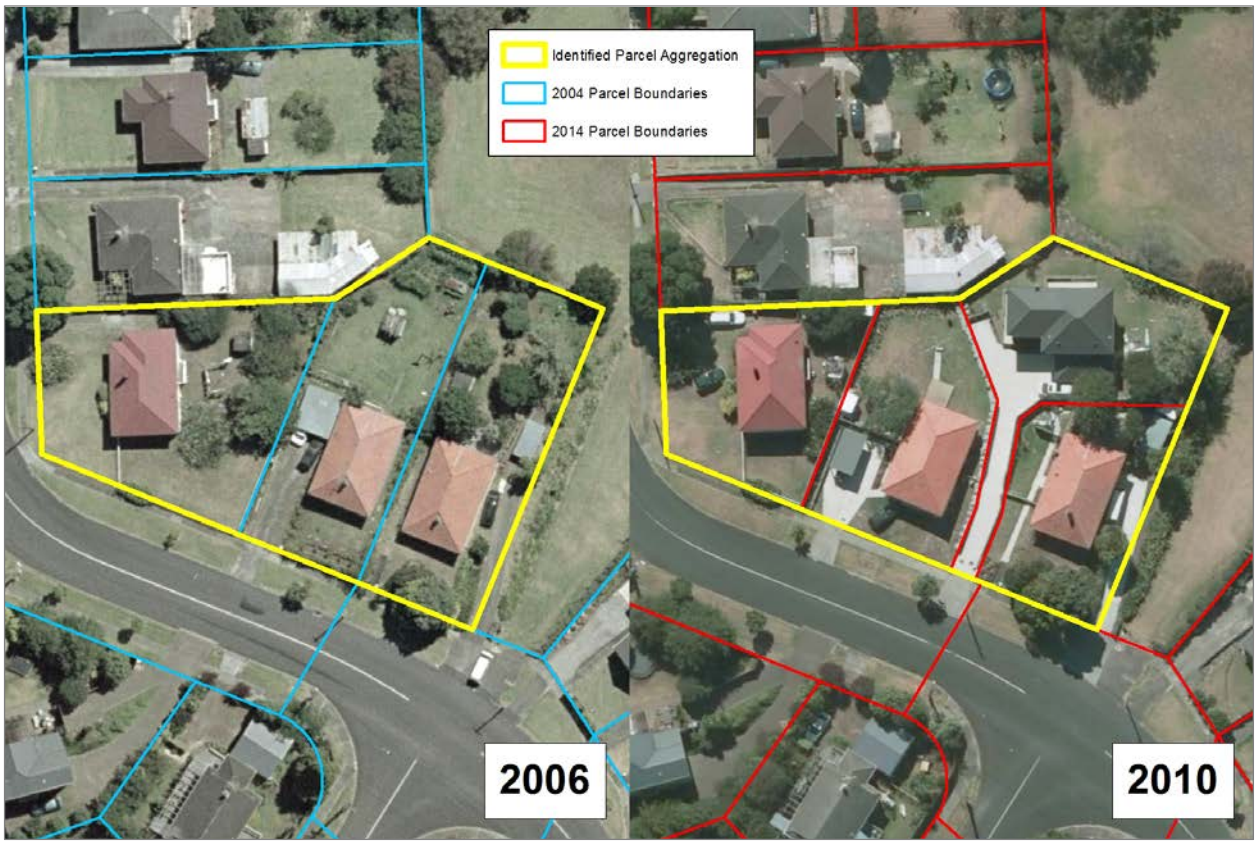


Figure 28: Relocation of an existing dwelling on a site in order to facilitate redevelopment of site aggregation (Example 2)

5.6.2 Development on amalgamations and aggregations as a proportion of total urban residential development

Across the period of the study, 2673 dwellings were consented on amalgamation or aggregation sites, from a total of 52,250 dwellings consented to in the entire urban area. This means that together development on amalgamations and aggregations accounted for 5 per cent of total residential development. Broken down, development on amalgamations account for just 1.3 per cent of the total while development on aggregations accounted for 4 per cent of the total.

Dwellings consented on amalgamations and aggregations, by the year that the consent was issued can be used to see what proportion of development occurred from the urban area total. As a proportion of development, amalgamation and aggregation sites have twice reached a high of 8.2 per cent in 2011.

Table 12: Residential dwellings consented between 2004 and May 2014, for amalgamation and aggregation sites and the rest of the urban area

Year	Dwellings consented on amalgamation and aggregation sites	Dwellings consented in rest of urban area	Total dwellings consented in the urban area	Proportion on amalgamation and aggregation sites
2004	371	10,130	10,501	3.5%
2005	249	6,214	6,463	3.9%
2006	392	5,580	5,972	6.6%
2007	294	4,175	4,469	6.6%
2008	173	3,412	3,585	4.8%
2009	185	2,802	2,987	6.2%
2010	164	3,050	3,214	5.1%
2011	272	3,029	3,301	8.2%
2012	246	3,674	3,920	6.3%
2013	257	5,175	5,432	4.7%
2014	70	2,336	2,406	2.9%
Total	**2,673**	**49,577**	**52,250**	**5.1%**

5.7 Change in number of dwellings between 2006 to 2014 on amalgamation and aggregations

This section outlines analysis that was undertaken to try and understand the quantum of change, through the net change in the number of dwellings, on amalgamations and aggregations. In order to calculate this change we need to have two 'snapshot-in-time' datasets that allow us to count the number of dwellings on each residential property in the region, and then record the differences.

Due to limitations with data used in this analysis (outlined below), users of the results should note that care needs to be taken when using them. The results are perhaps best used as an indication or an estimate of the net change in the number of dwellings, rather than as a 'concrete' answer.

5.7.1 Method

Access to dwelling count data at a property level is not easy to come by, and there are few historical examples of such datasets that can be used for analysis. Fortunately the Research and Evaluation Unit has access to data that was collected for the Capacity for Growth Study 2006, which happens to include some dwelling count data. While this data does not match up with the base year for the study (2004), it can nevertheless provide us some insight into change over time, albeit from 2006 to 2014. Recently we have been able to access and evaluate information collected and stored by council as part of the valuation and rating process; this includes dwelling counts.

The 2006 dwelling count data was sourced from valuation roll data that was held by the Auckland Regional Council and supplied to them by former councils of the region. A process was undertaken to match this data to spatial extents (parcels), which may not have always been accurate. Further analysis was undertaken as part of the Capacity for Growth Study 2006 which saw a manual cross-check done using aerial photographs to confirm the presence or absence of a dwelling on a particular site. Neither method provided accurate information. For this analysis the dwelling count from the valuation roll has been used as a base, and where there was no dwelling count available for a site in that dataset, the count from the manual assessment has been used. It is for this reason that care should be taken when using the results of this analysis.

Dwelling count data for 2014 is more readily available, and much more robust. A data extract of information stored by council on the District Valuation Roll which includes dwelling count is joined to GIS parcel data by a process developed as part of the Capacity for Growth Study 2012[7].

In order to determine the dwelling counts for individual amalgamations and aggregations a series of spatial queries were built in FME that allowed the dwelling count in 2004 and 2014 to be extracted.

[7] For more information on this process refer to the Capacity for Growth Study 2012: Methodology and Assumptions Auckland Council technical report (TR2013/0009)

It should be noted that on as there is no documentation on how the dwelling count data was assigned to parcels as part of the Capacity for Growth Study 2006. As such, the results calculated in the following sub-section should be used with caution.

5.7.2 Results

Analysis shows that between 2006 and 2014, overall there was an increase of 409 dwellings (an increase of 10 per cent) on land that had been amalgamated or aggregated (see Table 14). These numbers reflect the net change in the number of dwellings on these sites. This means that where dwellings have been removed, demolished or resited and have been replaced by the same number of dwellings the change in dwelling numbers would be zero.

Table 13: Count of dwellings (2006 and 2014) on amalgamations and aggregations

Type	Dwellings 2006	Dwellings 2014	Number change 2004 to 2014	Per cent change 2004 to 2014
Amalgamations	1,381	1,089	-292	-21%
Aggregations	2,640	3,341	701	27%
Total	**4,021**	**4,430**	**409**	**10%**

Looking at amalgamations and aggregations separately you can see that there is quite a contrast in the results. The number of dwellings fell by 292 on amalgamation sites between 2006 and 2014, or a decrease of 21 per cent. Dwellings on aggregations increased by 701; an increase of 27 per cent.

The accuracy of the dwelling count data from 2006 is unknown; as such we are not confident that the results in this section accurately reflect the changes in dwelling on these sites.

5.8 Development on amalgamations and aggregations that have occurred on publicly owned land, versus those on privately owned land

The drivers to undertake amalgamations and aggregations on publicly owned land, such as those undertaken by Housing New Zealand (HNZ) are likely to be different from those undertaken elsewhere. Redevelopment of HNZ properties are likely to be driven less by the location of adjoining properties they already own, the age and condition of any dwellings on their properties, and the most-needed location for new dwellings. It is because of these differences that it is perhaps useful to look at the proportion of amalgamations and aggregations on publicly-owned land.

5.8.1 Method

Amalgamations and aggregations that are on publicly owned land, at the time of analysis, were identified by undertaking a basic spatial query.

The publicly owned land dataset used in this analysis was created by RIMU on behalf of the Ministry of Business Innovation and Employment (MBIE) from data provided by Land Information New Zealand. A list of public entities that qualified as “publicly owned”, for which title information based on owner was extracted, was created by MBIE. A full list of these entities is included in Appendix D.

It is important to note that the publicly owned land data set represents a snapshot in time (as at October 2014), and therefore it does not take into account amalgamations and aggregations that have been undertaken and sold on public land prior to this time. It is for this reason that the analysis undertaken in this section should be only used as a high-level assessment.

5.8.2 Results

In 2014, 20 amalgamations (five per cent) and 174 aggregations (22 per cent) were on publicly owned land (see Table 14). Overall, 16 per cent of all amalgamations and aggregations were on publicly owned land.

Table 14: Number of amalgamations and aggregations that are on publicly owned land (as at 2014)

Type	Publicly owned land	Total in urban area	Publicly owned land as per cent of total
Amalgamations	20	402	5%
Aggregations	174	800	21.8%
Total	**194**	**1,202**	**16.1%**

Nearly all (93 per cent) amalgamations and aggregations identified as being on publicly owned land were on land that was shown as being owned by HNZ. Only a small number were on land with other owners, as indicated in Table 15.

Table 15: Number of amalgamations and aggregations that are on publicly owned land (as at October 2014), by owner

Public body	Amalgamations	Aggregations	Total amalgamations and aggregations	Per cent of total
Auckland Council	4	0	4	2.1%
Auckland schools	1	0	1	0.5%
Her Majesty the Queen	7	1	8	4.1%
Housing New Zealand	8	173	181	93.3%
Total	**20**	**174**	**194**	**100%**

As seen above, a significant proportion of the amalgamations and aggregations identified were on HNZ owned land. We look at HNZ in more depth in Section 5.8.4. The other 13 that were found to be on publicly owned land include the amalgamation or aggregation of parcels under two Housing for the Elderly complexes, esplanade reserves, a school and an area that is part of the Waterview Connection.

5.8.3 Dwellings consented on amalgamations and aggregations that are on publicly owned land

There were 542 dwellings consented on amalgamations and aggregations that were on publicly owned land, 30 per cent of all dwellings that were consented on amalgamations and aggregations. Amalgamations and aggregations on publicly owned land make up only 16 per cent of the total, yet have 30 per cent of residential development on them, as seen in Table 16. This has perhaps been driven by the fact that HNZ is undertaking large-scale development in a number of areas, and these developments tend to be of a higher-density.

Table 16: Residential dwellings consented on amalgamations and aggregations, by ownership type

Dwellings consented on amalgamations and aggregations that were on 'publicly owned land'	542
Total dwellings consented on amalgamations and aggregations	1,809
Per cent of dwellings consented on amalgamations and aggregations that were on 'publicly owned land', as proportion of total	30%

5.8.4 Housing New Zealand developments

Suburbs developed in the 1950s and 1960s such as Glen Innes, in which HNZ has a large number of properties, were planned with orderly streets and properties where sections were often a quarter-acre, each with a house and a garage (Pool and Du Plessis, 2012). Larger section sizes, such as quarter- and half-acre sections are often under-utilised, and as HNZ notes "a lot of old homes on quarter- and half-acre sections in Auckland, which was not sustainable given the city's housing shortage" (NZ Newswire, 2012). It is for this reason that HNZ has chosen Glen Innes as an area to concentrate efforts to redevelop some of its property portfolio, where they intend to have

156 properties redeveloped and 260 homes built (Housing New Zealand, 2014b), a net gain of 104 dwellings. In addition to this, HNZ is undertaking a number of smaller redevelopments across the Auckland region in order to add, and better configure its housing stock, replacing 200 existing homes with 600 new houses (Niall, 2014). Twenty four minor redevelopments, mainly concentrated in western Auckland, will include 80 “old state houses on large, under-utilised sections”, also noting that the number of dwellings gained per site will range from one to 23; in total 110 new dwellings will be built (Housing New Zealand, 2014a). It is for these reasons that such a large number of amalgamations and aggregations which were identified as part of this study are located on HNZ owned land.

The concentration on redevelopment projects in the former Auckland City and Waitakere City areas, as seen in Table 17, are also reflective of HNZs decision to concentrate their redevelopment efforts in these locations.

Table 17: Number of amalgamations and aggregations that are on publicly owned land, by former territorial authority area

Former territorial authority	Amalgamations	Aggregations	Total
Auckland City	7	111	118
Manukau City	2	28	30
North Shore City	8	3	11
Papakura District	0	4	4
Waitakere City	3	28	31
Total	**20**	**174**	**194**

5.8.4.1 Example of Housing New Zealand intensification redevelopment: Eastview Road

Since HNZ has been such a large contributor to residential development on amalgamations and aggregations, it is perhaps worthwhile looking at an overview of one such development.

The properties at 9-15 Eastview Road in Glen Innes is an example of where three properties have been amalgamated into a since parcel for a higher-density redevelopment, and the proposed construction of terraced houses. Figure 29 shows an aerial photograph of the three properties; each has a single stand-alone dwelling on it, they each also have a reasonably large and what appears to be unused back yards. The area of the three properties totals 2420 square metres.

Figure 29: Aerial photo (2010/2011) showing aggregation location for development at 9-15 Eastview Road. Glen Innes

In Figure 30 we can see the proposed development concept plan for the amalgamation site. Here we see that the three stand-alone houses are to be replaced by 15 terraced houses in two blocks (Cumming, 2013), as well as parking for each dwellings and green space.

Figure 30: Concept plan for proposed development on amalgamation site at 9-15 Eastview Road, Glen Innes (image sourced from Construkt Architects, 2014)

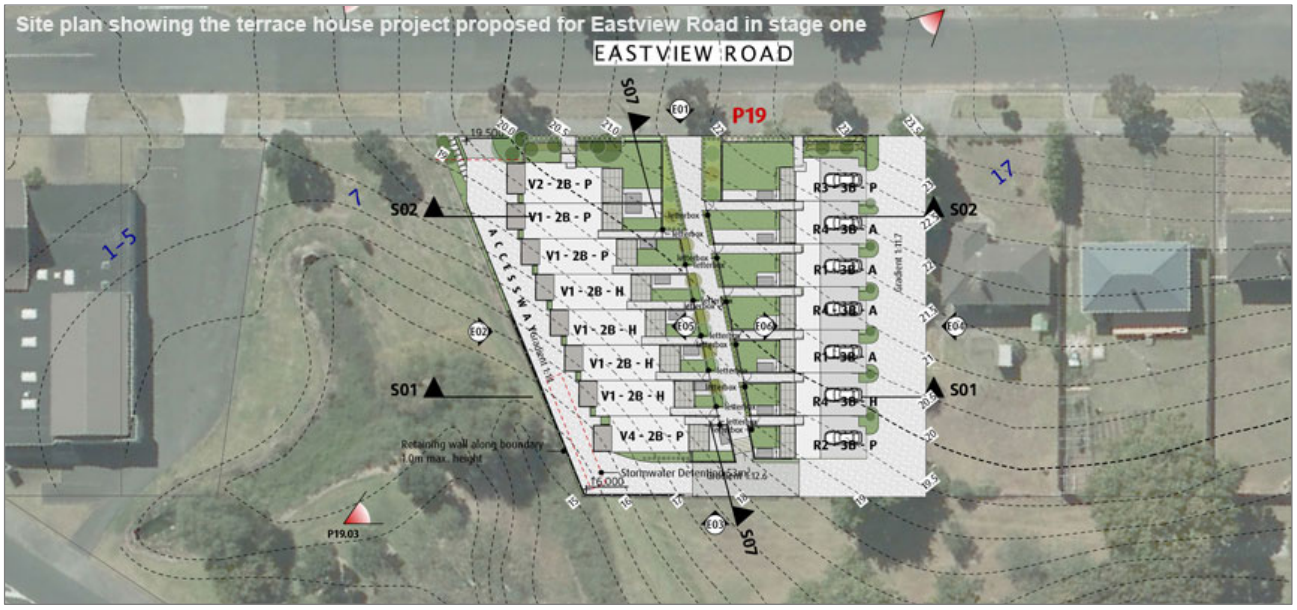


Figure 31 shows how the proposed development would look from the Eastview Road, when completed.

Figure 31: Concept design (street view) for proposed development on amalgamation site at 9-15 Eastview Road, Glen Innes (image sourced from Construkt Architects, 2014)

5.9 Location in relation to house sale prices

A likely driving factor for undertaking amalgamations or aggregations is prospective profit that can be achieved by the developer. Several sources note that much of the residential development being undertaken in Auckland in recent times is at the top-end of the market (The New Zealand Productivity Commission, 2011, 2012; Ministry of Business Innovation and Employment, 2013; Phil Twyford, 2014). With this in mind, it is interesting to explore whether there is a spatial relationship between house sale price and the location of these kinds of development. Analysis exploring how 2014 median house sales prices at a Census Area Unit level associates with the location of amalgamations and aggregations is outlined in this section.

5.9.1 Methodology

When a property is bought and sold, Auckland Council is required to be notified of the new owner and the sale price of the property (New Zealand Government, 2002). Auckland Council enters this information onto the District Valuation Roll (DVR). In order to undertake this analysis, RIMU received an extract of residential sales data from the DVR. The median house sales price was calculated for each Census Area Unit (CAU)[8] in Auckland, including the urban area, for the period from 1 January to 31 October 2014. Once the median sale price of each CAU had been calculated, they were split into four equal groups, based on their ranking from lowest to highest median sale price. Each of these four groups is known as a quartile.

[8] 2013 Census Area Units boundaries were used in this analysis.

Information about each of the quartiles is outlined in Table 18. It should be noted that the 1st quartile refers to the bottom quarter of the CAUs; these had the lowest median house sales prices. At the other end of the scale the 4th quartile refers to the top quarter of CAUs; these had the highest median sales prices.

Table 18: Census area unit median house sales price (2014) quartile ranges, median and average

Quartile	Quartile minimum sale price	Quartile maximum sale price	Quartile median sale price	Quartile average sale price
1st quartile	$0	$486,499	$391,500	$356,137
2nd quartile	$486,500	$624,999	$557,625	$559,027
3rd quartile	$625,000	$794,999	$691,000	$699,375
4th quartile	$795,000	$1,983,000	$971,000	$1,087,747

For reference the median house sale price for the period between January and October 2014 was $636,000[9].

5.9.2 Results

The majority (65 per cent) of amalgamations and aggregations identified in the study were in CAUs where the median sale price was in the top two quartiles, indicating that there is a spatial relationship between the locality of these developments and higher-sales prices. The count of amalgamations and aggregations by quartile are shown in Table 19.

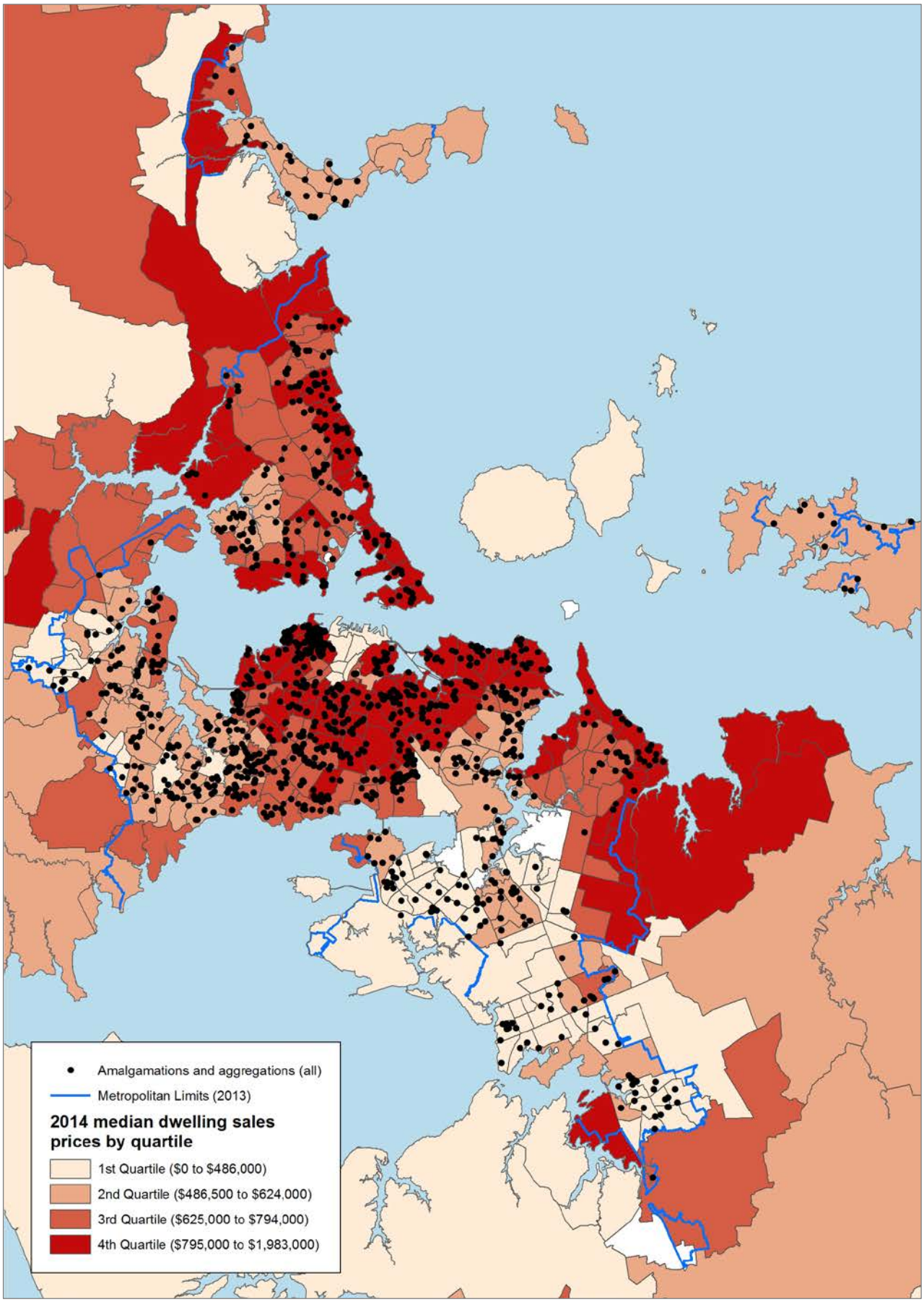
Table 19: Counts of amalgamations and aggregations by census area unit median house sales prices quartiles

Quartile	Count of amalgamations and aggregations	Per cent of total
1st quartile	117	10%
2nd quartile	303	25%
3rd quartile	296	25%
4th quartile	486	40%
Total	**1,202**	100%

The relationship is illustrated in Figure 32 which colours the CAUs by quartile, and shows the location of amalgamations and aggregations represented by black dots. There is a correlation between the darker red shaded CAUs and dots.

[9] The median house sale price specifically for the urban area of Auckland was not available; this is the median sale price for residential houses for all of Auckland for the period January to October 2014.

Figure 32: Median house sale price (quartile) (2014) by census area unit and location of amalgamations and aggregations



The drivers behind amalgamations and aggregations on publicly owned land, particularly those undertaken by HNZ, are different from those undertaken privately, as noted in Section 5.8.4. With house sale prices perhaps not playing such a large part of the decision-making process it is appropriate to look at the distribution of public and non-private amalgamations and aggregations across of the median house sales quartiles. Table 20 shows the number and proportion of amalgamations and aggregations by location on publicly owned land and non- publicly owned land, by census area unit median house sales prices quartiles. Nearly half (47 per cent) of developments on non-publicly owned land are in the fourth quartile, whereas a very small proportion (7 per cent) that are on publicly owned land are in this category.

Table 20: Count of amalgamations and aggregations by location on publicly owned land and non-publicly owned land, by census area unit median house sales prices quartiles

Quartile	Count on publicly owned land	Per cent of total	Count on non-publicly owned land	Per cent of total
1st quartile	37	19%	80	8%
2nd quartile	63	32%	240	24%
3rd quartile	81	42%	215	21%
4th quartile	14	7%	472	47%
Total	**195**	100%	**1,007**	**100%**

This is perhaps illustrated better in Figure 33, which graphs the count of amalgamations and aggregations by public and non-public ownership and by census area unit median house sales prices quartiles. The map in Figure 34 shows the location of amalgamations and aggregations for non-publicly owned land only, against the census area unit median house sales prices quartiles.

Figure 33: Count of amalgamations and aggregations by location on publicly owned land and non-publicly owned land, by census area unit median house sales prices quartiles

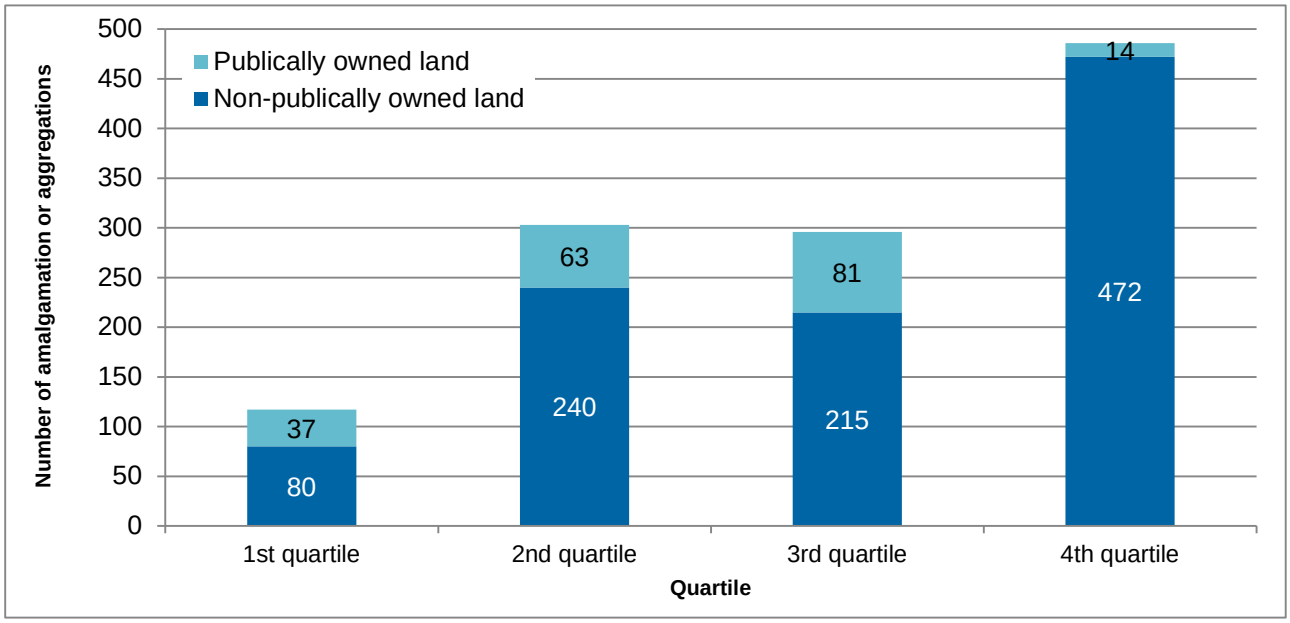
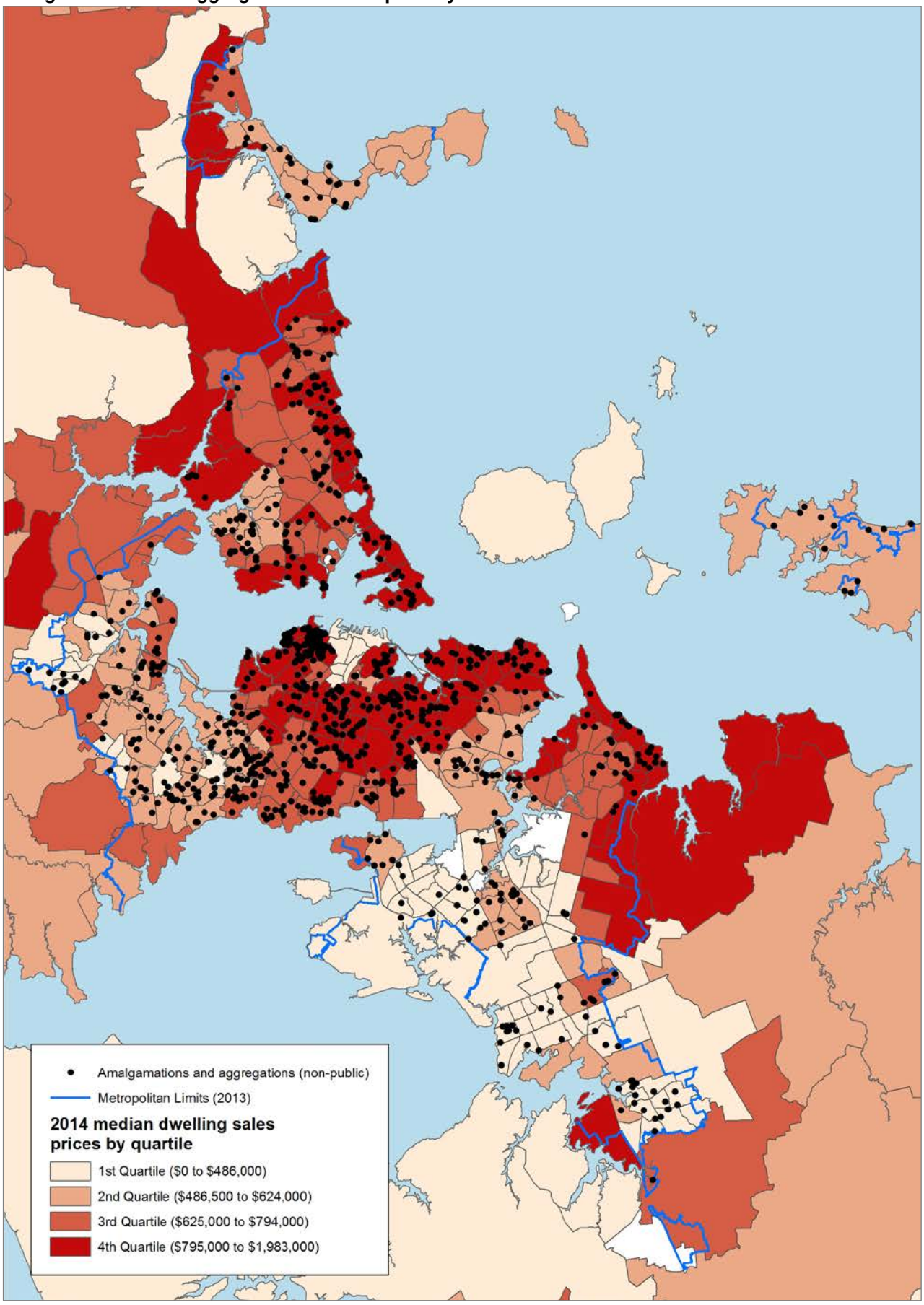


Figure 34: Median house sale price (quartile) (2014) by census area unit and location of amalgamations and aggregations for non-publicly owned land

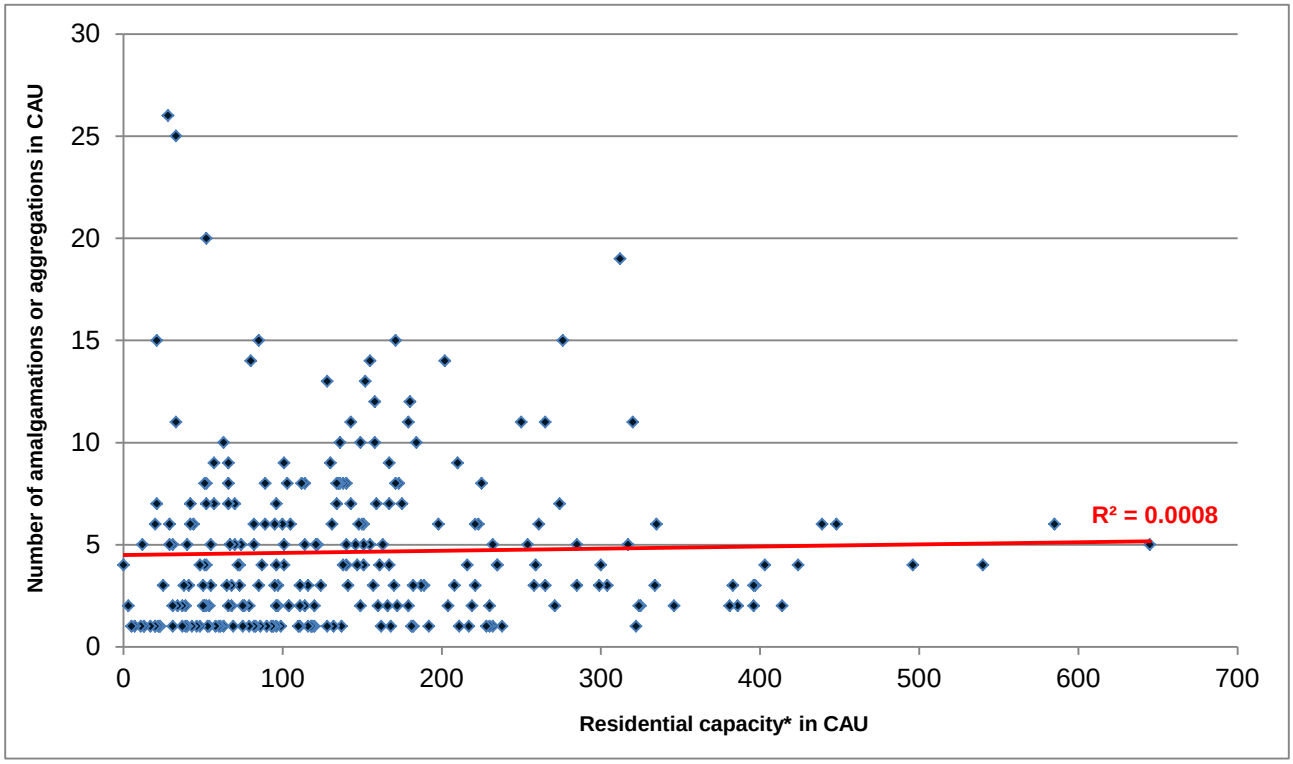


5.10 Location of amalgamations and aggregations compared to the location of identified residential capacity

Engaging in residential development through amalgamations and aggregations are likely to require more resources and effort than developing land that is already vacant, or a single parcel that has subdivision potential without the need for further land. It is for this reason that we thought that it would be good to explore whether there was a correlation between the amount of residential capacity in a location, and the number of amalgamations and aggregations. The premise being that if there was a low amount of capacity for development, and the location was popular, more amalgamations and aggregations may take place in this location.

Residential capacity[10] identified as part of the Capacity for Growth Study 2012 (Fredrickson and Balderston, 2013b, 2013a) was summed to the CAU 2013 geography, and graphed against the numbers of amalgamations and aggregations identified within each CAU, this is shown in Figure 35. What this shows is that there is no spatial relationship between the amount of capacity in a location and the number of amalgamations and aggregations; this shows that these took place in locations even where there were other development options available to developers.

Figure 35: Residential capacity versus count of amalgamations and aggregations by census area unit



[10] Residential capacity types used in this analysis include 1) vacant, 2) vacant potential, and 3) infill.

5.11 Higher density developments on amalgamations

During the manual checking of amalgamations (refer section 4.2.2), we tagged those that were identified as having had 'higher density' development take place on them subsequent to amalgamation. With the PAUP provisions expecting to yield higher densities from amalgamated properties, it was important to gauge the levels of this sort of development seen over the study period.

Higher density development for the purposes of this study was defined as those amalgamations having:

- Four or more dwellings (as measured by dwellings count data from council's DVR)
- On a single amalgamated parcel, and
- Appeared to be of the 'attached' dwelling typology i.e. terraced house, flats/apartments (from visual check of aerial photos).

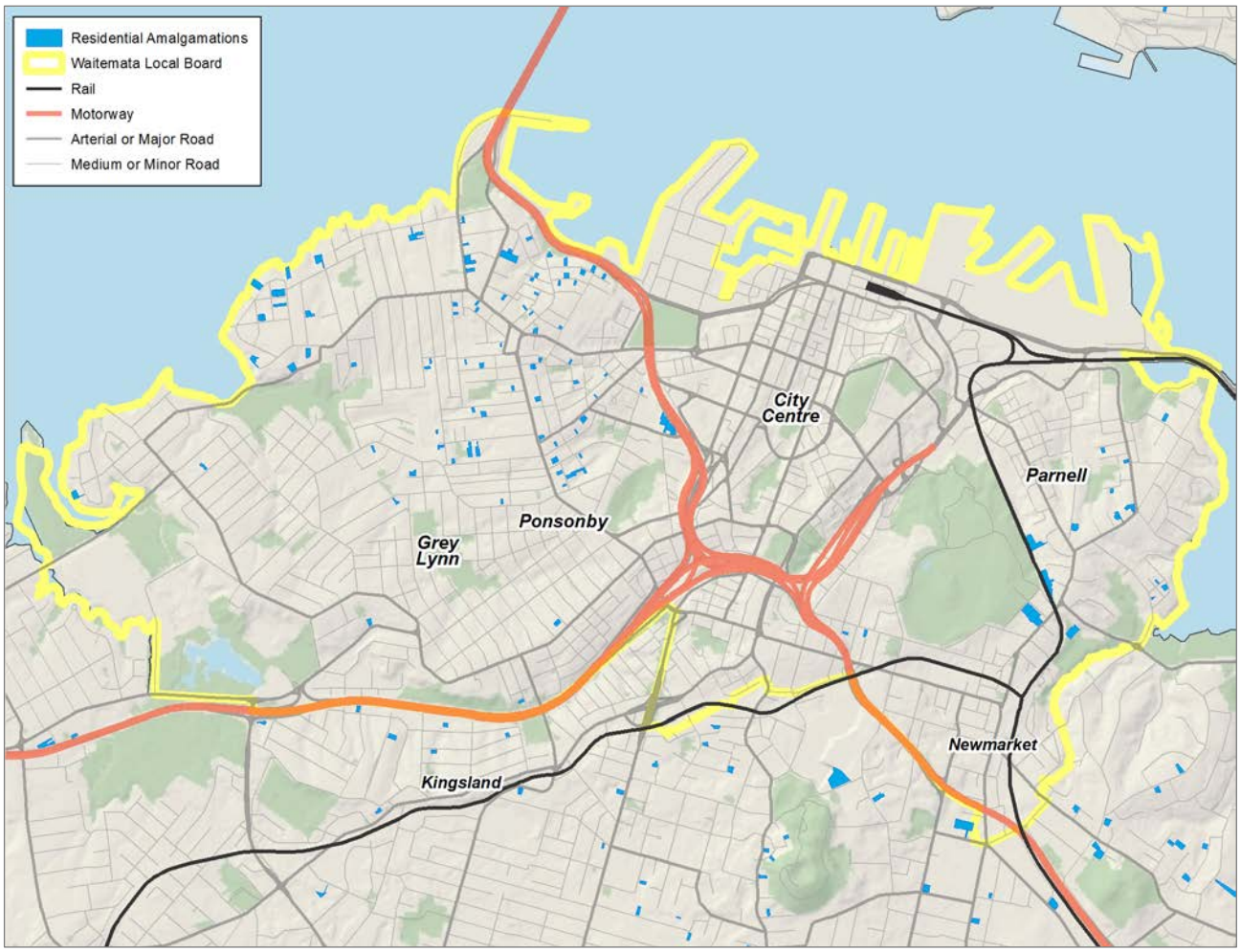
From the 402 amalgamations measured by the study, 19 were identified as having apartments or terraced housing developed on the sites post amalgamation; this is five per cent of amalgamations (2004-2014). From the 19 identified 14 (74 per cent) were in the former Auckland City Council area.

5.12 A closer look: Two local board examples

5.12.1 Amalgamations in the Waitematā Local Board

Looking at the Waitematā Local Board in more detail, you can see from Figure 36 that there is a concentration of amalgamations within the western area in the suburbs of Ponsonby, St Marys Bay, and Herne Bay, and to a lesser extent Grey Lynn. Some amalgamations are also seen, but to a lesser degree, in Parnell to the east of the local board area.

Figure 36: Location of amalgamations within the Waitematā Local Board

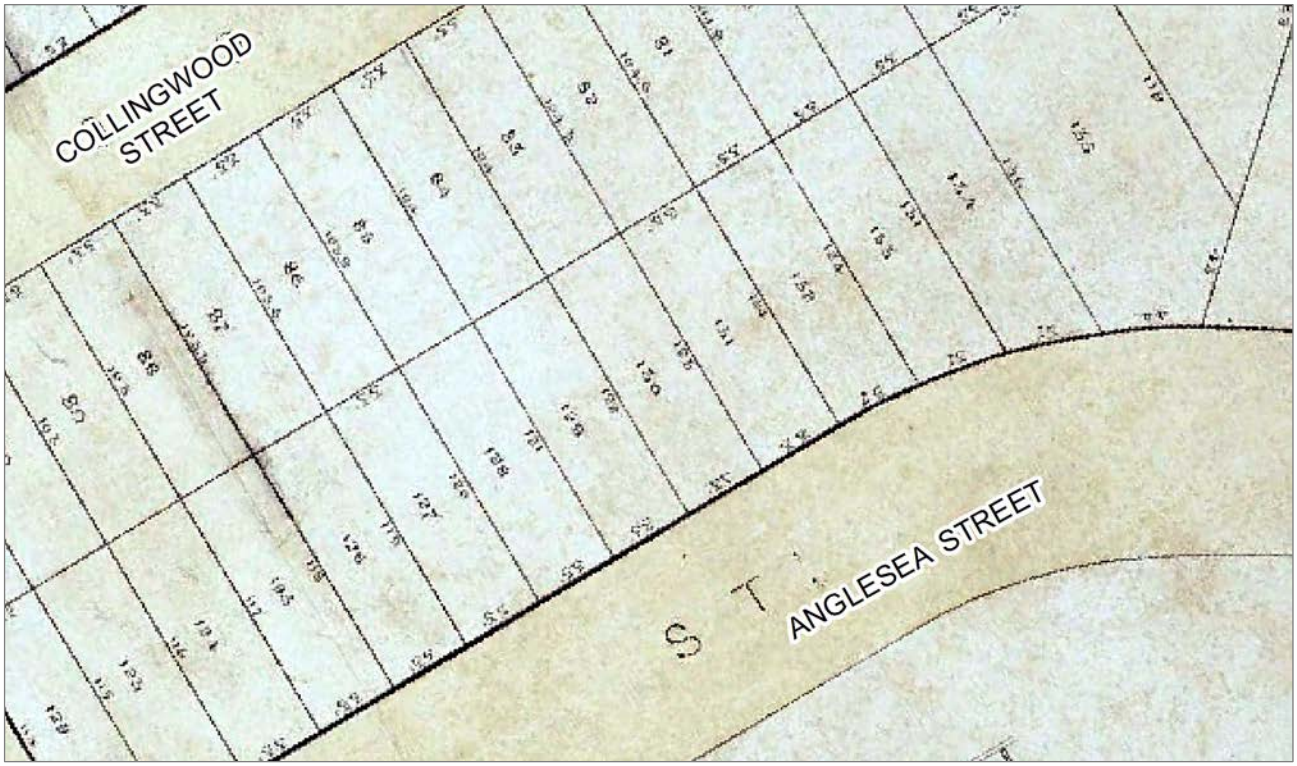


Many of these amalgamations are in what can be considered desirable inner-isthmus suburbs, often characterised by an older housing stock – many of which are on smaller sections compared to newer developments. The area's proximity to the central business district, transport links, and other amenities, is also likely to play a part in its popularity (Auckland Council, 2012; Vaughan, 2012; Hamilton-Chadwick, 2014; Wilson, 2014; Nunns, 2015).

Using computer mapping, including aerial photography, and archival maps of the suburb we can start to see why amalgamations may be more common in this local board area.

In an example shown in Figure 38, which focuses on Anglesea Street, Ponsonby, the original survey plan, shows that most of the residential lots on the street had a 33-foot width, and ranged in depth from 100 feet to 124 feet as the street moved further down the hill away from Ponsonby Road.

Figure 37: Portion of original survey plan, showing parcel boundaries for Anglesea Street, Ponsonby (image sourced from Sir George Grey Special Collections, Auckland Libraries, NZ Map 4187: Unknown, 1860s)



The 33-foot wide lots may have been suitable for small houses, such as workers' cottages; tiny houses built for the working classes on small plots in the late 19th and early 20th centuries. Examples of these small cottages can still be seen today; Figure 38 shows workers' dwellings on Summer Street in Ponsonby, Auckland.

Figure 38: Example of workers cottages in Summer Street, Ponsonby (image sourced from Liz, 2014)

Despite the subdivision layout catering for these small houses, it appears that those that purchased the sections wanted larger houses than these tiny lots would allow. Figure 39 shows an aerial photograph from 2010 with the current parcel boundaries overlaid. Here we can see that a number of the houses lay across what would have been the original lot boundaries. To accommodate these houses, many of the parcels have been subdivided. The houses on Anglesea Street were all built between 1880 and 1909, meaning that the sections were too small for dwellings from when they were created.

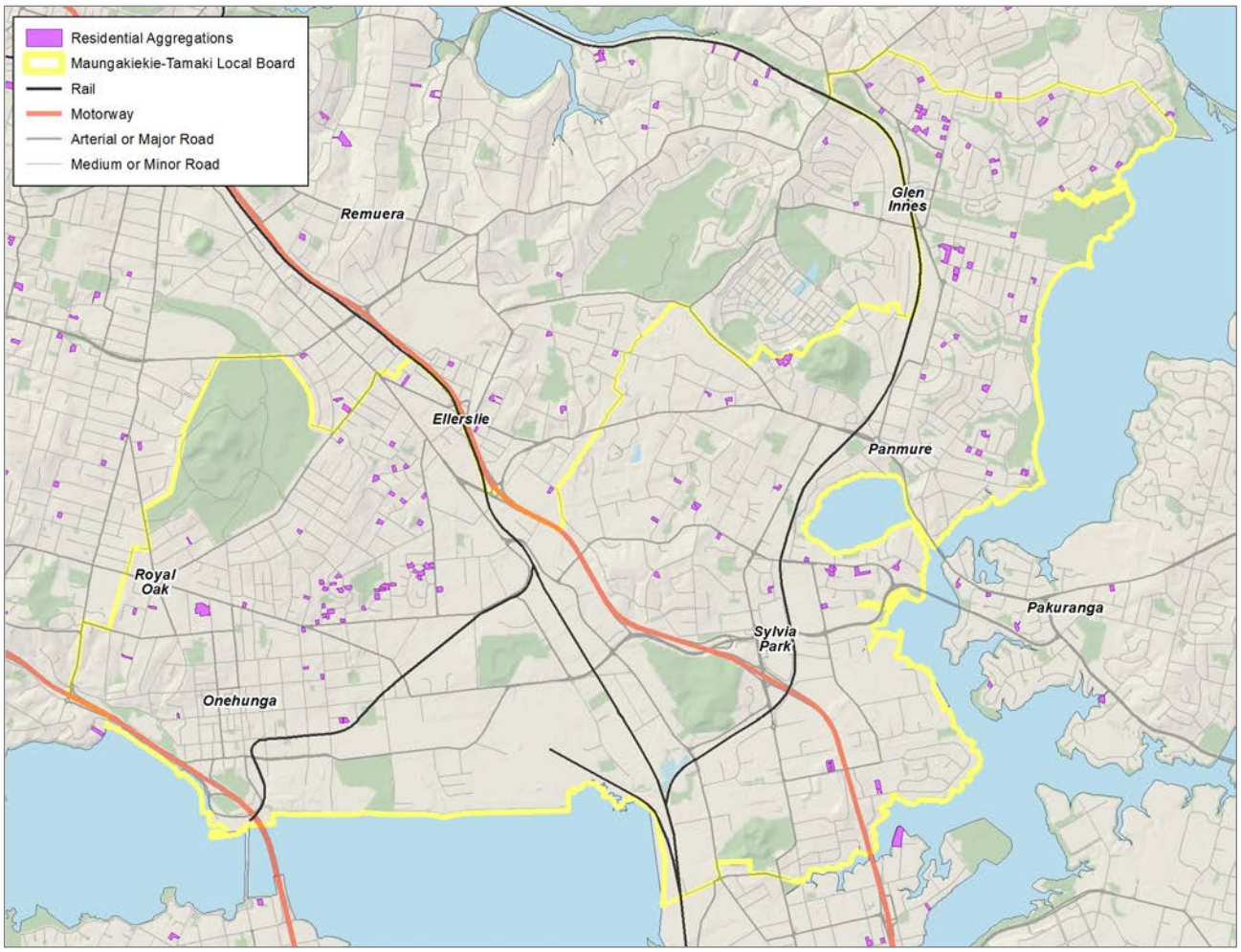
In many older suburbs it appears that people have been amalgamating parcels together to “tidy things up”. This would account for the large number of amalgamations that have occurred in the Waitematā Local Board in the last decade.

Figure 39: Examples of 'strip' parcels created on Anglesea Street, Ponsonby

5.12.2 Aggregations in the Maungakiekie-Tāmaki Local Board

Maungakiekie-Tāmaki Local Board contains 101, or six per cent, of the total aggregations in the urban area over the study period – the highest number seen in any of the local boards. Figure 40 shows the location of aggregations within the Maungakiekie-Tāmaki Local Board area.

Figure 40: Location of aggregations within the Maungakiekie-Tāmaki Local Board



Why have aggregations been so popular in this area? Location on the central isthmus is one reason, but the other driver it seems is Housing New Zealand and their extensive redevelopment plans in the Glen Innes area. HNZ are a major driver of aggregations in this local board area, accounting for over half (55 per cent); HNZ are also a major driver of amalgamations – this is shown in Table 21.

Table 21: Number of amalgamations and aggregations identified as being on land owned by Housing New Zealand

Year	Total	Housing New Zealand	Per cent of total
Amalgamations	13	3	23.1%
Aggregations	101	55	54.5%
Total	**114**	**58**	**50.9%**

6.0 Phase two: Interviews with industry participants

6.1 Interviews methodology

6.1.1 Introduction

Our intention was to interview at least 20 landowners who have undertaken aggregation and amalgamation in the past. Due to extreme difficulties encountered in recruiting participants, however, this aspect of the project was ultimately unsuccessful. Despite trying three different recruitment strategies, and despite a generous incentive offered for participation ($100 voucher), we ultimately secured only one interviewee; while the comments from our sole interviewee are briefly summarised below, they should be regarded with circumspection in light of this. The planned qualitative component, including the various recruitment strategies employed, is outlined below in the interests of providing a complete record of the project.

6.1.2 Research design

We hoped to speak with a range of participants who had undertaken each sort of development, and a mixture of those who had proceeded to develop housing on the site(s) and those who had on-sold the aggregated or amalgamated parcels without further development. Semi-structured interviews were planned to elicit information regarding the nature of the development(s) they engaged in, the process by which they undertook the development and any barriers the encountered. The interviews were also designed to explore landowners' motivations for undertaking aggregation or amalgamation and their perceptions about the factors that make these development types feasible or attractive for developers, including locational and procedural aspects. The interview schedule is included as Appendix F.

Three participant recruitment strategies were tried. These were the targeting of individuals using land information data, snowballing, and sourcing participants through real estate agents.

6.1.2.1 Participant recruitment strategy one: using land information data

A 'targeted' sample of 40 sites was created from all of the amalgamations and aggregations identified through our spatial analysis. This was based on the geographic location, focussing on distribution of sample based on district plan area (legacy territorial authority area), matching proportions measured with sample sub-areas.

Site selections n=40

- Aggregations: n=24
- Amalgamations: n=16

Proportions in each territorial authority area) (as shown in Table 4) are based on the proportions observed in the analysis.

Table 22: Count and proportions of amalgamations and aggregations in legacy territorial authorities

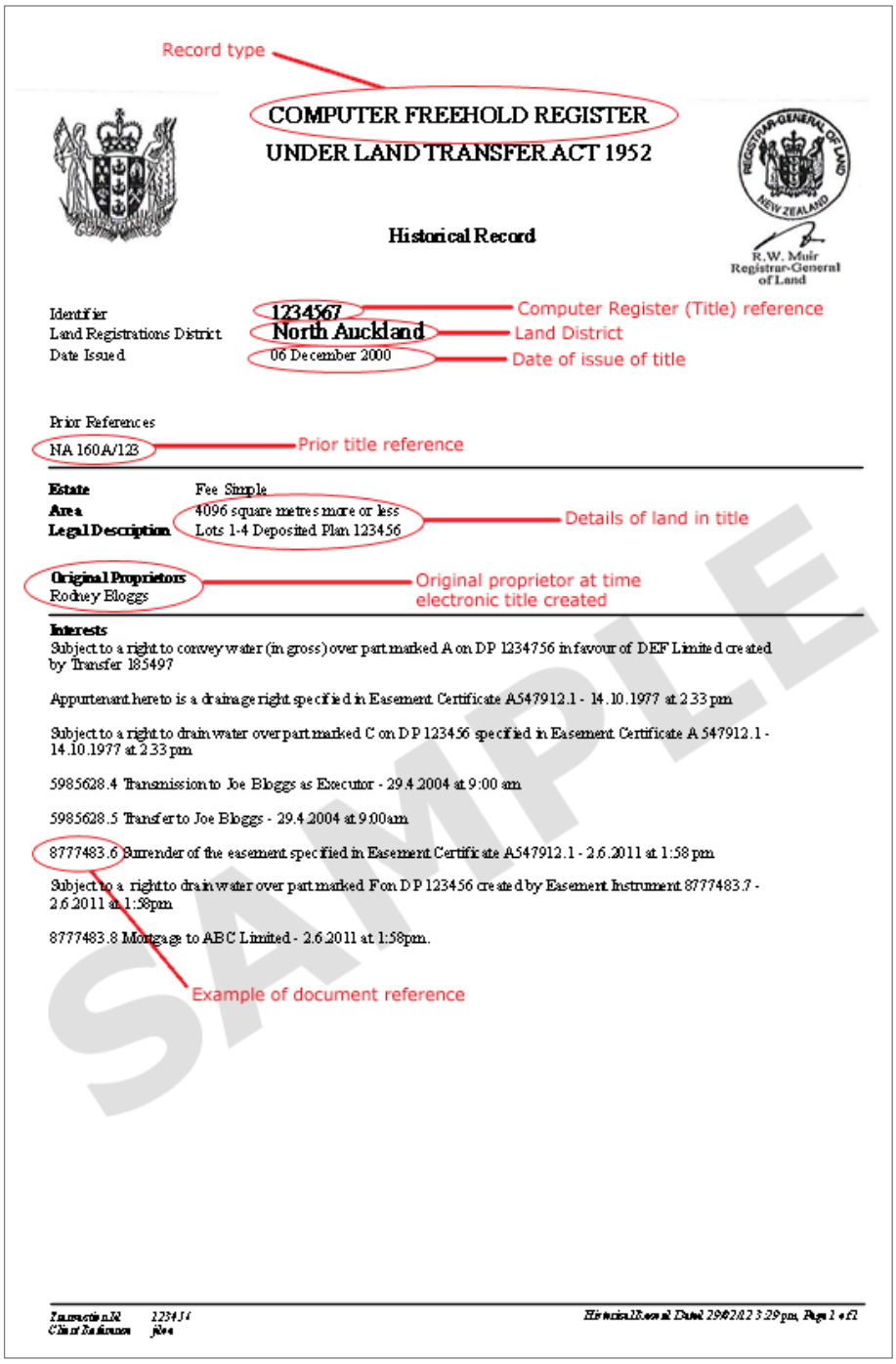
Territorial Authority	Count of amalgamations	Per cent of total	Count of aggregations	Per cent of total
Auckland City	11	69%	12	50%
Manukau City	2	13%	4	17%
North Shore City	2	13%	4	17%
Waitakere City	1	6%	4	17%

Housing New Zealand properties and other central or local government-owned sites identified as part of this study were excluded.

When manual checking for the identification of amalgamations was completed (refer to section 4.3.2), all of the amalgamations were reviewed and those which appeared to have high-density development on the sites (as seen from the aerial photography) were tagged. The reason they were identified and tagged was that it was this kind of development that some believe will be encouraged by the *Proposed Auckland Unitary Plan*; by tagging them we could count how many had occurred and also to focus the target sample. After these higher density development sites had been selected, the remaining sites required to make up the sample for each type (amalgamation or aggregation) within each TA area were selected at random.

The 40 amalgamations and aggregations selected as above were then matched spatially with a title area dataset sourced from LINZ. The Computer Register (Certificate of Title) – Historic for each of the 40 properties in the sample was used to identify first owner of the newly created title. Our assumption was that first owner of the new title would be the person who owned the land at the time of amalgamation or aggregation, and, in all likelihood the person who undertook this development. An example of CT (Figure 41) shows the field included on the CT called “original proprietor”.

Figure 41: Sample of Computer Register (Certificate of Title) – Historic (image sourced from Land Information New Zealand, 2015)



Forty CTs were purchased online from LINZ, and supplied to us by email. From the CTs a list of original proprietors was made, after which postal addresses were required. This information was sought through the following process:

- Where an original proprietor was a limited liability company, the companies register was used to find the postal address of the entity
    - Where companies had been struck-off, this was noted and letters were not sent

- Where the original proprietor was an individual or a group of individuals, the White Pages were used
    - Only where it was clear that one of the original proprietors could be matched to a name in the White Pages was it included as an address in the list

From this first cut, 19 invitations to participate in the study were mailed out on 15 April 2015. For each potential participant, the mail out included:

- Cover letter/invitation to participate in the study
- Information sheet on the project
- Consent form

Using publicly available ratepayer information a further five postal addresses were identified, and letters were sent to these potential participants on 22 April 2015. No responses were received from either mail out. Follow-up phone calls were made in cases where a phone number was publicly available. Those contacted expressed no wish to participate in our interviews, even when offered the inducement.

6.1.2.2 Participant recruitment strategy two: snowballing

Following the failure of the first recruitment method, two alternative recruitment methods were tried simultaneously. One of these was snowballing, where research team members used their professional and personal networks to seek out potential interviewees. While this method yielded our one interviewee, efforts to expand our sample through further snowballing proved fruitless.

6.1.2.3 Participant recruitment strategy three: through real estate agents

Recent real estate advertising supplements were scanned for adjacent properties being marketed together. A total of 16 real estate agents who had advertised eligible properties were identified through this method. These agents were contacted, first by email, followed up by phone; the project was explained and the characteristics of participants outlined. We enquired as to whether they had contacts (either vendors or prospective buyers) who might consent to be interviewed, and whether they would (with permission) supply us with contact details for those individuals. This last ditch effort proved unsuccessful.

6.1.3 Data analysis

The sole interview was transcribed for thematic analysis. The original plan for this phase, which included collaborative development of the coding frame and subsequent analysis in Nvivo, proved unnecessary in light of the failure to secure adequate participation. The single transcript was instead read to identify themes and manually coded.

6.2 Results of interviews

As only a single interview was completed, the findings from this part of the project cannot be considered as in any way robust or representative. However, in order to honour the time our sole participant invested in the project we consider it appropriate to briefly report on some of the observations made.

The participant, a property developer, stated that they had undertaken amalgamation or aggregation approximately 15 times over the previous 20 years. The geographical distribution of these developments was wide: Waitakere and Papakura were the only legacy TAs in Auckland identified where they had not amalgamated or aggregated sites. The participant had also carried out this type of development outside the Auckland region, notably in Christchurch as part of post-quake redevelopment. This resonates with the discussion in the literature regarding land assembly and agglomeration following large-scale destruction through war or natural disasters (Godfrey, 1997; McDonald, 2004; Schencking, 2008).

In relation to the motivation for this kind of development, the participant carried out these activities in order to facilitate housing development as a commercial activity. The participant noted that both the size and shape of the resultant parcel were factors that made agglomerating parcels attractive; a larger size provides for a "more efficient scale of development" and altering the shape can also enhance efficiency in this regard. Because the development potential is increased through the improved efficiency of the parcel, our respondent considered that higher-value areas were well-suited to amalgamation or aggregation. Typically development on these sites would be at the upper end of what is allowable, as, the respondent said, "you're not going to under-cook it" when the objective is a return on investment

In terms of the acquisition of properties for amalgamation, the participant described their process as one where an initial site is under contract for purchase and negotiations begin with the owners of adjacent parcels. The tendency for the owners of the neighbouring sites to demand a premium when they understand the nature of the intended development was noted as one of the biggest difficulties attendant on amalgamation. This issue led to a specific response from the participant in relation to their practice: leaving the contract on the first site conditional upon the ability to secure the others:

> "Now if the neighbour feels that you must get their site then the price goes up whereas if we bought the site conditionally and then we started talking to the extra parties and say 'hey, look we'd like to buy your site as well'. We always like to … say 'hey, well we are only conditional and if all this comes off it will be great but if it doesn't then yeah we will just go somewhere else.'"

The participant said that often the parcels were purchased from different owners but still happened contemporaneously; it was more unusual for the properties to be acquired over a period of time. Quite specific circumstances led to the piecemeal acquisition of land over time:

> "…sometimes we might be doing some stuff and you get approached by a neighbour and then there's another time where we were doing some development work and the property

two along come up and so we bought that conditionally and then started negotiating with the one next door but he didn't know that we had that one as well."

The participant did not report council-imposed barriers to amalgamation, noting "I've always found the various councils all quite good. The council can see the benefit in it, you know, so the council has always been pretty good." The participant did consider however that the density rules in the Mixed Housing Zone in the PAUP posed a potential barrier to amalgamation by dramatically increasing density.

7.0 Discussion

From the results of this study we can conclude that historic levels of amalgamation and aggregation have been limited, with a total of 1202, an average of 116 per year, between 2004 and 2014. Many of the amalgamations and aggregations have produced stand-alone dwellings on small parcels, rather than higher-density developments. Increased density though 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 and aggregation process who were willing to be interviewed for this project proved difficult. It appears that currently only a small number of participants actively amalgamate or aggregate 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 or aggregating parcels.

Our sole interviewee indicated that often developers build houses that fit with the existing housing stock - which are usually stand-alone dwellings. This is despite that 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 per cent) 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 5700 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 residential development community is slowly catching on.

Spatial analysis and the interview show that certain locations are favoured by those undertaking amalgamations; central suburbs with their strong amenity, and high sales prices (Barfoot & Thompson, 2015) are preferred. Zoning rules, such as in Auckland City Council Residential 6a and Manukau City Main Residential zones, 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 residential zones in the PAUP 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. 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 the suburb of Epping in the Hornsby Shire of Northern Sydney, Australia, where seven neighbours joined forces to negotiate the sale of their adjoining properties to a development company, who intend to undertake a large-scale redevelopment project after combining the properties (Hutchinson, 2014; Bloomberg, 2015). Perhaps we will see more of this kind of activity in Auckland in coming years if demand for housing remains strong.

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 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 per cent 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 and aggregations 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 would be required to facilitate this.

Auckland Council's Pānuku Development Auckland (PDA) is expected to have an active role in redevelopment, 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 the ability to effect large scale changes to the existing cadastral pattern, through amalgamation, is yet to be fully understood.

Since this research was undertaken, Auckland Council's position on the proposed provisions allowing higher-density residential developments on sites 1200 square metres or larger, with at least 20 metres of road frontage in the Terraced Housing and Apartments, Mixed Housing Urban, and Mixed Housing Suburban zones has changed. Through mediation with other submitters as part of the participatory planning process council now proposes that higher-density developments be allowed on properties 1000 square metres in size or larger, and have removed of 20 metre minimum road frontage rule. While these amended rules potentially enable greater amounts of higher-density development across urban Auckland, this may mean that the incentive to amalgamate properties has been reduced.

Through initiating this project we challenged views and assumptions on residential amalgamation. The methods developed as part of this project will allow the repetition of the study's analysis at any point in the future. This can be can be used to assess whether the rules that are made operative have indeed had an effect, and also be used to see what the level of that effect has been.

8.0 Conclusion

There is an expectation that amalgamation will occur and bring about increased dwelling density under the proposed planning provisions of the PAUP. 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. In light of these findings, 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.

9.0 Glossary

Aggregation	Where two more parcels/titles are assembled under single ownership in order to create a subdivision across these properties (at a higher density), creating at least one more parcel/title than the original number.
Amalgamation	More correctly the ‘amalgamation of allotments’ (New Zealand Government, 1991), is the process of combining two or more adjacent allotments into a single allotment.
Cadastre	The system used to record and locate boundaries of land and is the formal term for the systems and processes which record property boundaries
Certificate of Title (CT)	A certificate of title records the legal owners of land and all dealings with the land, like transfers of ownership and mortgages, leases etc., registered under the Land Transfer Act 1952 (or the Unit Titles Act 2010). All certificates of title were converted into ‘computer registers’ between 1999 and 2002 (Landonline titles conversion), although the terms ‘certificate of title’ and ‘title’ are still commonly used. These may also be referred to as ‘documents’ or ‘instruments’. (Land Information New Zealand, 2013)
Deposited plan	Sometimes also known as a ‘Title Plan’, these are plans recording land transfer subdivisions that have been deposited by the Registrar General of Lands; This could be a simple plan of the property's boundaries, area and dimensions, a detailed survey plan or a combination of both. Plans are identified by a number and a DP prefix such as ‘DP 12345’. Most modern land transfers are identified by their position on a specific deposited plan, e.g. Lot 123 DP 4567. (Land Information New Zealand, 2013)
Parcel	A cadastral polygon with a legal description (can also be known as a property, section or lot). Can also be called a ‘lot’.
Property	Generally refers to a block of land owned by an individual or business as set out in a Certificate or Certificates of Title. Can also be known as a site, section, lot or parcel.
Title	The land contained on a registered Certificate of Title. A title may contain one or more parcels.

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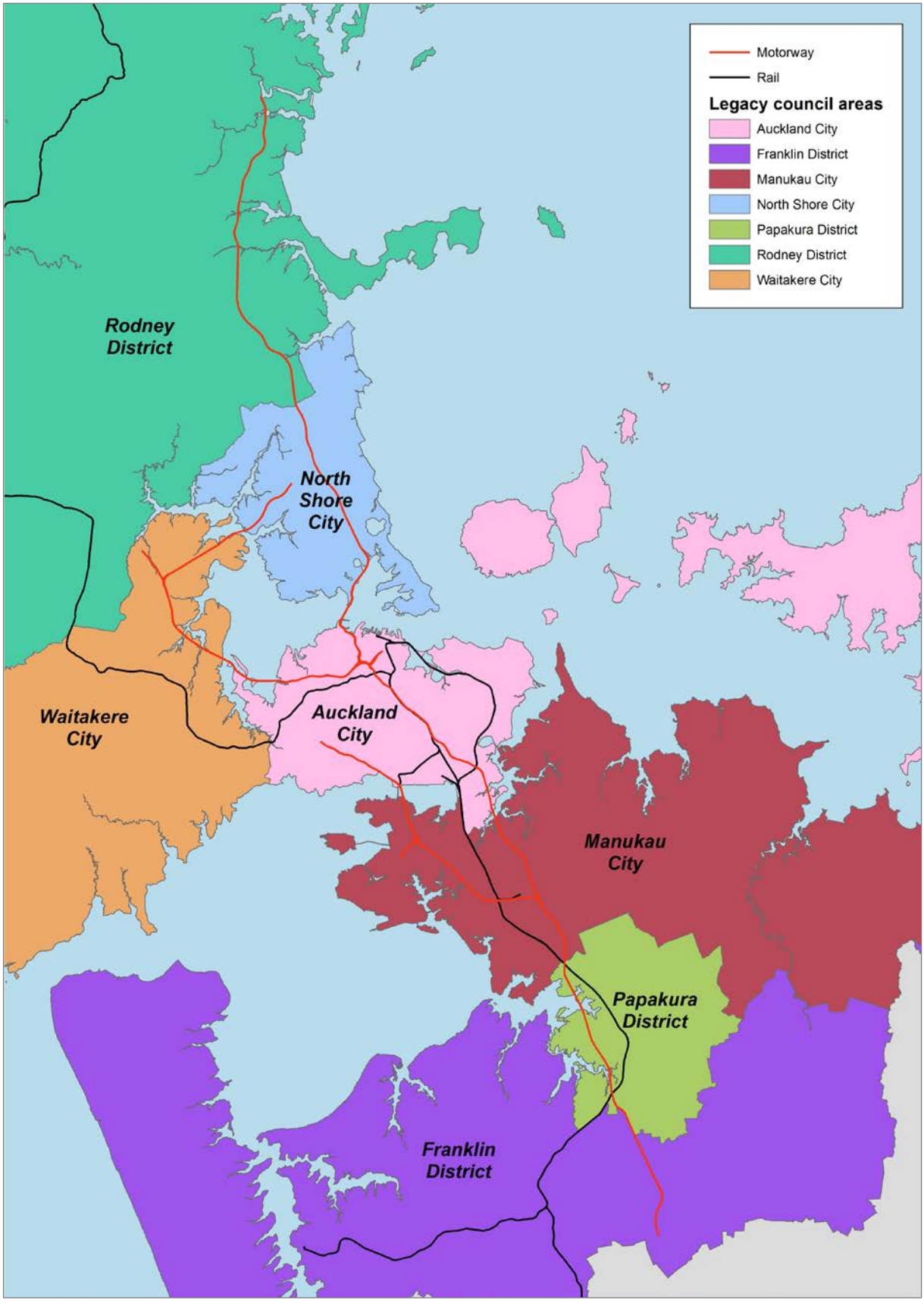
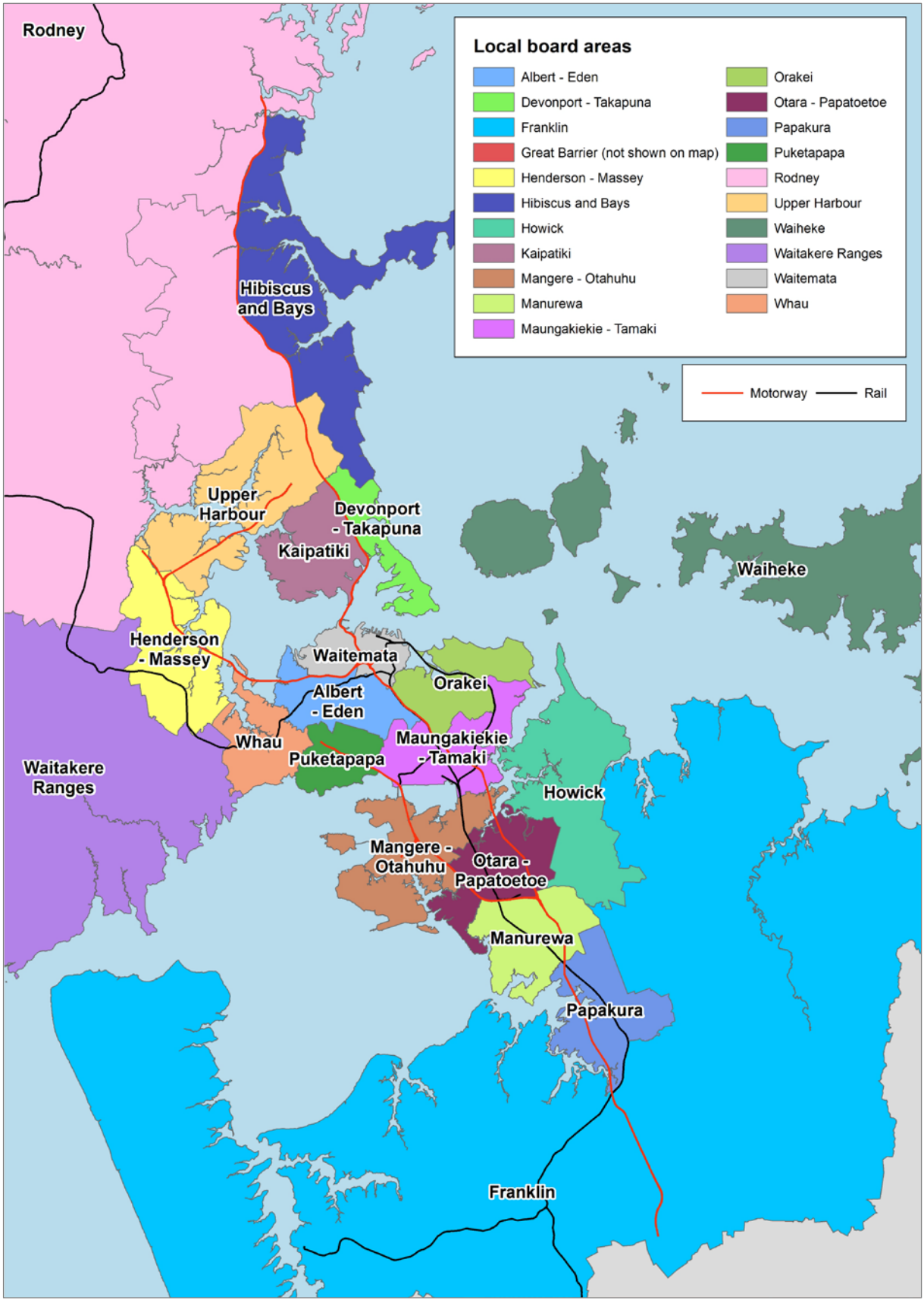
Appendix A Map of legacy territorial authority boundaries

Map of Auckland's legacy territorial authorities

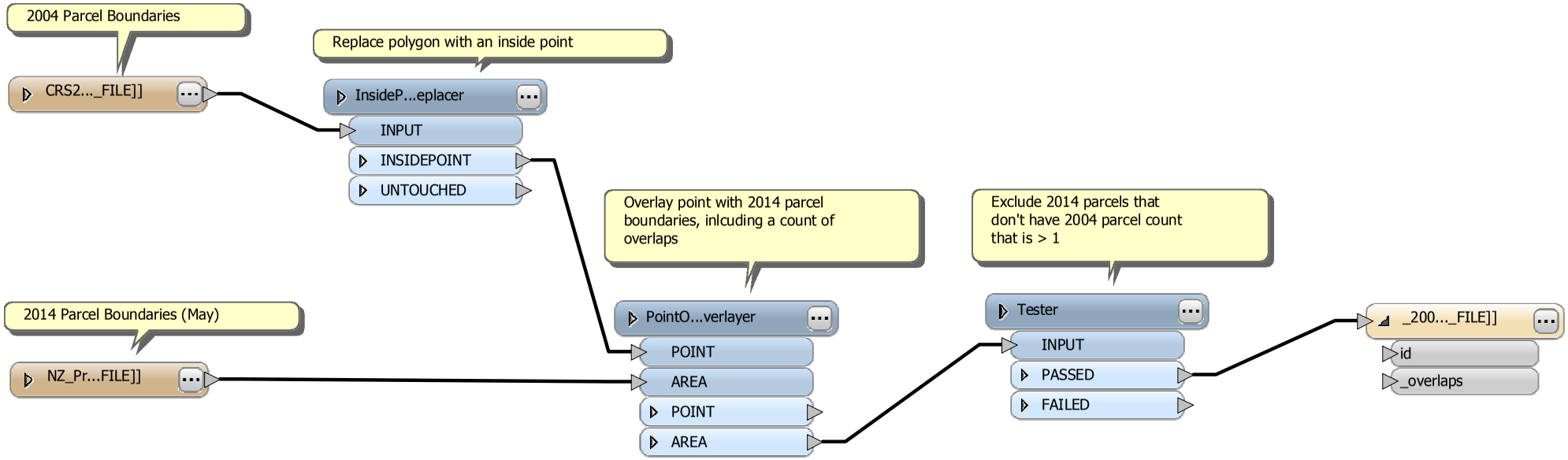


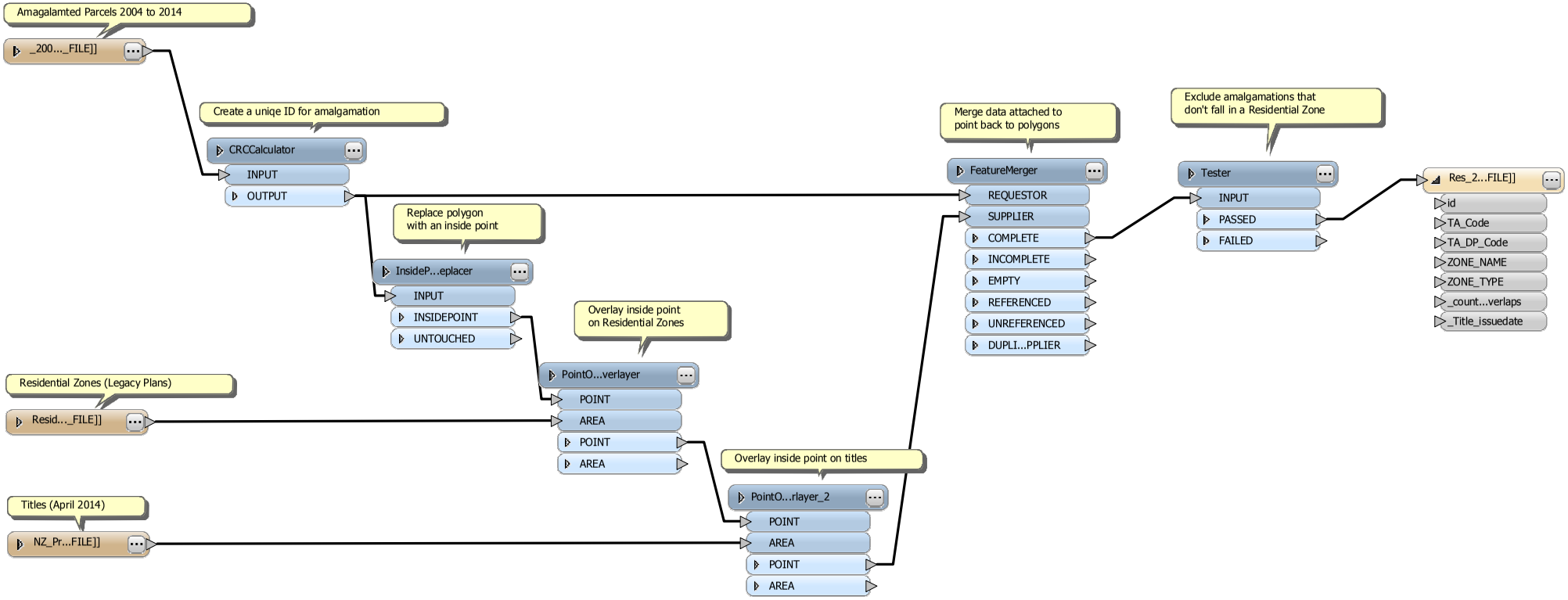
Appendix B Map of local board boundaries

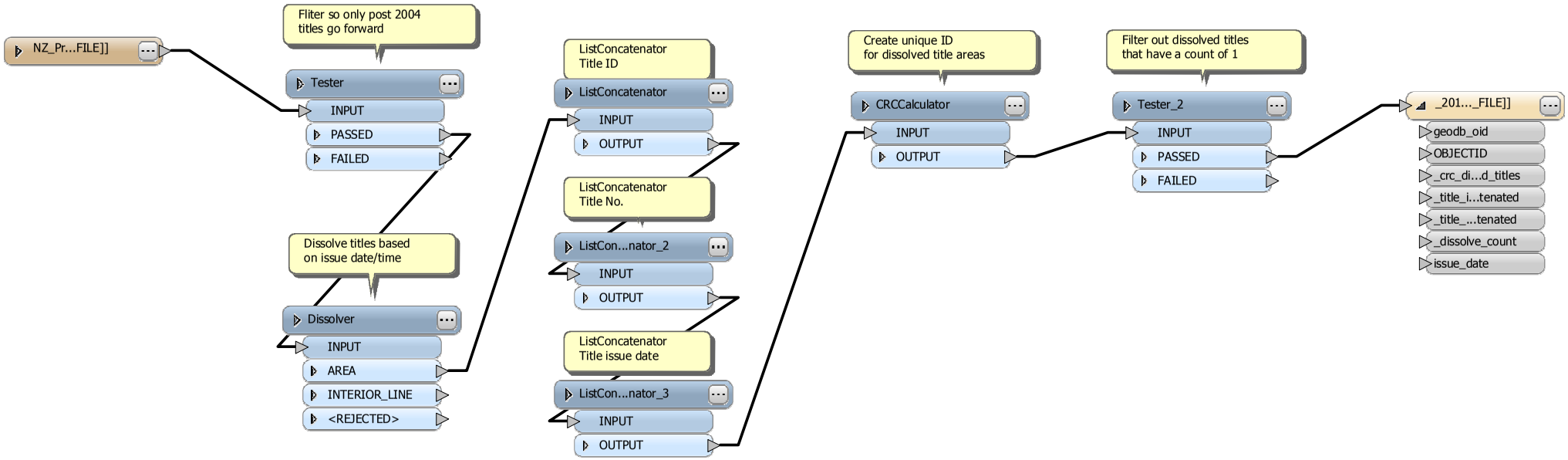
Map of Auckland's local board areas

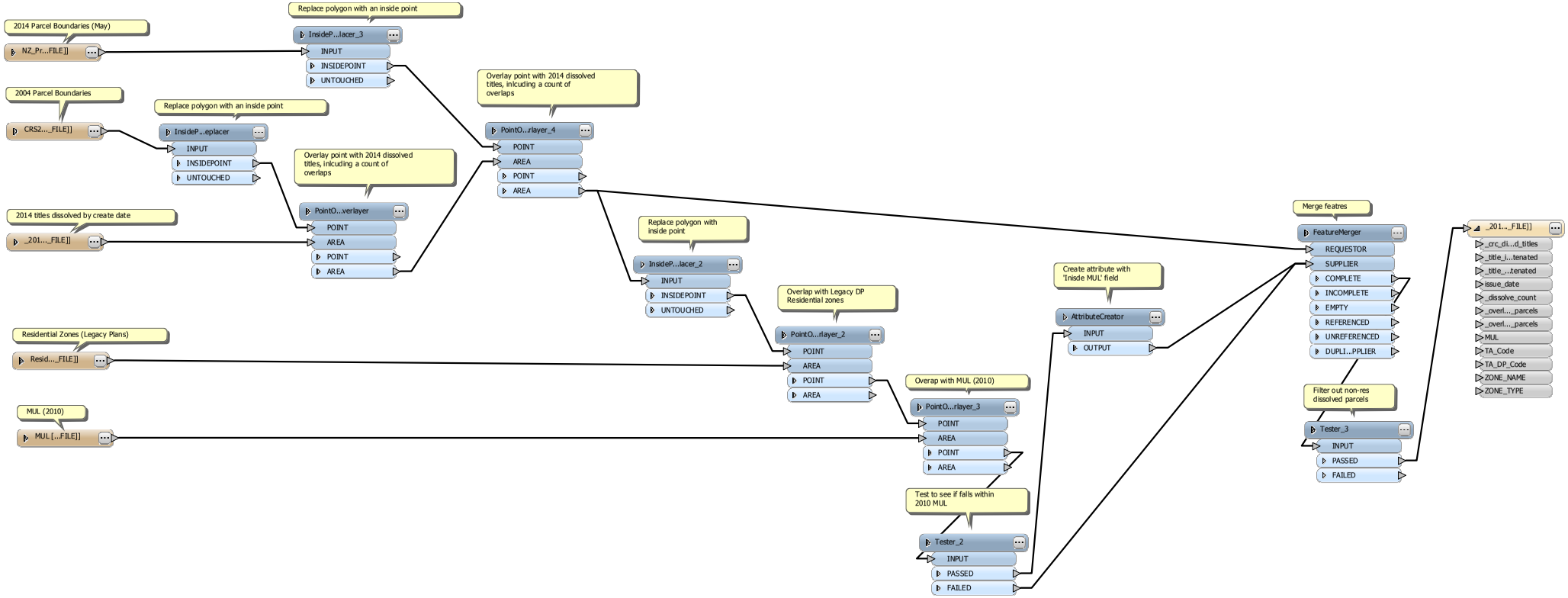


Appendix C FME workbench schematics for phase 1 analysis


2004 Parcel Boundaries
CRS2..._FILE]]
Replace polygon with an inside point
InsideP...eplacer
INPUT
INSIDEPOINT
UNTOUCHED
Overlay point with 2014 parcel boundaries, inlcuding a count of overlaps
PointO...verlayer
POINT
AREA
POINT
AREA
2014 Parcel Boundaries (May)
NZ_Pr...FILE]]
Exclude 2014 parcels that don't have 2004 parcel count that is > 1
Tester
INPUT
PASSED
FAILED
_200..._FILE]]
id
_overlaps


Amagalamted Parcels 2004 to 2014
_200..._FILE]]
Create a uniqe ID for amalgamation
CRCCalculator
INPUT
OUTPUT
Replace polygon with an inside point
InsideP...eplacer
INPUT
INSIDEPOINT
UNTOUCHED
Overlay inside point on Residential Zones
PointO...verlayer
POINT
AREA
POINT
AREA
Residential Zones (Legacy Plans)
Resid..._FILE]]
Titles (April 2014)
NZ_Pr...FILE]]
Overlay inside point on titles
PointO...rlayer_2
POINT
AREA
POINT
AREA
Merge data attached to point back to polygons
FeatureMerger
REQUESTOR
SUPPLIER
COMPLETE
INCOMPLETE
EMPTY
REFERENCED
UNREFERENCED
DUPLI...PPLIER
Exclude amalgamations that don't fall in a Residential Zone
Tester
INPUT
PASSED
FAILED
Res_2...FILE]]
id
TA_Code
TA_DP_Code
ZONE_NAME
ZONE_TYPE
_count...verlaps
_Title_issuedate


NZ_Pr...FILE]]
Fliter so only post 2004 titles go forward
Tester
INPUT
PASSED
FAILED
Dissolve titles based on issue date/time
Dissolver
INPUT
AREA
INTERIOR_LINE
<REJECTED>
ListConcatenator Title ID
ListConcatenator
INPUT
OUTPUT
ListConcatenator Title No.
ListCon...nator_2
INPUT
OUTPUT
ListConcatenator Title issue date
ListCon...nator_3
INPUT
OUTPUT
Create unique ID for dissolved title areas
CRCCalculator
INPUT
OUTPUT
Filter out dissolved titles that have a count of 1
Tester_2
INPUT
PASSED
FAILED
_201..._FILE]]
geodb_oid
OBJECTID
_crc_di...d_titles
_title_i...tenated
title...tenated
_dissolve_count
issue_date


2014 Parcel Boundaries (May)
NZ_Pr...FILE]]
Replace polygon with an inside point
InsideP...lacer_3
INPUT
INSIDEPOINT
UNTOUCHED
2004 Parcel Boundaries
CRS2..._FILE]]
Replace polygon with an inside point
InsideP...eplacer
INPUT
INSIDEPOINT
UNTOUCHED
Overlay point with 2014 dissolved titles, inlcuding a count of overlaps
PointO...verlayer
POINT
AREA
POINT
AREA
2014 titles dissolved by create date
_201..._FILE]]
Overlay point with 2014 dissolved titles, inlcuding a count of overlaps
PointO...rlayer_4
POINT
AREA
POINT
AREA
Replace polygon with inside point
InsideP...lacer_2
INPUT
INSIDEPOINT
UNTOUCHED
Overlap with Legacy DP Residential zones
PointO...rlayer_2
POINT
AREA
POINT
AREA
Residential Zones (Legacy Plans)
Resid..._FILE]]
MUL (2010)
MUL [...FILE]]
Overap with MUL (2010)
PointO...rlayer_3
POINT
AREA
POINT
AREA
Test to see if falls within 2010 MUL
Tester_2
INPUT
PASSED
FAILED
Create attribute with 'Inside MUL' field
AttributeCreator
INPUT
OUTPUT
Merge featres
FeatureMerger
REQUESTOR
SUPPLIER
COMPLETE
INCOMPLETE
EMPTY
REFERENCED
UNREFERENCED
DUPLI...PPLIER
Filter out non-res dissolved parcels
Tester_3
INPUT
PASSED
FAILED
_201..._FILE]]
_crc_di...d_titles
_title_i...tenated
title...tenated
issue_date
_dissolve_count
_overl..._parcels
_overl..._parcels
MUL
TA_Code
TA_DP_Code
ZONE_NAME
ZONE_TYPE

Appendix D List of public bodies for which land parcels were identified as being "publicly owned"

Public body name	Notes
Accident Compensation Corporation	
Airways Corporation of New Zealand Limited	
Auckland College of Education	
Auckland Council	
Auckland District Health Board	
Auckland Film Studios Limited	Owned by Auckland Council controlled organisation
Auckland Regional Council	No longer in existence, merged in to Auckland Council
Auckland Regional Transport Authority	No longer in existence, merged in to Auckland Transport
Auckland Transport	Auckland Council controlled organisation
Auckland University of Technology	
Auckland Waterfront Development Agency Limited	Auckland Council controlled organisation
Counties Manukau District Health Board	
Crown Asset Management Limited	
Dunedin City Council	
Franklin County Council	No longer in existence, merged in to Auckland Council
Franklin District Council	No longer in existence, merged in to Auckland Council
Genesis Power Limited	
Her Majesty the Queen	
His Majesty the King	
Housing Corporation of New Zealand	Former name of Housing New Zealand
Housing Foundation Limited	
Housing New Zealand	
Institute of Environmental Science and Research Limited	
Landcare Research New Zealand Limited	
Manukau Institute of Technology	
Maori Trustee	
Maritime Safety Authority of New Zealand	
Massey University	
Mighty River Power Limited	

New Lynn Central Limited Partnership	Joint venture between Auckland Council Property Limited and Infratil Limited
New Zealand Fire Service Commission	
New Zealand Housing Foundation	
New Zealand Post Limited	
New Zealand Railways Corporation	
North Shore City Council	No longer in existence, merged in to Auckland Council
North Shore District Council	No longer in existence, merged in to North Shore City Council
Papakura District Council	No longer in existence, merged in to Auckland Council
Ports of Auckland Limited	Owned by Auckland Council controlled organisation
Public Trust	
Radio New Zealand Limited	
Regional Facilities Auckland Limited	Auckland Council controlled organisation
Rodney District Council	No longer in existence, merged in to Auckland Council
Television New Zealand Limited	
Tertiary Education Commission	
The Auckland City Council	No longer in existence, merged in to Auckland Council
The Franklin County Council	No longer in existence, merged in to Franklin District Council
The Franklin District Council	No longer in existence, merged in to Auckland Council
The Manukau City Council	No longer in existence, merged in to Auckland Council
The Papakura City Council	No longer in existence, merged in to Auckland Council
Transpower New Zealand Limited	
Unitec Institute of Technology	
University of Auckland	
Waitakere City Council	No longer in existence, merged in to Auckland Council
Waitematā District Health Board	
Watercare Services Limited	Auckland Council controlled organisation

Appendix E Invitation to participants

INVITATION TO PARTICIPANTS

[Participant address]
[Participant address]
[Participant address]
[Participant address]

Thursday, 16 April 2015

Dear *[name]*,

I would like to invite you to participate in a study of residential land amalgamation in Auckland.

Residential property amalgamation can take a number of different forms. This can include the amalgamation of two or more properties in order to increase the development potential of the combined sites, through to the amalgamation of properties to correct or improve historical boundaries.

One of the drivers of this research is provisions in the Proposed Auckland Unitary Plan. Under the Plan, some forms of residential development are required to have a large lot size and a measure of road frontage in order to undertake higher-density development. The assumption is that there will be interest in taking up this sort of development once the rules take effect, but in order for this to happen, in some locations the amalgamation of existing residential properties would need to take place.

At present, we have little or no information about where, when, how, why and by whom residential property amalgamation occurs, or what the drivers and barriers are. We have recently completed spatial analysis of where amalgamations have been undertaken. We are now using interviews to investigate the drivers of this development practice, the processes by which it occurs, and the factors that might influence decisions about such development in the future. This research intends to capture a range of landowner perspectives, rather than provide information about specific pieces of land.

You have been identified through publicly available property title information as the legal owner at the time of amalgamation of a property that meets our criteria. We would be interested to hear about your experience on the property amalgamation process, what the motivations for undertaking amalgamations were, and what might encourage or discourage future developments of this nature.

If you are willing to participate in our project, you will be interviewed by a member of the Auckland Council's Research and Evaluation Unit. This interview should take between 30 minutes and an hour. We are offering a choice of Westfield or petrol vouchers to the value of $100 in recompense for your time. Our intention is to interview approximately twenty to forty people who have engaged in property amalgamation activity, and analyse these interviews to identify themes in landowner responses. Your responses to our survey will remain confidential, and you will not be identified in any way with the amalgamated properties we have identified as part of the study. The attached information sheet provides further details on the purpose and nature of this research.

Please let me know if you are happy to participate in an interview, by completing the enclosed consent form and returning it in the prepaid envelope, by the 19th of April.

If you have any questions or concerns regarding this research, you may contact me in my capacity as the Lead Researcher on this project (my details are below), or you may wish to contact Regan Solomon, Acting Manager of the Research and Evaluation Unit. His contact details are as follows: Email regan.solomon@aucklandcouncil.govt.nz, phone (09) 484 6248.

Thank you for your time, and I look forward to your response.

Kind Regards,

Craig Fredrickson
Growth Analyst
Research and Evaluation Unit
Auckland Council
craig.fredrickson@aucklandcouncil.govt.nz Phone: (09) 484 6241

This project was approved by Auckland Council's Human Participants Ethics Committee on March 31, 2015, Ref 2015-003.

INVITATION TO PARTICIPANTS (EMAIL)

I would like to invite you to participate in a study of residential land amalgamation in Auckland.

Residential property amalgamation can take a number of different forms. This can include the amalgamation of two or more properties in order to increase the development potential of the combined sites, through to the amalgamation of properties to correct or improve historical boundaries.

One of the drivers of this research is provisions in the Proposed Auckland Unitary Plan. Under the Plan, some forms of residential development are required to have a large lot size and a measure of road frontage in order to undertake higher-density development. The assumption is that there will be interest in taking up this sort of development once the rules take effect, but in order for this to happen, in some locations the amalgamation of existing residential properties would need to take place.

At present, we have little or no information about where, when, how, why and by whom residential property amalgamation occurs, or what the drivers and barriers are. We have recently completed spatial analysis of where amalgamations have been undertaken. We are now using interviews to investigate the drivers of this development practice, the processes by which it occurs, and the factors that might influence decisions about such development in the future. This research intends to capture a range of landowner perspectives, rather than provide information about specific pieces of land.

You have been identified through publicly available property title information as the legal owner at the time of amalgamation of a property that meets our criteria. We would be interested to hear about your experience on the property amalgamation process, what the motivations for undertaking amalgamations were, and what might encourage or discourage future developments of this nature.

If you are willing to participate in our project, you will be interviewed by a member of the Auckland Council's Research and Evaluation Unit. This interview should take between 30 minutes and an hour. We are offering a choice of Westfield or petrol vouchers to the value of $100 in recompense for your time. Our intention is to interview approximately twenty to forty people who have engaged in property amalgamation activity, and analyse these interviews to identify themes in landowner responses. Your responses to our survey will remain confidential, and you will not be identified in any way with the amalgamated properties we have identified as part of the study. The attached information sheet provides further details on the purpose and nature of this research.

Please let me know if you are happy to participate in an interview, by contacting me by phone or email (my details are below). If you have any questions or concerns regarding this research, you may contact me in my capacity as the Lead Researcher on this project, or you may wish to contact Regan Solomon, Acting Manager of the Research and Evaluation Unit. His contact details are as follows: Email regan.solomon@aucklandcouncil.govt.nz, phone (09) 484 6248.

Thank you for your time, and I look forward to your response.

Kind Regards,

Craig Fredrickson, Growth Analyst, Research and Evaluation Unit, Auckland Council

craig.fredrickson@aucklandcouncil.govt.nz Phone: (09) 484 624

This project was approved by Auckland Council's Human Participants Ethics Committee on March 31, 2015, Ref 2015-003.

Appendix F Participant information sheet

INFORMATION SHEET FOR PARTICIPANTS

Project: Residential Property Amalgamation and Aggregation Study
Principal researcher: Craig Fredrickson

What is the aim of the research?

The Proposed Auckland Unitary Plan requires some forms of residential development to have a large lot size and a measure of road frontage in order to undertake higher-density development. It is believed that there will be interest in taking up this sort of development once the rules take effect, but in order for this to happen in some locations the amalgamation or aggregation of existing residential properties would need take place.

At present, Auckland Council has no data or monitoring information on where, when, how, why and by whom this type of development occurs, or what the drivers of and barriers to it are. We have recently completed spatial analysis of where amalgamations and aggregations have been undertaken. We are now using interviews to investigate the drivers of this development practice, the processes by which it occurs, and the factors that might influence decisions about such development in the future.

Who is being interviewed?

We hope to interview between 20 and 40 people who have engaged in amalgamation or aggregation in the past. We will attempt to get both a geographical spread and a mixture of people who have and have not developed housing on the resulting sites post-amalgamation or aggregation.

What will participants be asked to do?

You will be interviewed by a researcher from RIMU. The interview will take about 40 minutes to an hour. You will be asked to describe your experience of amalgamating or aggregating property, your motivations for doing it, and how you think proposed planning regulations might impact on its viability in the future.

With your consent, the interview will be recorded and later transcribed. You may request a copy of the transcript if you wish. If you do not wish to be recorded the interviewer will take notes. During the interview, you may choose not to answer any particular question(s). You may also request the removal of particular parts of the interview, or choose to withdraw from the research entirely, up until a week after the interview.

What uses will be made of the data?

The interviews will be analysed and the results presented in an Auckland Council technical report. Every effort will be made to ensure you are not identifiable in the report or related documents. It is also possible the findings of the research will become evidence in the Proposed Auckland Unitary Plan Process. The results may also be published in an academic journal or presented at conferences. Electronic interview transcripts and digital recordings will be securely stored and password protected. Any interview records will be retained in secure storage for five years, after which they will be destroyed.

If you have any questions, please feel free to contact me at: craig.fredrickson@aucklandcouncil.govt.nz or on (09) 484 6241

Craig Fredrickson
Research and Evaluation Unit, Auckland Council

This project was approved by Auckland Council's Human Participants Ethics Committee on March 31, 2015, Ref 2015-003.

Appendix G Consent form

Attention: Craig Fredrickson
Research and Evaluation Unit
Level 4, Takapuna

CONSENT FORM FOR PARTICIPANTS

Project: Residential Property Amalgamation and Aggregation Study

I have read the Information Sheet for this project and understand the purpose and content of the research. All my questions have been answered to my satisfaction. I understand that I am free to request further information at any stage.

I know that:

1. The interview will focus on my involvement in the amalgamation and/or aggregation of residential property;
2. My participation in the interview is entirely voluntary;
3. My responses will remain confidential:
    a. My recorded responses will only be used for analysis by the project team.
    b. My interview will be transcribed by a transcriber who has signed a confidentiality agreement.
    c. I will not be personally identified or identifiable in any of the resulting publications.
4. I may decline to answer any particular question(s);
5. If I want to see a copy of the transcript of my interview, or if I said something in the interview that I would like removed from the transcript, I will contact the researchers;
6. Personal identifying information [such as transcribed interviews and audio files] will be password protected and securely stored for at least five years, after which it will be destroyed;
7. The results of the project will be published as an Auckland Council technical report, and may also be used as evidence in the Proposed Auckland Unitary Plan hearings process. In addition, findings may be shared at conferences and/or published in an academic journal.

I agree to take part in this project (please circle one): **AGREE** **DISAGREE**

I agree to have this interview recorded (please circle one): **AGREE** **DISAGREE**

....

Signature of participant Date

.....

Full name of participant

If you have agreed to participate, please provide us with contact details such as an email address or phone number below, so we can get in touch.

……

This project was approved by Auckland Council's Human Participants Ethics Committee on March 31, 2015, Ref 2015-003.

Find out more: phone 09 301 0101
email rimu@aucklandcouncil.govt.nz or
visit www.aucklandcouncil.govt.nz

Auckland Council
Te Kaunihera o Tāmaki Makaurau