01

Fig 01 Panoramic view looking west showing Three Kings Road (later Mount Eden Road, foreground) and part of the Three Kings mountains (J Richardson, 1920), Sir George Grey Special Collections, Auckland Libraries, ID 4-4230/4231

LIVING AROUND TE TĀTUA A RIUKIUTA

Landscape rehabilitation and urban redevelopment of Three Kings

Richard Reid *from Richard Reid & Associates Citymakers outlines two different approaches for landscape rehabilitation and urban redevelopment of Three Kings Quarry, Auckland.*

Our involvement with this project began in May 2015 when we were engaged by two community groups to assess a proposed plan change by Fletcher Residential for redevelopment of Three Kings Quarry. Our expertise was sought by the South Epsom Planning Group and Three Kings United Group who were aware of our local work on Puketapapa Mt Roskill Volcano and the Basin Reserve Roundabout in Wellington.

Te Tātua a Riukiuta and the City Plan

Three Kings Quarry is situated within the Three Kings suburb of Auckland. Both quarry and suburb took their name from Three Kings Volcano which is an outstanding natural feature of the area. The volcano is considered geologically and scientifically valuable for its original mix of five, not three scoria cones, numerous scoria mounds and a lava lake ‘nested’ inside a one kilometre diameter tuff ring. The whole feature was called by Maori Te Tātua a Riukiuta, the belt of Riukiuta (Fig 01).

The local area is strongly defined by Te Tātua a Riukiuta, including the historic arrangement of streets. As early as 1860, a city plan showed Mt Eden Road aligned on the centre of Te Tātua a Riukiuta and Maungawhau, creating a grand landscape and urban axis between the two volcanoes. No two other volcanoes were embedded in the city plan in this way (Fig 02).

On the same plan, four boundary roads formed a near-perfect square frame around Te Tātua a Riukiuta, with the alignment of Mt Eden Road incorporated into the symmetrical structure. A square frame is an unusual typology in Auckland’s early and ongoing city planning. It demonstrated that a high level planning order was overlaid on the volcanic complex which accommodated its distinctive size and features.

The scale of this order is usually seen in the planning of imperial cities such as Beijing which are planned to align a ‘divine’ organisation of human settlement with an auspicious natural landscape, typically

Fig 02 Map of Eden County (c.1900), Sir George Grey Special Collections, Auckland Libraries, ID 7-A14275 (Te Tātua a Riukiuta and Maungawhau highlighted by RRA)

Fig 03 Te Tātua a Riukiuta tuff ring encircles Three Kings Quarry, Reserve and Suburb: Town Centre (foreground), Three Kings Reserve (south and west of quarry), Big King Reserve (north-west of quarry) and Mt Eden Road (to the north). Photo: www.wildearthmedia.com, 2009

Fig 04 Panorama view showing Three Kings Quarry (foreground), Big King (middle background), Te Tātua a Riukiuta tuff ring (right background), Three Kings Reserve adjoining the quarry (left foreground and background), Three Kings Town Centre (out-of-view to the left) (RRA, 2015)

mountains. These cities also have a rich hierarchy of spatial definition from their centre outwards which is articulated by a series of nested structures (buildings inside courtyards inside compounds inside city walls).

The streets inside the square frame also reflect this. Beginning in the 1890's, the street system pushed inside the frame and bifurcated around the scoria cones. The streets on the western side took their line from the circular structure and radial arrangement of the volcano's features, fitting between or around the cones, the crusted 'lip' of the lava lake and the walls of the tuff ring. Even plots of land for state housing in the 1940-50's were uniquely proportioned to maintain the legibility of the volcano.

The order evident in the planning of the suburb is subtle and has largely gone unnoticed. The city remains poorly informed as to the value of early city plans and the recognition of what they originally related to and provided for.

Since the late 1800's, regulatory authorities have enabled quarrying of Te Tātua a Riukiuta at the expense of its physical integrity, landscape prominence and complementary relationship with the city plan. The volcano has been divided along property lines and significantly compromised as a result (Fig 03). Four of the scoria cones have been quarried away, leaving only Big King, the second highest, as the most visible and recognisable remnant. Te Tātua a Riukiuta now chiefly refers to this one remaining cone (Fig 04). While the circularity of the tuff ring is still imprinted on the suburb, the centrality of the volcano has been replaced by the scale, shape and depth of Three Kings Quarry.

Fletcher's plans for Three Kings Quarry

In 2011 the Environment Court granted Winstone Aggregates, a division of Fletcher, the right to clean-fill the 15.1 hectare quarry. The Court's consent conditions set out a process by which the final fill levels could rehabilitate the 25-40m deep hole and integrate the site with Big King, Three Kings Reserve, adjacent properties and surrounding streets. Engineering drawings referenced by the Court showed the quarry filled close to adjoining ground levels which also remedied the worst effects from quarrying. Winstone Aggregates and the two community groups supported the Court's decision.

Fig 05a Fletcher PC372 Masterplan 17H1 (May 2015)

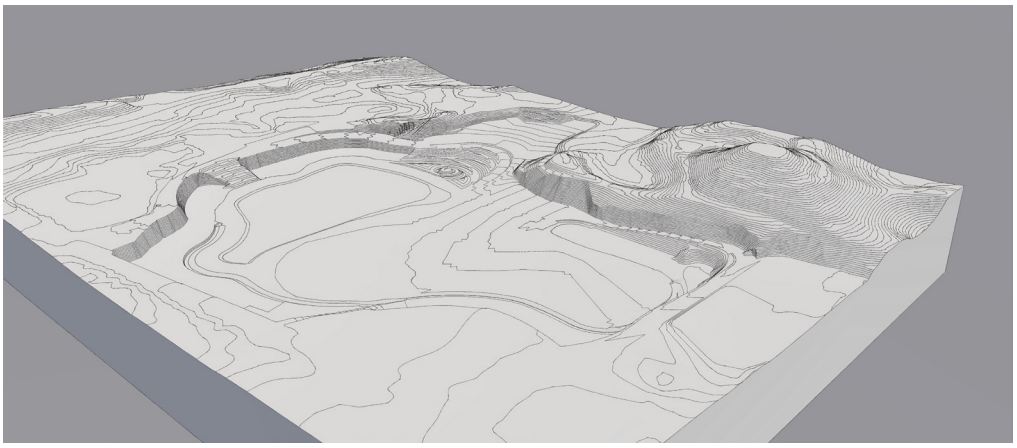


Fig 05b Masterplan 17H1 – Proposed landform viewed from north-east (3D model by RRA)

In late 2014, Fletcher Residential applied to rezone the quarry for residential development. Fletcher submitted two private plan changes for public feedback. Both finished the fill levels of the quarry 15-17 metres below street level, principally to shorten the lead-in time for construction of dwellings. The significant change in final fill level conflicted with the expectations of the local community and Puketapapa Local Board (PLB). PLB had prepared a thirty year strategic guide for development of the suburb in partnership with mana whenua, major landowners (including Fletcher), the local community and other stakeholders called the 'Three Kings Plan' which was based upon a presumption the quarry would be filled to street level.

Private Plan Change 373 (PC373) sought rezoning of the quarry. PC372 included rezoning 6.5ha of Three Kings Reserve adjacent to the quarry. Fletcher chose to progress PC372 (Fig. 05a) after determining that development of the quarry by itself was too restrictive for traffic distribution, too constraining for recreational open space and too remote from the Three Kings Town Centre and surrounding open space network. At the same time, Fletcher and Auckland Council considered Three Kings Reserve was compromised by past quarrying and suffered from poor connectivity, amenity and safety.

Council supported Fletcher's application for a public land exchange because it considered an "integrated comprehensive

Fig 06a RRA Development Plan

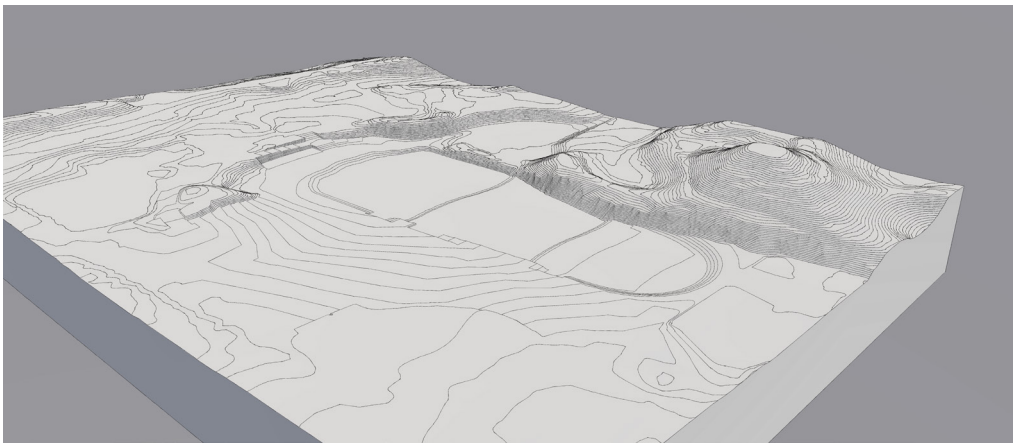


Fig 06b RRA Development Plan – Proposed landform viewed from north-east (3D model by RRA)

development" could maximise residential intensification and increase recreational open space adjacent to the emergent Three Kings Town Centre. These were cited as two key objectives of 'The Auckland Plan', Council's long-term, overarching spatial plan to ensure Auckland grows in a way that will meet the opportunities and challenges of the future.

Opposition to Plan Change 372

PLB, the two community groups and a majority of submitters opposed both the plan change and land exchange. PLB considered PC372 failed to involve the Local Board; meet the long term planning objectives of the 'Three Kings Plan' including rehabilitation of the landscape; provide land equity; and adequately consider alternative options.

A third application by Fletcher for PC372 to become a special precinct in the Proposed Auckland Unitary Plan further complicated the process.

Each application needed to be assessed against different legislation: the plan change in relation to the Operative Auckland City District Plan, the land exchange chiefly under the Reserves Act and the precinct rezoning as part of a special statutory process for the Unitary Plan.

All three applications were subsequently approved, with only one design change from the land exchange decision which required the removal of 15 terrace houses from the north-western area of Three Kings

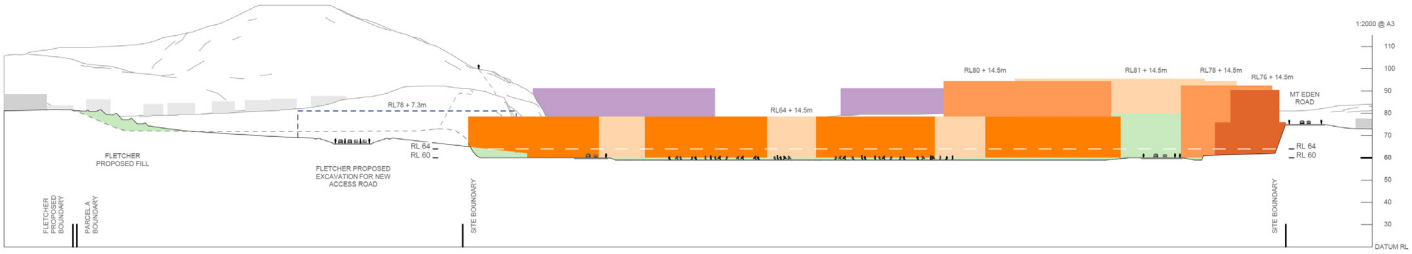


Fig 07a Fletcher PC372 Masterplan 17H1 – Proposed Zoning (west-east cross-section)

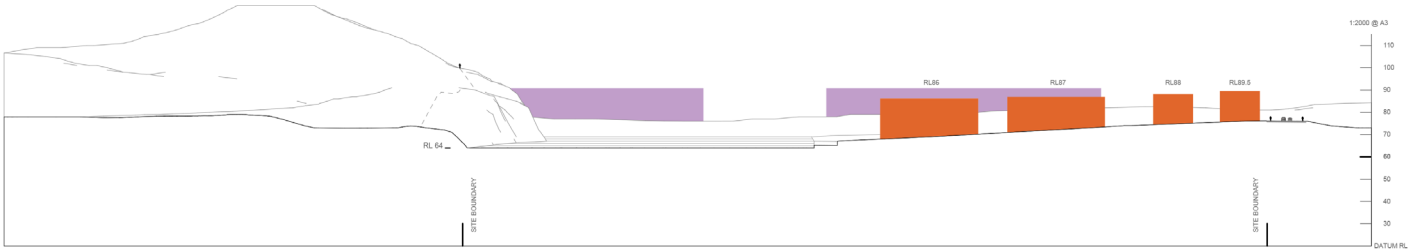


Fig 07b RRA Development Plan – Proposed Zoning (west-east cross-section)

Reserve. The two community groups appealed to the Environment and High Courts on the plan change and Unitary Plan decisions, with the Government of the time joining the legal proceedings in support of Fletcher.

Richard Reid was engaged either by the community groups or PLB to provide landscape and urban design evidence through the three processes. At the same time, Richard Reid & Associates (RRA) was commissioned by PLB to develop an alternative Masterplan aligned with the 'Three Kings Plan' for public consultation.[1] Reid was accompanied in the Environment Court by Jan McCredie, one of Australasia's foremost urban designers, who also peer reviewed the RRA Development Plan.

In short, the Environment Court preferred Reid and McCredie's evidence on PC372's poor connectivity and integration with the surrounding neighbourhood and in an interim decision required Fletcher to review thirteen key aspects of its Masterplan. The Court's findings countered the Unitary Plan decision which sought no changes to the Masterplan.

Fletcher and the community groups chose to settle the legal impasse out-of-court in June 2017, the outcome of which will be discussed in the Conclusion. Reid and McCredie's evidence and Reid's alternative proposal are now the focus of this paper.

Critique of Fletcher Masterplans [2]

Reid and McCredie's evidence stated:

1. Fletcher's decision to set the quarry's final fill level 15-17 metres below Mt Eden Road fundamentally compromised the development's ability to integrate with Big King, Three Kings Reserve, the Town Centre and surrounding streets, as well as provide easy access and a walkable neighbourhood.
2. Fletcher's Masterplan required significant excavation of the existing quarry walls and Three Kings Reserve (c.680,000 tonnes) in order to make access to the quarry floor viable and enable apartment buildings to be built around its edges (Fig 05b).
3. Fletcher and Council argued the lower fill level would expose more of Big King to view yet the proposed zoning enabled the whole northern half of the quarry to be filled with up-to-five-storey buildings which would block these potential views (Fig 07a).
4. The Masterplan treated Big King as a background feature and retained the quarry access road's severe cut into its eastern face. Prominent volcanic features left from past quarrying of the other scoria cones were proposed to be removed, concealed or significantly modified.
5. The location and amount of open space did not contribute to the enhancement of Big King or future-proof Council's significant recreational open space needs for the wider area (Fig 08a,c).
6. The existing open space was re-oriented in an east-west direction, swinging the focus away from Big King and its landscape extension to the south (Fig 04, 05a).
7. Fletcher argued its residential re-zoning of the south-western area of Three Kings Reserve was to improve passive surveillance and public safety, yet little evidence of social problems was presented to warrant this privatisation of public space.
8. The Masterplan arranged ten 9-10 storey apartment buildings around the

eastern and southern sides of the quarry, despite the relevant District Plan residential zoning enabling 4 storeys. Fletcher used the 15-17m lower fill level to hide the bottom 5-6 storeys from Mt Eden Road, exposing the full height of the buildings to Big King. In total length, the apartment buildings stretched over 750metres around the site, creating a monumental wall competing with Big King in scale and visual dominance.

9. Yet the apartment buildings' location against the quarry walls significantly reduced their potential housing yield. A typical cross-section showed apartments on only one side of seven of the building's ten storeys, with carparking sharing six of the floors. This is an extremely inefficient typology and a prime reason for Fletcher needing public land to increase the yield of 1200 dwellings it cited in the Environment Court. The above-ground car parking also added substantially to the bulk and cost of the buildings.

10. An excessive amount of land, 4.59 ha, was dedicated to roading due to the circuitous routes down into the quarry and an inefficient street pattern (Fig 09a,b).

11. The convoluted street pattern was reflected in the shape of many buildings. Their irregular curvature would create a high number of bespoke building elements, inefficient use of materials and wasted space. These inefficiencies further reduced the potential housing yield.

12. The convoluted street pattern and termination of streets by buildings increased the inward focus and perceived density of the development rather than visually connecting people with Big King and other green open spaces.

13. Few street pedestrian access points into the 21.6 hectares site were provided. These were distant from one another and the abrupt level changes reinforced the depth of the final fill level and its separation from the surrounding street network.

14. The lower fill level, limited entry points, circuitous roading and wall-effect of the apartment buildings isolated the development from the Town Centre and neighbourhood, effectively creating a 'gated' community within.

15. No alternative plan was developed by Fletcher or investigated by Auckland Council which sought to combine residential intensification with a higher fill level and large recreational open space adjacent to Big King. Yet the public land exchange with Fletcher placed an onus on Auckland Council to consider this approach, espcially when the land exchange was deemed inequitable by PLB and the local community.

Alternative Concept Masterplan by RRA

Richard Reid submitted an alternative Concept Masterplan as part of his assessment of PC372 in May 2015.

The RRA Concept Masterplan applied a methodology the Environment Court had proposed to Winstone Aggregates in 2011 for investigating how the quarry could integrate with its surrounds. This required analysis of a much wider context than PC372 provided, which in turn enabled different insights into how an "integrated comprehensive development" could be achieved. The RRA Concept Masterplan had three main points of difference from Fletcher's Masterplan.

Firstly, it designated a significant area of open space alongside Big King to provide an appropriate curtilage and spatial setting for Big King, which also future-proofed recreational needs (Fig 07b, 08b,10).

Secondly, it connected the western and eastern sides of the Three Kings suburb together for the first time by joining their separate street systems (Fig 09b,c). This could principally be achieved by re-routing Smallfield Ave through three Housing New Zealand properties and a Council Parks Depot site to link up with Grahame Breed Drive. The subsequent extension of the western side's radial street pattern through the Town Centre and Fletcher's property would fulfil the ultimate goal of the 'Three Kings Plan' to "Develop a sense of local character and identity around the presence of Te Tātua a Riukiuta".

Thirdly, the RRA Concept Masterplan re-visioned the development potential of the privately-owned Town Centre and adjacent Housing NZ land to maximise business and street activities, residential intensification and urban porosity (Fig 09c).

The fundamental features of the RRA Concept Masterplan aligned with the key objectives of PLB's 'Three Kings Plan'. It also brought other major landowners into the frame who may wish to redevelop their properties.

RRA Development Plan

Puketapapa Local Board (PLB) engaged RRA to develop the Concept Masterplan in two stages between June 2015 and May 2016. The first stage translated it into the graphic language used by the 'Three Kings Plan' and correlated its outcomes with the Plan's five key moves. The second stage required the Masterplan to be developed to a detailed level in which fill levels, open space areas and housing yields could be measured. In summary, the RRA Development Plan (Fig 06a,b):

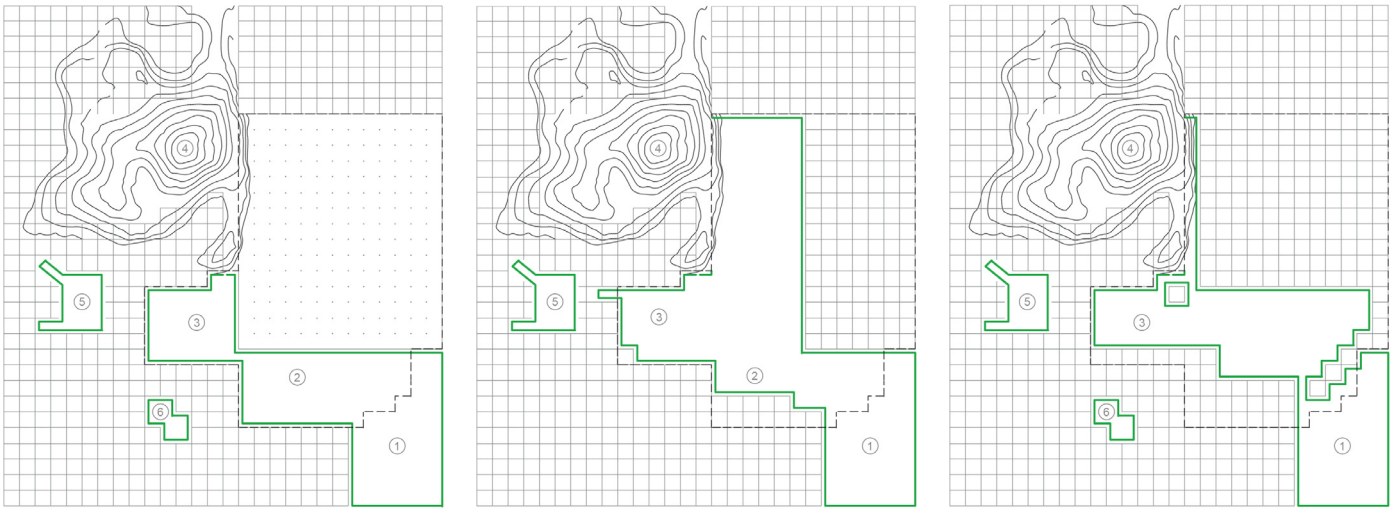
1. Established that higher fill levels were needed to integrate the quarry with Big King, Three Kings Reserve and the surrounding neighbourhood as well as to remedy past abuses from quarrying. The higher fill level significantly enhanced Big King without needing to modify the cone itself.

2. Raised the ground level of Three Kings Reserve between the Town Centre and the quarry by 8 metres in conjunction with raising the fill level of the quarry. This significantly reduced the 17 metre level difference and transformed the weakest part of the reserve into the critical join between all areas.

3. Shaped the clean-fill to give the impression it had been carved into an existing landform. Reference points were the depressed sports fields around Pukekaroro in Pukekawa Auckland Domain and the raised earth-shaped stadium beside Mt Kronos at Olympia in ancient Greece.

4. Planned the development to fit within the remnant volcanic landscape, not the quarry. The Fyvie Ave, Barrister Ave and Grahame Breed Drive bluffs were used as markers to frame open space and define the location for buildings.

5. Extended the neighbourhood street grid pattern over Fletcher's land and the Town Centre with a street block size linked to a conventional apartment building



a Existing b RRA Development Plan c Fletcher Masterplan 18H1

Fig 08 Open Space Analysis (Big King with contours; public reserves in green)

typology (Fig 06a, 09c).

6. Provided free-standing medium-density housing of mainly five storeys height, with carparking in basements to reduce the fill needed.

7. Integrated all components of the Three Kings suburb by building upon the underlying structure of the volcanic landscape and historic city plan.

Comparison of outcomes

The RRA Development Plan provided:

- Up to 1200 dwellings,[3] the same yield Fletcher nominated for PC372. However, RRA's dwellings covered only half of Fletcher's property and only one third of the plan change area. The RRA yield also excluded residential redevelopment of the Town Centre and adjacent HNZ properties
- Over 1,000m² of private communal space for each apartment building against none provided by PC372
- Nearly double the amount of public open space compared to PC372
- Three additional playing fields versus Fletcher's one
- Under half the road area of PC372
- Seven traffic dispersal points to the surrounding streets compared to PC372's three (Fig 09)
- Pedestrian pathways which followed existing desire lines and avoided conflict with traffic.

These outcomes demonstrate that the RRA Development Plan's compact urban form is much more efficient and productive than PC372. It achieves a similar number of dwellings without needing public land for housing or creating adverse effects on the environment and neighbourhood. It also resolves the planning problems that dissuaded Fletcher from developing only its land (see page 3). The higher fill levels for the quarry and lower reserve establish a continuous ground surface, making for a more accessible, liveable and cohesive suburb (Fig 06b, 10).

The amount of time required to fill to the RRA Development Plan's levels, based upon a realistic filling rate, would take one year and ten months longer than the Masterplan Fletcher gained resource consent for in November 2015, according to the community groups' civil engineer Garry Law (55 months vs 33 months).[4] Yet the RRA Development Plan's levels are still well below those originally agreed by Fletcher for rehabilitation of the quarry in 2011. Mr Law also considered there was no difficulty in servicing the RRA Development Plan for stormwater and wastewater, an analysis confirmed by Fletcher.

In contrast, Fletcher's need to further excavate the quarry and Three Kings Reserve was a cost associated with preparation of the area for residential development, not rehabilitation. The lower fill level also required use of the new sports fields for retention of surface flooding during 100 year storm events, a potential loss of public amenity considering the uncertain frequency of these weather events.

Environment Court recommendations

Although the Environment Court preferred Reid and McCredie's evidence on PC372's poor connectivity and integration with the surrounding neighbourhood, it recommended an approach different from those proposed or tested by the conflicting parties.

The Court supported the south-western area of Three Kings Reserve and two volcanic bluffs being protected from residential development. This reduced Fletcher's yield by 58 dwellings. It also directed an 8m higher ground level for the reserve land below the Town Centre and a 4m higher level for the new sports fields, as specified in the RRA Plan. However, the Court also supported Fletcher's lower fill level in the northern half of the quarry and their arrangement of streets and buildings.

The Court's directive left a substantial part of the development within a deep hole in the ground. The Court appeared to prioritise

a Fletcher Masterplan 17H1 b Existing c RRA Development Plan

Fig 09 Street Network

connection of the southern part of the development with the Town Centre rather than achieving integration across the whole area, a holistic outcome which both the 2011 clean-fill decision and PLB's 'Three Kings Plan' had focused on.

In this respect, the Court's view that PC372 fitted with the key objectives of PLB's 'Three Kings Plan' sat uncomfortably with PLB's public rejection of PC372 for not taking account of substantial aspects of its plan, including a failure to integrate the development with the wider local area.

The Masterplan's use of a large-scale, land-hungry suburban typology was also the antithesis of the fine-grained, inter-connected street grid plan favoured in the 'Three Kings Plan'. The RRA Development Plan had adopted this pattern because it was a logical extension of the neighbouring street network and would facilitate easy pedestrian movement to the Town Centre, community facilities, public transport and open space.

Conclusion

Negotiations between Fletcher and the community groups post-court continued to weaken this compromised arrangement and further reduced the housing yield by c. another 110 dwellings. Precious areas of the volcanic landscape, like the Grahame Breed Drive volcanic bluff, have been unnecessarily sacrificed for inconsequential housing opportunities. [5]

In Reid and McCredie's opinion, the intrinsic problems associated with Fletcher's fill levels and street network will not be able to be remedied over time. Nor will the new plan respect or enhance Big King. Most of the issues raised in Reid and McCredie's critique of PC372 remain. Judged against the principles of the 'Three Kings Plan' and the priorities of 'The Auckland Plan', a quality compact environment will not be achieved.

The development does not maximise the efficient use of existing land for urban development; provide greater preservation of natural environmental qualities through a reduced urban footprint; reinforce and enhance local character, identity and heritage; significantly increase or enhance local amenities; and enable good accessibility.

This lack of understanding of good urban outcomes seems reflective of the whole process. The result is poor and fails to capitalise on the opportunity to build an examplar urban development that ensures landscape rehabilitation and residential intensification. The housing yield in the RRA Development Plan now appears substantially greater than the revised Fletcher Masterplan. The differential of c.170 dwellings is unlikely to change given that increases in height levels along Mt Eden Road agreed by the Court could equally be applied to the RRA Plan.

Although the RRA Plan specifies a higher fill level at the northern end of the quarry, there cannot be too much time difference between filling to this level versus the new levels proposed by the Court as well as the time Fletcher needs for further regulatory processes. This apparently will involve a new plan change and another public land exchange to help increase Fletcher's housing yield. Redevelopment of the exchanged site, the Council Parks Depot area, would permanently block Reid's proposed unification of the local street network around Big King, a more equitable social and environmental outcome.

Jan McCredie concluded in her evidence:

> *"Urban areas require more than intensification. An urban city is not a suburban city with bigger buildings. The public domain is critically important and great care needs to be taken as to how the streets and built fabric are organised relative to the landform when people are located close together, are less car dependent and using public transport. 'Urban' is a different model and has to be considered in the long term framework of a city and how a city changes. The approach must be holistic.*

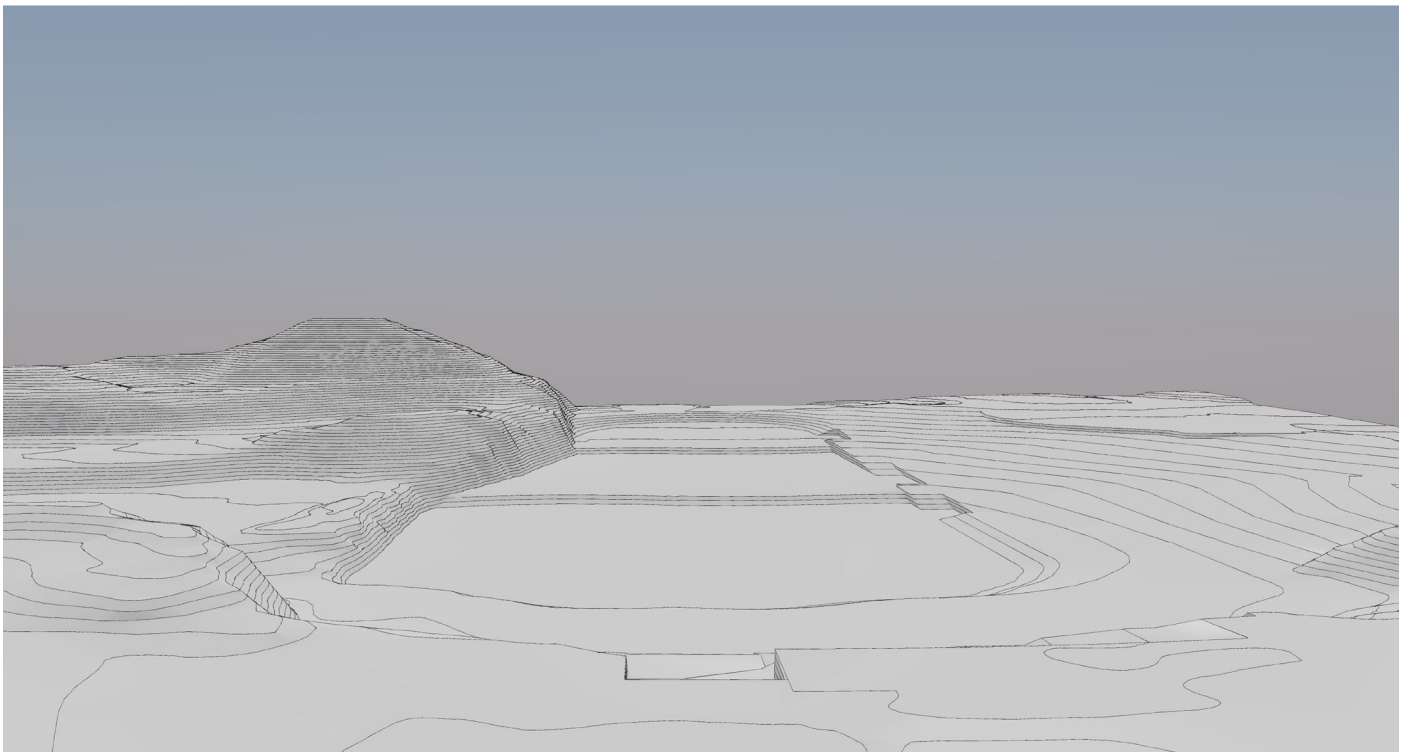


Fig 10 RRA Development Plan – New landform viewed from the Town Centre

Re-development of Auckland or any city undergoing change should not be by a 'site by site' approach. All avenues should be kept open so the best outcome can be developed. The RRA design does precisely this. It enables the possibility over time for an integrated outcome that celebrates the Maunga and creates a cohesive, urban, memorable place."

Endnotes

1. Our design was commissioned by Puketapapa Local Board and submitted to the Environment Court on behalf of two community groups to highlight key outcomes neccessary for successful intensification of the area: integration of the final quarry landform and residential development with the volcanic landscape, Town Centre, open space network and neighbourhood; provision of more open space to enhance Tātua a Riukiuta and recreational activities; and revitalisation of the Town Centre.
2. Fletcher produced at least four iterations of the masterplan for assessment after Masterplan 15-H1 was submitted with PC372 in November 2014. Masterplan 17-H1, re-presented by RRA here, was submitted by Fletcher for the plan change hearing in May 2015.
3. The yield is calculated using an average floor space area for apartments which can vary depending upon the mix of apartment sizes wanted. A range of yields was calculated by Jan McCredie, an expert urban designer from Sydney, based upon different average floor space areas. The methodology used is standard practice in NSW for assessing the development capacity of building envelopes. It is derived from tested assumptions over many projects and delivers a high level of accuracy.
4. Mr Law's evidence to the Environment Court estimated and commented upon the respective fill volume, rate and time differences between the Fletcher, RRA and 2011 (EC214) proposals.
5. The author's involvement with this project lasted from May 2015 until the completion of an Environment Court hearing in May 2016. He has had no further involvement with the project or parties concerned including their negotiation of a final settlement in June 2017.

The author

Richard Reid is an architect, landscape architect, urban designer and transport planner with thirty years professional experience. Richard has worked with nationally and internationally recognised design practices in Sydney (Neville Gruzman) and London (Sir Colin St John Wilson). Richard is director of Richard Reid & Associates Citymakers, a multi-disciplinary design practice based in Auckland. Over the past twenty years, the practice has focused on large-scale infrastructure projects and their integration with local communities and sensitive urban/natural environments.

All drawings in this article were prepared for RRA by Richard Reid and Carlos Charlton except Fig 5a and 6a by Richard Reid and Yiqiu Hong. Drawings of Fletcher's Masterplans were prepared by RRA using information published by Fletcher Residential. The RRA Development Plan and RRA drawings are protected by copyright.

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