BEFORE THE WAIKATO DISTRICT COUNCIL

SUB0009/17

IN THE MATTER	of the Resource Management Act 1991
AND	
IN THE MATTER	of a resource consent application for subdivision and land use consents for residential development at 24 Wayside Road, Te Kauwhata, including earthworks and construction of four show homes.
BY	Te Kauwhata Land Ltd,
	Applicant

STATEMENT OF EVIDENCE OF ALASDAIR DAVID ANGUS GRAY

ON BEHALF OF TE KAUWHATA LAND LTD

1 February 2018

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INTRODUCTION

1. My name is Alasdair David Angus Gray. My qualifications and experience are as follows:

    a. I hold a Bachelor of Science degree (Civil Engineering, 1986) from the University of Aberdeen. I am a Corporate Member of Engineering New Zealand (previously the Institute of Professional Engineers NZ) and a Chartered Professional Engineer.

    b. I have worked in the transportation field as a civil/transportation engineer for more than 30 years and have been involved at a senior level in the investigation and development of projects in Hamilton City and the Waikato region for more than 20 years. I am based in Hamilton and established my own consultancy, Gray Matter Ltd, in January 2006. For 5 years prior to that I was Group Engineer, Asset Development, with Opus International Consultants Ltd in Hamilton, managing approximately 30 technical staff in a range of road projects. For the previous 5 years I was a senior civil/transportation engineer with AECOM's predecessor in Hamilton.

    c. I am familiar with the transport issues arising in and around Waikato, having provided advice to Waikato and Waipa District Councils, Hamilton City Council and other local authorities, Waikato Regional Council, NZ Transport Agency, and developers on projects in the area over the past 20 years. I have the following specific experience with respect to the matters currently in front of the Committee:

        i. Consultant civil/transportation engineer for developers, landowners and local authorities assisting in preparing and reviewing consent applications and Notices of Requirement for road projects, including the Rangiriri Section of the Waikato Expressway for Waikato DC;

ii. Traffic engineer supporting NZ Transport Agency, Hamilton and Tauranga City Councils, and Rotorua, Waipa, Waikato and Matamata Piako District Councils in transport-related aspects of District Plan changes, reviews and variations including the Ruakura and Waikeria Prison Boards of Inquiry, and the Te Kauwhata Lakeside Plan Change 20 under way;

iii. Project manager and civil/traffic engineer assisting Waikato DC in project investigation and reviews for transport projects including the Te Kauwhata heavy traffic bypass and infrastructure requirements for the Te Kauwhata Housing Infrastructure Fund submission.

d. I have been involved with the proposal since early 2016, commencing with advice on desirable road gradients to inform development of the concept, road layouts and cross sections and including preparing a traffic impact assessment (TIA) to support the application and responding to requests for further information.

EXPERT CODE OF CONDUCT

2. I have read the Code of Conduct for Expert Witnesses as contained in the Environment Court Practice Note 2014, and I agree to comply with it. My qualifications as an expert are set out above. I confirm that the issues addressed in this brief of evidence are within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

SCOPE OF EVIDENCE AND SUMMARY OF CONCLUSIONS

3. The purpose of this statement of evidence is to:

a. Confirm the conclusions in my Traffic Impact Assessment (3 October 2017 as included in the application) and subsequent advice in response to queries;

b. Describe the proposal from a transport perspective;

c. Explain the adverse effects of the proposal relating to traffic;

d. Comment on submissions relating to traffic; and

e. Respond to comments relating to transportation in Council's Section 42A Planning Report.

4. In summary, I conclude that:

a. The effects of the proposal relate mainly to:

i. Additional traffic from approximately 30 more lots than consented for under the Silverspur subdivision and 163 new lots compared to the existing situation, which would lead to around 300 trips daily and 1,670 trips daily respectively.

ii. The internal road layout having altered road alignments providing connectivity generally consistent with the Te Kauwhata structure plan and more accessible gradients than those achieved under the Silverspur consent.

iii. A new collector road intersection on Wayside Road.

iv. Narrower road widths than the Te Kauwhata structure plan that match the District Plan typical engineering standards for residential roads.

v. Classification of an access way as a road to protect options for future development for the adjacent landowner.

b. The adverse effects relating to transportation include:

i. Increased noise from the additional traffic that is unlikely to be noticeable compared to the expected environment.

ii. An increase in the potential for crashes relating to the additional exposure to traffic, additional intersection and access points that can be mitigated to less than minor through appropriate design.

iii. A slight increase in delays at intersections during peak periods, but delays are unlikely to be long and the intersection performance will remain within generally accepted levels of service.

c. The positive effects of the proposal relating to transportation, as well as access for housing, generally relate to improved road gradients in comparison with the Silverspur subdivision design, resulting in a more accessible transportation network, easier access for properties and a greater likelihood of walking and cycling. Increased density supports walking, cycling and passenger transport but the difference between the proposal and the consented Silverspur subdivision is unlikely to be noticeable.

d. In my view the adverse traffic effects are no more than minor. Subject to appropriate conditions requiring mitigation such as widening Wayside Road, design approvals and construction management plans, there does not appear to be any significant reason related to traffic why the proposal should not proceed.

CONTEXT

5. The site is located on the corner of Wayside Road and Te Kauwhata Road on the outskirts of the Te Kauwhata village within the Te Kauwhata Structure Plan area.

6. Wayside Road is a local road carrying 530 vpd. Te Kauwhata Road is an arterial carrying 2,875 vpd east of Wayside Road and 2,670 vpd west of Wayside Road. For comparison, four laning would normally be considered around 20,000 to 30,000 vehicles per day, so the network has reserve capacity. I arranged for SIDRA traffic modelling of the 4-leg

roundabout at the Wayside Road/Te Kauwhata Road intersection as part of assisting Waikato DC with the Lakeside Plan Change, Plan Change 20. I concluded that average delays would get close to minimum desirable levels of service (typically 35 seconds for an arterial) at around 1200 vehicles/hour. Current flows are around 300-400 vehicles/hour so there is significant reserve capacity.

7. Crash data suggests that there are no significant safety issues in the area. There have been no reported crashes in the vicinity of the site along Wayside Road or Te Kauwhata Road. The network has low to medium-low collective road safety risk and a low to medium personal road safety risk[1].

8. The Wayside Road/Te Kauwhata Road roundabout means that speeds at the south end of Wayside Road will be 50km/hr or less. The urban subdivision will have speeds of 50 km/hr. There will be residential development from the roundabout to the north edge of the subdivision. The current speed limit on Wayside Road is 100 km/hr. The subdivision proposal is consistent with the Structure Plan and the Te Kauwhata West Living Zone. My assessment presumes that Waikato DC will reduce the Wayside Road speed limit to 50 km/hr since it is within the Te Kauwhata Structure Plan and the surrounding area is zoned for living and is becoming developed for residential purposes.

9. The space planned for development in Te Kauwhata is broadly consistent with high growth population projections, as shown in Figure 1. If these areas can be accessed and serviced, they could provide around 2,900 lots. Development areas include:

    a. 389 lots within the existing village.

    b. 348 lots in terms of the zoned land north of the existing village.

[1] Te Kauwhata Road is the only road with a medium personal safety risk level

c. 541 lots west of the railway line (Country Living and Te Kauwhata West zoned land) (E.g. Jetco and Wayside).

d. 1,600 lots planned in the Lakeside Plan Change 20 area.

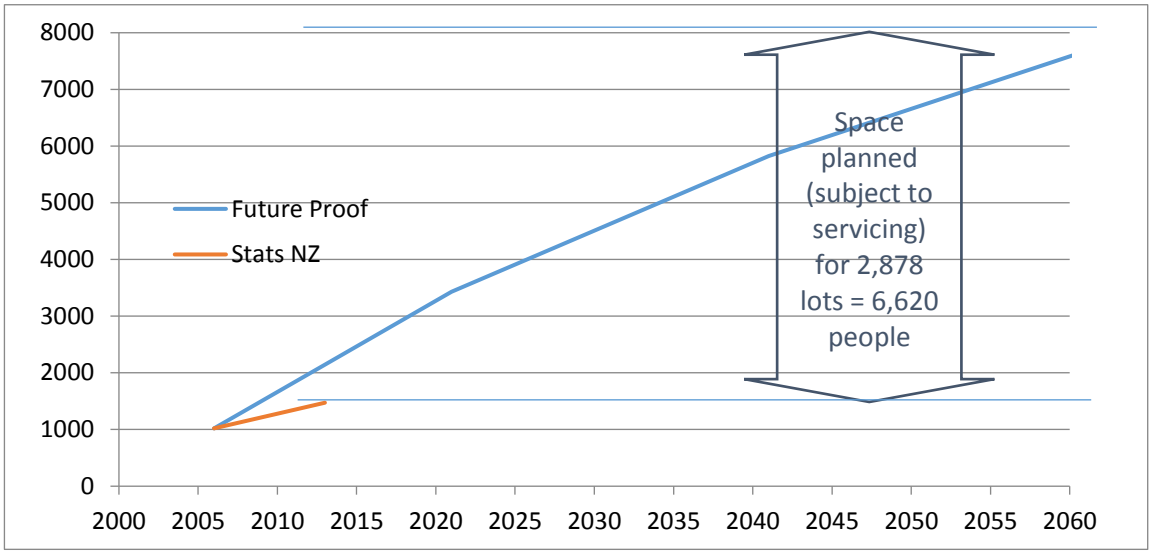


Figure 1: Population Projections in relation to development capacity (based on 2.3 people/household)

10. Using the Future Proof projections over a 10 year planning period there would be around 580 additional households. Based on an 80:20 peak period directional split and 1.4 trips/household during peak periods, that would result in around 650 additional trips/hour westbound on Te Kauwhata Road, and a total flow of around 950 vehicles/hour. This remains within the capacity of a single lane, which can carry around 1,400 vehicles/hour uninterrupted, and the Wayside Road/Te Kauwhata Road roundabout, which the majority of this proposal's traffic would use.

11. The site has consent for a 130 lot subdivision scheme layout (SUB0163/1) with some differences to the Structure Plan indicative road layout. In my opinion, the wider network effects relate to a difference of 30 lots, and internal and interface (subdivision to existing network) effects relate to a combination of 30 extra lots and a revised layout.

THE PROPOSAL

12. The proposal is for subdivision and land use consents for residential development for 163 lots. It includes significant earthworks to moderate

the variable slopes to optimise the site in terms of access and making the development of houses on the residential lots easier. Most of the earthworks are internal cut to fill operations, which avoids very large quantities of materials being transported to or from the site.

13. Once developed and occupied, the proposal is likely to result in an increase of around 1,670 trips/day, around 230 peak hour trips. Most of the traffic is likely to be to and from the Waikato Expressway to the west.

14. Initially, all the traffic will access the subdivision from Wayside Road. As development progresses and other connections are completed to Travers Road and Te Kauwhata Road through adjacent development within the Structure Plan area the demands on Wayside Road will reduce. In the worst case, the traffic volume on Wayside Road could increase by up to 1,670 veh/day, with full development and no extra connections, and this is well within the capacity of Wayside Road to accommodate it.

15. Wayside Road has a current seal width of 7m. This will need to be widened to meet the minimum lane widths required by the Te Kauwhata Structure Plan cross section. For a collector road (refer Figure 4B2 Te Kauwhata Structure Plan – Typical Road Cross Sections – Collector Roads), two 4m lanes are required, a total seal width of 8m. Verge and footpaths would also need to be modified. It may be desirable to consider a narrow painted median to provide for turning cars to be clear of through lanes. This may also assist in managing speeds. This is covered by draft condition 11 in the S42A report.

16. The proposed location of the new collector road intersection is the position shown on the Te Kauwhata Structure Plan. Wayside Road has a speed limit of 100 km/hr however the assessed speed environment is around 70-80 km/hr. This is due to the horizontal and vertical curvature and the restriction to visibility, as well as a relatively narrow seal width with only centreline markings. The existing sight distance is approximately 90m restricted to the north along Wayside Road by

vegetation, the bank within the road corridor and the power poles and adequate for the expected 50km/h speed restriction. Visibility could be improved to 110m by removing the bank and relocating the power poles and to 160m by trimming vegetation in private property if permitted. This is one of the main intersections subject to independent road safety audit at detailed design and post-construction stages as required by Proposed Condition 14. Proposed Condition 14 requires detailed design to meet the requirements and recommendations of the Gray Matter Traffic Impact Assessment for Te Kauwhata Land Ltd, Issue 2, dated 3 October 2016 and the Gray Matter s92 response dated 10 July 2017. My ITA recommends that the detailed design includes dimensions and details demonstrating that Waikato DC's requirements for visibility at intersections and driveways on Wayside Road will be satisfied. Condition 14 will ensure that the intersection is designed to achieve the sight distance relevant for the speed environment.

17. The additional traffic is well within the capacity of the road network to accommodate it.

ROAD LAYOUT

18. Figure 2 shows the proposed layout with roads labelled for reference.

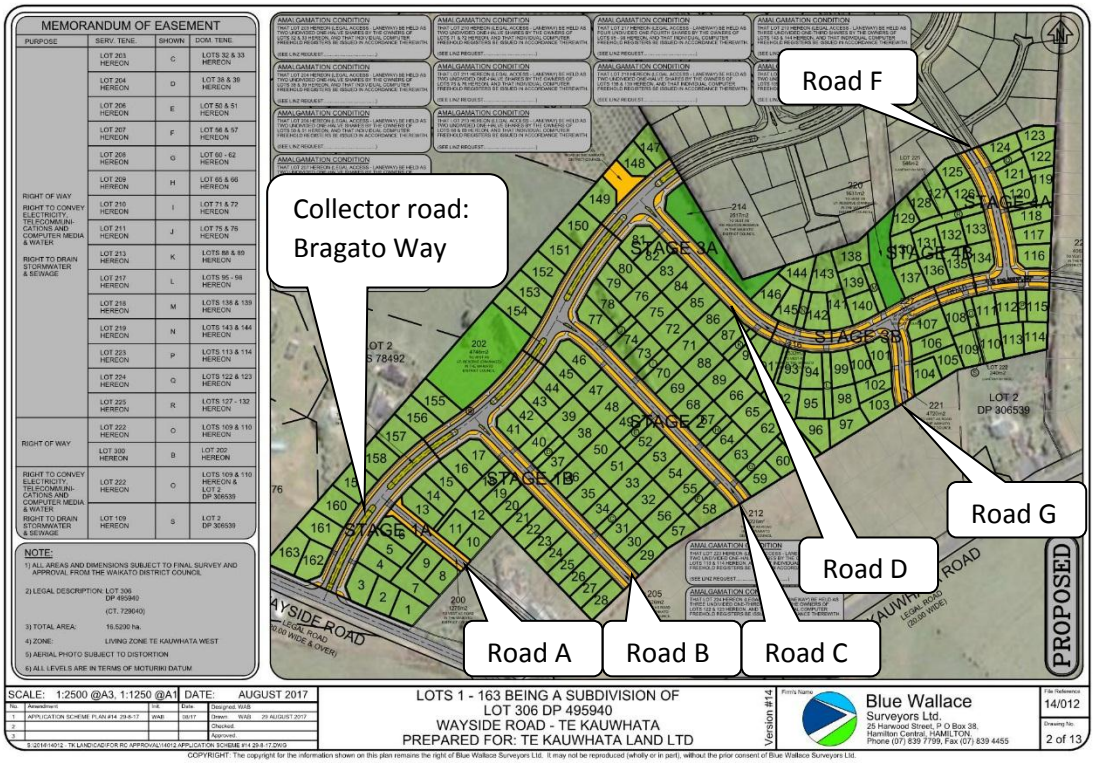


Figure 2: Structure Plan Road Layout Overlaid on Proposal

19. The proposed road layout is different from the Te Kauwhata Structure Plan and the Silverspur subdivision layout. It provides similar connectivity. However, the collector (location important) road is included in the proposal and forms an intersection with Wayside Road.

20. Figure 3 shows the indicative road layout with the Structure Plan layout overlaid for comparison. Other departures from the Structure Plan indicative layout are within the neighbouring subdivision areas, however the road layouts are consistent and connect appropriately to achieve the high degree of connectivity sought in the objectives and policies (15A.2.32) of the Te Kauwhata Structure Plan.

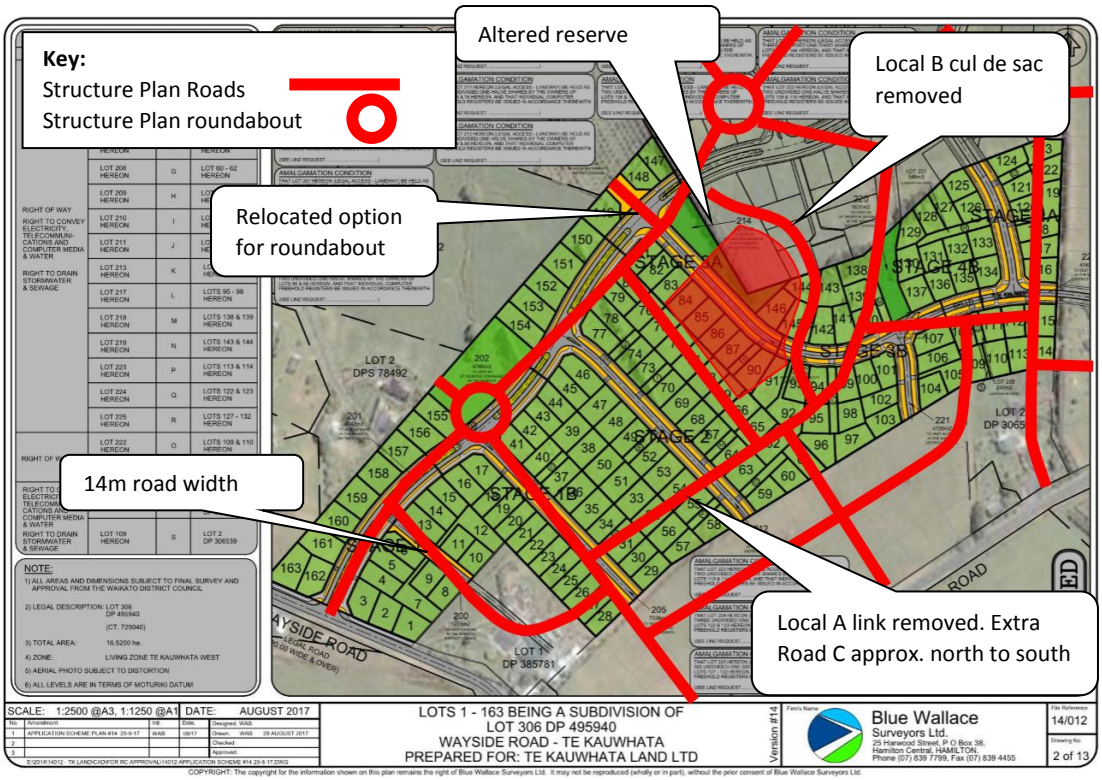


Figure 3: Structure Plan Road Layout Overlaid on Proposal (Approx.)

21. The main differences are:

a. No roundabout on the collector road, but with an option for a roundabout at the intersection of the collector road and Road D.

b. Reserve Access: The reserve has access from the north (collector road) and west (Road D) instead of east and west. This departure from the Structure Plan is the removal of a long cul-de-sac (Local B standard) but the proposed layout maintains two road frontages and access to the reserve area.

c. Road A will be in a narrower corridor (6m seal width, 14m road reserve) than the Local B width, and provides access to eight lots (6 to 13). The Structure Plan has the Local B connection through the neighbouring property to the Local A road. The proposed road extends to the boundary. Compared to the consented layout, which had a ROW accessing four lots but not extending to the boundary, the proposed classification as road (rather than

a right of way (with no connection) in the consented layout) allows more flexibility in terms of access and servicing if the neighbouring property were to subdivide in the future. I deal with the 14m corridor and potential development in the next section of this statement.

d. The proposed layout includes a connection from the east around the reserve to link to the collector road, removing one of the Local Road A links. There are four connection points for land to the south providing for future subdivision.

22. From a traffic engineering perspective, I consider that the connectivity provided by the proposed network is the same or better than that consented for Silverspur, and the improved gradients will make it easier for pedestrians and cyclists to get around.

ROAD AND ACCESS WIDTHS

23. The Te Kauwhata Structure Plan cross section standards include:

a. Collector: 25.5m wide road reserve, two 4m wide traffic lanes, planting in the median, services, drainage, one 1.5m wide footpath, one 3m wide shared cycleway/footpath and 2.65m wide car parking on both sides.

b. Local A: 22m wide road reserve, two 3.5m wide traffic lanes, services, drainage, 1.5m wide footpaths on both sides and 2.5m car parking on both sides.

c. Local B: 22m wide road reserve, two 3m traffic lanes, services, drainage, 1.5m wide footpaths both sides and 2.5m car parking on both sides.

24. The collector road will be 25.5m wide, consistent with the Structure Plan.

25. The proposed width for the local roads is 20m and includes all traffic features (parking, traffic lanes, footpaths, services, landscaping,

drainage etc.) equivalent to the Local A or B but within a reduced width (20m) corridor. A 20m road width is consistent with other areas of the District and with other developments recently approved within the Te Kauwhata West Living Zone. The effects of the changed widths relate to stormwater disposal, servicing and landscaping space and do not affect transportation functions.

26. Road A has a 14m road width. This is narrower than the Waikato District Plan standard width. It maintains a 6m carriageway.

27. The main transport effects of the reduced width are in flexibility for future changes, and risks for manoeuvring, compared to the typical Waikato DC requirement for a 20m wide road reserve or access allotment for five to eight lots. Road A has six lots requiring access (lots 7-12) and two lots that may use it for access (lots 6 and 13). The neighbouring land (Lot 1 DP385781) that Road A connects to could give rise to around nine potential lots.

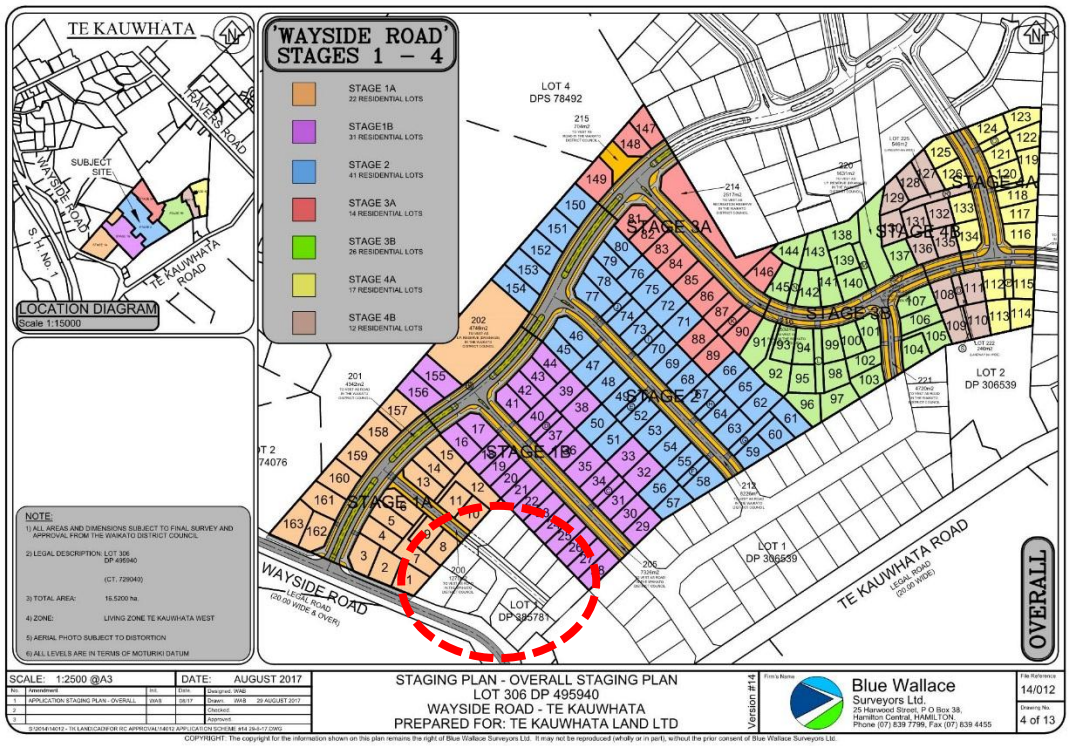


Figure 4: The limited catchment (circled dashed red) serviced by Road A means that there is negligible risk of a change in role.

28. The proposed road reserve and carriageway are wider than the 9m road reserve and 5.7m carriageway set out in NZS4404:2010, Land Development and Subdivision Infrastructure Table 3.2 for access for up to 20 dwelling units. NZS4404 is a national standard that encourages sustainable development and modern design of land development and subdivision infrastructure.

29. Attachment A includes drawings presented in response to Waikato DC requests for additional information that show that the reduced width:

    a. Provides for sufficient sight distance at the intersection;

    b. Provides sufficient space for services, carriageway features and landscaping; and

    c. Does not make any significant difference to access for vehicles. The swept paths show:

        i. A car will be able to manoeuvre with either width.

        ii. An 8m truck struggles with both the 20m corridor and the 14m corridor but would be able to gain access by completing an extra manoeuvre in the road corridor (for example – reverse in to an entrance) in order to get access. There is no design requirement for truck access to residential sites.

        iii. The swept paths also show how larger vehicles (11m rigid and a semi-trailer) will be able to manoeuvre at the intersection but that they cannot access a 4m right of way from either a 20m corridor or a 14m corridor so there is no change for them.

30. Most vehicles can turn tighter than the design vehicles, which have conservative turning circles and an allowance either side for driver errors. For example, most cars can complete a U turn easily within a 10m carriageway. There may be a few vehicles between the 8m rigid

and the 11m which would need an extra manoeuvre in the road corridor (for example – reverse in to entrances) in order to get access, but these would be infrequent and with the low traffic flow likely on the road would not cause problems. A 6m paved/sealed shared space enables two vehicles to pass without adverse effects on the road, visibility or access.

31. Options to mitigate the potential effects of the narrower road reserve include:

    a. Detailed design coordinating entrances, landscaping and parking to minimise constraints and provide opportunities for extra width for manoeuvring if parking bays are empty.

    b. Requiring entranceways to be wider at kerbs and property boundaries (e.g. minimum 4m at boundary rather than 3m).

32. There may need to be a turning area at the end of Road A until there is a connection through to the neighbouring property. This is dealt with in Proposed Condition 14(g).

33. Proposed Condition 14 requires detailed design for each of the internal roads.

34. There are 15 laneways each 8m wide proposed as access to rear lots. All but one service four lots or less and meet the District-wide Access and Road Performance Standards. Lot 225 services 6 lots. It meets the required seal width standard for an access allotment but not the corridor width (20m). I note that the Draft Proposed District Plan Access and Road Performance Standards[2] provide for an 8m corridor width for a residential access allotment servicing five to eight dwellings.

35. Proposed Condition 14 requires detailed design for each of the rights of way and entrances to rights of way.

[2] http://districtplan.waidc.govt.nz/pages/plan/book.aspx?exhibit=pdp (December 2017)

ROAD GRADIENTS

36. Significant earthworks are proposed. These will improve the road network by reducing the lengths of steep roads compared to existing topography and the consented Silverspur arrangement as shown in Figure 5. The main change is a shift of road sections from the 9-10% gradient to 6-7%. There remain some steep sections (greater than 8% (1 in 12)) but the proposed layout means most of the network is less than the maximum desirable ramp gradients for accessibility, although most do not achieve the desirable maximum gradient of 5% (1 in 20).

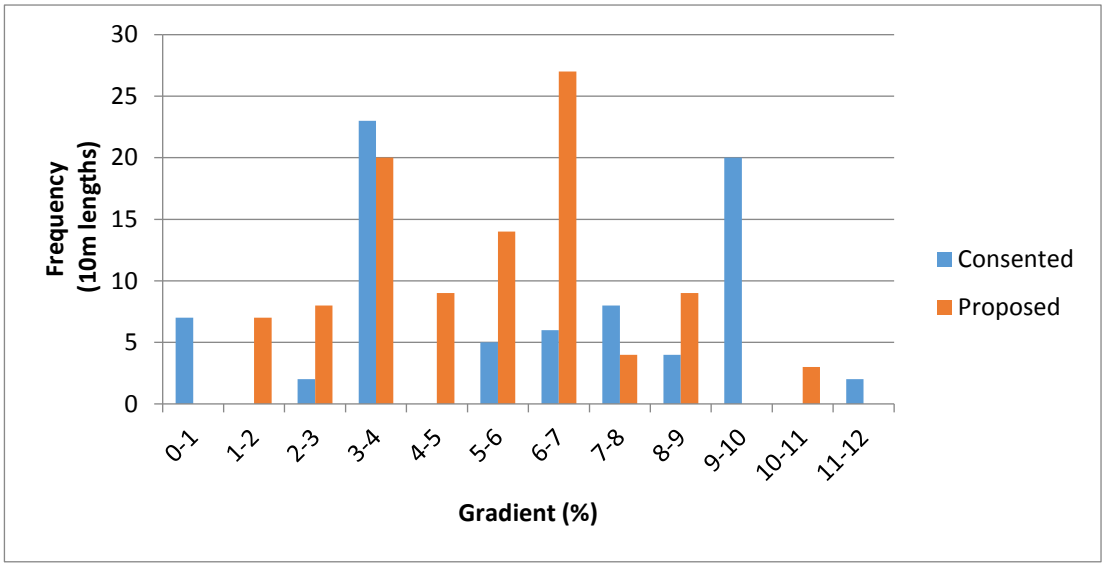


Figure 5: Comparison of proposed road gradients against Silverspur

37. The proposed earthworks provide better opportunities for less severe changes of gradient at intersections and on vertical curves. This has safety advantages because of improved visibility between road users and visibility for road markings at intersections. It also makes it easier to provide suitable crossing facilities for pedestrians.

38. As well as making the roads more accessible, the earthworks will make development of sections easier by reducing the need for retaining walls and the space required for entranceways to get up to building platform levels without steep driveways. This supports accessibility by making pedestrian, bike and wheelchair access easier and improves safety by reducing the gradients and making visibility from entranceways less

likely to be compromised by banks and retaining walls. This is illustrated in Figure C37 presented by Mr Graham, as shown in the extract below. The consented Silverspur design and its higher retaining walls would have resulted in longer driveways, increasing the costs of building and reducing the area of lots available for buildings and other activities. In some cases it is likely that the driveways would also not meet the WDC requirements for gradients.

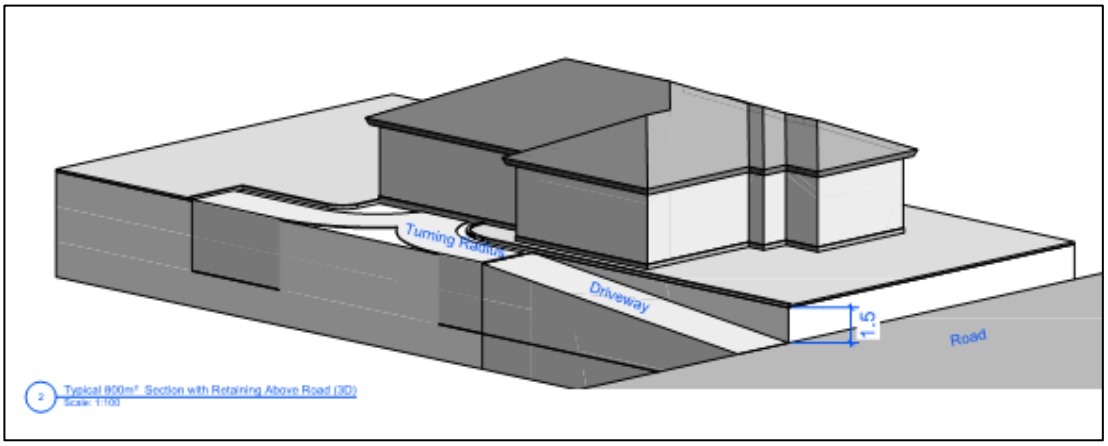


Figure 6: Illustration of how level differences affect internal access

EARTHWORKS AND SHOW HOMES

39. The application includes earthworks and four show homes as commercial activities.

40. There will be around 30,000m^3 nett cut material[3] for disposal, and construction materials which need to be brought in for the subdivision infrastructure. This is significantly less than the imported fill consented for the Silverspur proposal which did not balance cut and fill as well. Presuming earthworks over a single six month season, heavy vehicle construction traffic is likely to be less than 100veh/day[4]. With staging, traffic would probably be lower because the earthworks operations would be smaller. There will be construction machinery deliveries, and

[3] 202,143m^3 cut – 171,901m^3 fill = nett 30,242m^3 cut (Source – Blue Wallace Surveyors, 15/12/17).Earthworks volumes across whole subdivision (including reserve areas) – Revised TKL Proposal with hilltop reserve height remaining the same.

[4] 30,242m^3 x 1.25 (bulking factor)/8m^3/truck /120 working days = 40 loads = 80 trips/day.

materials such as those required for roads, drainage and retaining walls.

41. Traffic for the construction of the show homes is likely to involve up to 10 to 20 trips each day associated with tradespeople and deliveries.

42. Traffic for operation of the show homes would require fourteen groups of visitors and two staff trips each day to trigger the 30 trip threshold.

43. The traffic associated with the earthworks and show home construction and operation may exceed 30 trips/day but is highly unlikely to exceed 100 trips/day.

44. An additional 100 trips/day, likely to mean around 10 extra trips/hour, is unlikely to be noticeable and can readily be dealt with by a construction traffic management plan and temporary traffic management. Construction management is covered by Proposed Conditions 21 and 22 attached to Mr Dawson's evidence.

DISTRICT PLAN REQUIREMENTS

45. My ITA (Table 4) sets out the departures from the District Plan transportation requirements and their consequences. They include:

    a. Proportion of rear allotments

    b. Traffic generation

    c. Potential for reversing to or from the collector road

    d. Engineering standards (road reserve widths)

    e. Access spacing and sight distance for the Wayside Road intersection for the current Wayside Road speeds.

46. My understanding of the background to the Te Kauwhata Structure Plan road cross sections being wider than those for the rest of the District is that the additional width was desirable for landscape and amenity

reasons, and for stormwater management using swales, rather than relating to traffic.

47. Provided that adequate sight distance is addressed at the detailed design stage for the appropriate speed, there are no adverse effects on individuals or the environment from departures from District Plan standards relating to traffic.

48. The internal road layout departs from the Structure Plan layout but is more accessible and provides better connectivity for all transport modes within the subdivision and to the adjoining subdivisions and surrounding road network.

TRAFFIC EFFECTS AND MITIGATION

49. The likely effects of the proposal relate mainly to:

    a. Additional traffic from approximately 30 more lots than consented for the Silverspur subdivision and 163 compared to the existing situation, which would respectively lead to around 300 trips daily and 1,670 trips daily.

    b. The internal road layout having altered road alignments providing connectivity generally consistent with the Te Kauwhata structure plan and more accessible gradients when compared to the consented Silverspur proposal.

    c. A new collector road intersection on Wayside Road.

    d. Narrower road widths than the Te Kauwhata structure plan that match the District Plan typical engineering standards for residential roads.

    e. Classification of an access way as a road to protect options for future development for the adjacent landowner, resulting in a 14m wide road corridor.

50. The adverse effects relating to transportation include:

a. Increased noise from the additional traffic that is unlikely to be noticeable compared to the existing legal environment and the environment anticipated by the structure plan. I do not consider that mitigation is necessary because the traffic flows are generally as would be expected for the structure plan roads and typical urban traffic.

b. An increase in the potential for crashes relating to the additional exposure to traffic, additional intersection and access points that can be mitigated to less than minor through appropriate design. The designs should be subject to independent road safety audit.

c. A slight increase in delays (10 – 15 seconds) at intersections during peak periods, but average delays per vehicle are likely to remain below 35 seconds and the intersection performance will remain within generally accepted levels of service.

d. Potential for increased manoeuvring on Road A that can be mitigated through detailed design (e.g. avoiding constraints such as trees or power poles opposite and locating parking bays adjacent to entrances for lots 7 and 12) and/or wider entranceways.

e. An increase in traffic on Wayside Road between the collector road intersection and Te Kauwhata Road Roundabout. The effects can be mitigated by upgrading that length of Te Kauwhata Road to the appropriate standard. The juice factory site would be the property worst affected. Visibility at the entranceway is not likely to change and the design of Wayside Road is subject to Council approval, so there should not be any safety concerns. As development traffic increases it is likely that there will be delays of a few seconds waiting for vehicles on Wayside Road to pass. Once the full development is occupied, some traffic is likely to use the collector network through the Jetco site and Travers Road to get to Te Kauwhata Village. That is likely to be

a small proportion of the expected 1,670 trips/day and likely to have negligible adverse effects.

f. In the long term, there is expected to be an increased demand for infrastructure upgrades such as widening of Te Kauwhata Road and walking/cycling facilities on Te Kauwhata Road, but that demand is more likely to be driven by development alongside Te Kauwhata Road and towards the existing Te Kauwhata village. That can be dealt with through Council's infrastructure planning and funding processes and development contribution regime.

51. The positive effects of the proposal relating to transportation, as well as the benefits of access for housing, generally relate to improved road gradients in comparison with the Silverspur subdivision design. This results in:

a. A more accessible network;

b. Easier access for properties and,

c. A greater likelihood of walking and cycling.

52. The increased density supports walking, cycling and passenger transport but the difference in traffic movements between the proposal and the consented Silverspur subdivision is unlikely to be noticeable.

SUBMISSIONS

53. The submissions did not raise any concerns relating to traffic.

54. NZTA submitted in relation to reverse sensitivity to state highway traffic noise. This is dealt with in the evidence of Mr McAlley.

SECTION 42A REPORT

55. Section 8.6 of the Section 42A report concludes that the effects on land transport and traffic safety will be no more than minor, reserving a position on the effects of the proposed reduced width 14m public road

and recommending that the applicant address this further at the hearing. I agree with that conclusion.

56. I have commented on the 14m width in paragraphs 26 to 28 previously and make additional comments here. District Plan Appendix B: B7 Road Standards , B7.1 states that *"Roads shall meet these objectives:*

a. ensure safe and efficient movement of people, vehicles and goods, with minimum adverse effects on the environment

b. provide for network utilities, subject to objective (a)."

57. The cross section in Attachment 2 shows that the 14m is sufficient to accommodate the necessary road features and services. The 14m proposal is wider than in NZS4404:2010, Land Development and Subdivision Infrastructure, which has a road width of 9m for up to 20 sections, so is better than a nationally accepted standard.

58. The proposed subdivision includes eight lots that could use Road A so it could be classed as a right of way, with the impact being that an additional two lots use it for access. However, classification as a public road provides greater flexibility for potential development of the adjacent property and access for services.

59. Figure 7 shows how a car can fit in an access without difficulty in a 14m layout - just with a wider swept path as it crosses the boundary.

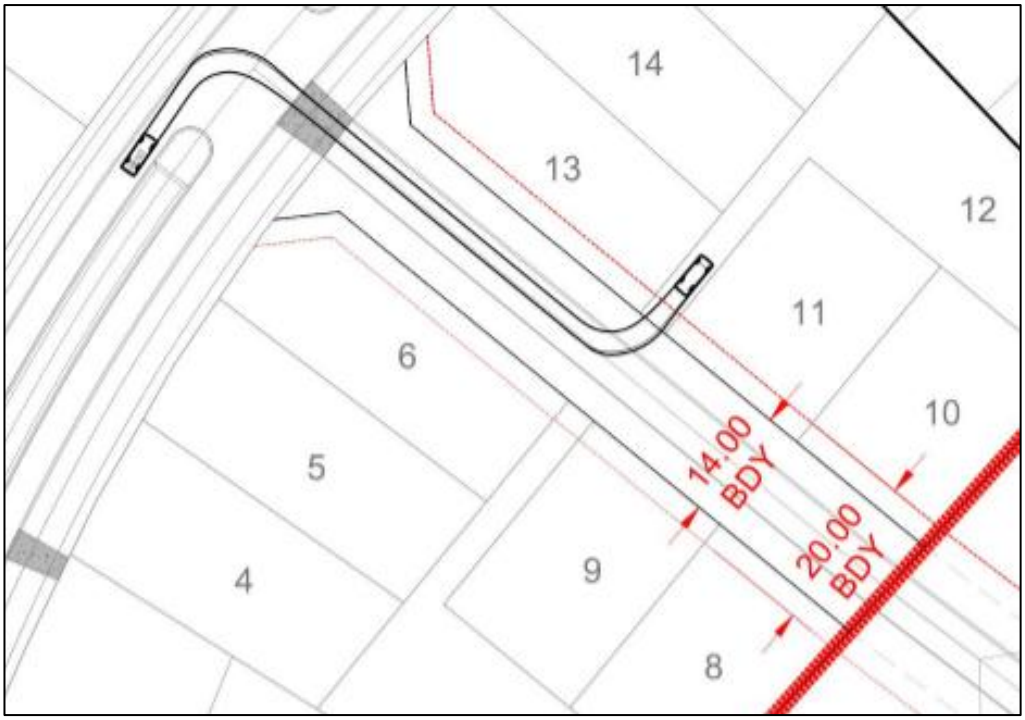


Figure 7: Car Swept Path – Road A (Extract from S92 response)

60. The reduction from 20m to 14m width for Road A is therefore unlikely to affect cars or vans.

61. There is no requirement to design residential entrances to accommodate larger vehicles. However, Figure 8 shows how the Waikato DC 90%ile truck nearly fits in a 4m access in a 14m corridor, again with a wider swept path as it crosses the boundary. Widening the carriageway to 6.4m to accommodate the 0.2m needed on each side, having a parking space, accepting that trucks may ride up on the kerb, or requiring wider entranceways would deal with the constraint if necessary.

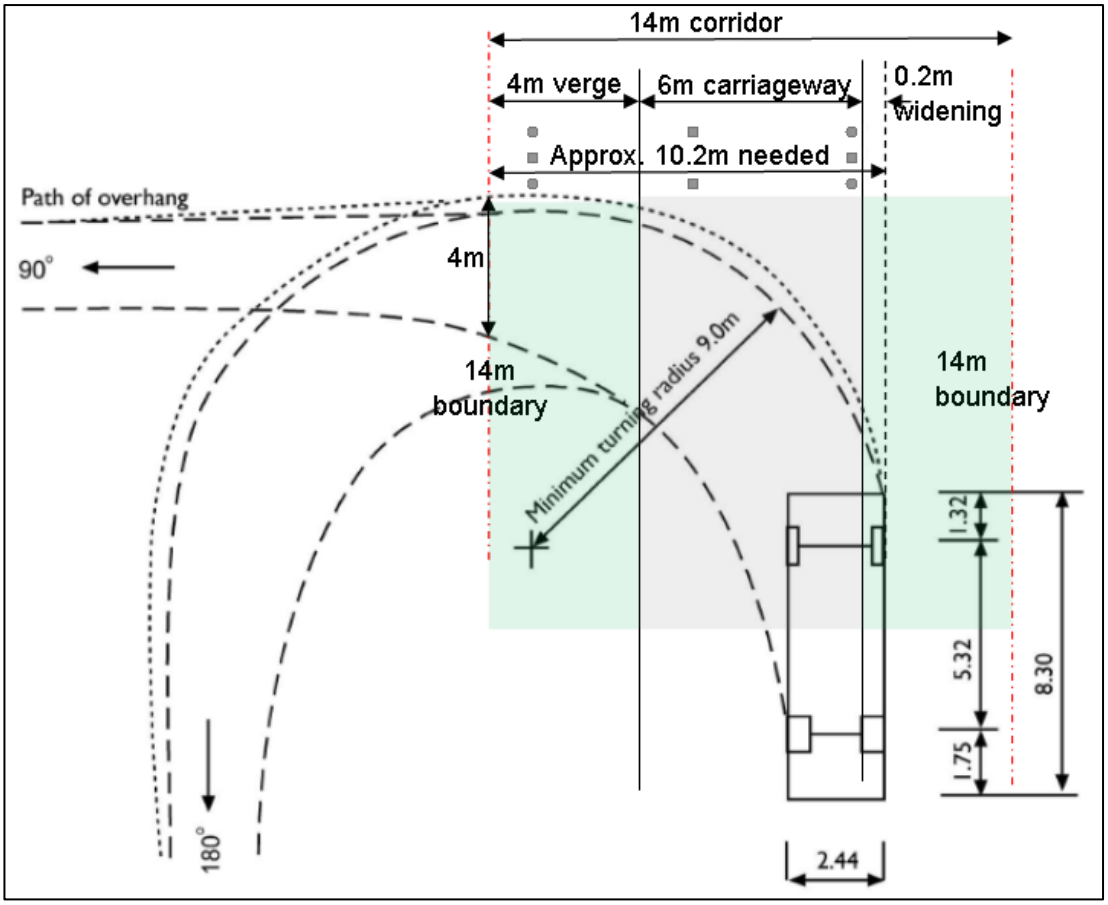


Figure 8: WDC 90%ile Truck Swept Path – Road A

62. The 14m width is therefore unlikely to affect most small trucks (smaller than the 90%ile or with better turning circles) or can be mitigated in detailed design.

63. I consider that the effects, even without mitigation, are likely to be less than minor since they affect a small proportion of traffic, only affect eight lots, and would only result in a single additional manoeuvre, and provide more space than NZS4404. If required, the effects can be mitigated to be negligible with a minor increase in carriageway width, reinforcing the kerbs, or placing parking bays appropriately. Those can be managed through detailed design approvals.

64. Section 15 of the S42A report introduces a draft suite of conditions for consideration. S42A draft condition 11(a) states:

"Roading

11. Detailed engineering plans including calculations and specifications shall be submitted to and approved by the Council for the following:

(a) The requirements and recommendations of the Gray Matter Traffic Impact Assessment, Te Kauwhata Land Ltd, Issue 2, dated 3 October 2016 and the Gray Matter S92 response dated 10 July 2017;….."

65. I consider that there is a risk of confusion in the wording of S42A draft condition 11(a) and suggest that the specific requirements are set out in the conditions, rather than referenced. Table 1 lists the requirements and recommendations from the Traffic Impact Assessment (Section 5.2 Mitigation Measures) and S92 response dated 10 July 2017 and how they are dealt with in the proposed amended conditions presented in the evidence of Mr Dawson.

Traffic Impact Assessment Requirement	Response in Conditions
a. Widening of Wayside Road carriageway to 4m on the subdivision side to meet the Te Kauwhata Structure Plan collector cross section and provide a 1.5m footpath along the subdivision frontage.	Partly dealt with in S42A draft condition 11(e) and numbered 14(e) in Mr Dawson's evidence amended conditions. Replacement condition 14a) (previously referenced Gray Matter ITA and S92 Response) to require *"widening of Wayside Road adjacent to the subdivision to provide a 4m carriageway width from the existing centreline and provide a 1.5m footpath;"*
b. Ensure stormwater management devices are designed to provide safely for pedestrians and vehicles.	Dealt with by combination of S42A draft condition 11(f) numbered 14(f) in Mr Dawson's evidence amended conditions, and safety audit requirement Condition 14f).
c. Design approvals, including: i. The consent holder arranging an independent Detailed Design (Stage 3) road safety audit for the subdivision roads and intersections with Wayside Road in accordance with the NZTA Draft Guidelines for Road Safety Audit.	Dealt with in S42A draft condition 11(f) numbered 14(f) in Mr Dawson's evidence amended conditions, including an additional requirement for post-construction safety audits as well as design audits.
ii. Detailed design in accordance with the Hamilton City Council Infrastructure Technical	Dealt with in S42A draft condition 9(b) numbered 12 in Mr Dawson's evidence amended conditions.

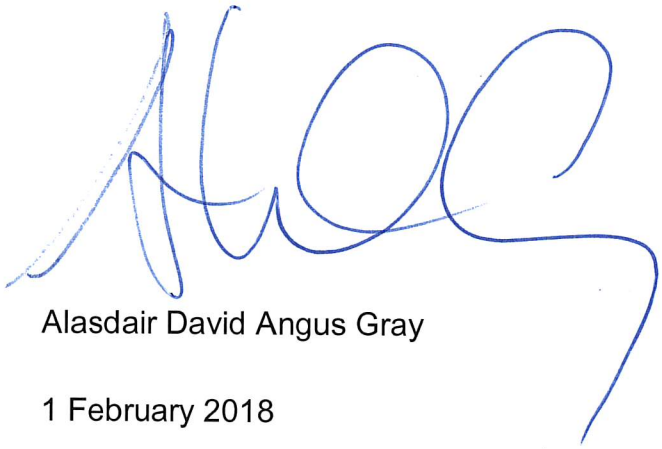
Specifications and the Waikato District Council supplement.	
iii. Dimensions and details demonstrating that Waikato DC's requirements for visibility at intersections and driveways on Wayside Road will be satisfied. A speed limit of 50 km/hr on Wayside Road from a distance approximately 150m north of the site to the Te Kauwhata Road roundabout is consistent with the Te Kauwhata Structure Plan expected residential nature of the surrounding area and the SLNZ assessment (after development).	Partly dealt with in S42A draft condition 9(b) numbered 12 in Mr Dawson's evidence amended conditions. Additional requirement proposed in 14(k) in Mr Dawson's evidence amended conditions to require dimensions and details demonstrating that Waikato DC's requirements for visibility at intersections and driveways on Wayside Road will be satisfied for the speed environment expected at the time of construction.
d. Construction management plan including: i. Temporary Traffic Management plans in accordance with the Code of Practice for Temporary Traffic Management. ii. Corridor access requests for any works affecting Wayside Road iii. Measures to prevent debris and mud tracking onto public roads, and arrangements to clean roads should dirt or debris end up on public roads.	Dealt with in S42A draft conditions 21 (Construction Management Plan) and 22 (Construction Traffic Management Plan). 22g) covers temporary traffic management. 22c) requires consultation with Waikato DC roading staff. A corridor access request is needed for authorisation for any works. 22f) covers soil and debris.
S92 Response dated 10 July 2017	**Response in Conditions**
e. ROW A to Public Road Require detailed design to consider services, parking, footpaths, visibility at intersections, entranceways, etc. to avoid the potential risks from reduced manoeuvring space.	Partly dealt with in S42A draft condition 9(b) general design requirements referring to Infrastructure Technical Specifications and numbered 12 in Mr Dawson's evidence amended conditions. Extended with 14l) in Mr Dawson's evidence amended conditions to require detailed design for roads narrower than 20m to consider services, parking, footpaths, visibility at intersections, entranceways, etc. to avoid the potential risks from reduced manoeuvring space.

Table 1: Specific Requirements from ITA and S92 Response.

CONCLUSIONS

66. The draft conditions proposed in the S42A report, as amended and attached to Mr Dawson's evidence, are sufficient to ensure that the effects of the proposal relating to traffic and transportation are no more than minor.

67. I consider that, subject to appropriate conditions requiring mitigation such as widening Wayside Road, design approvals including ensuring adequate visibility at the Wayside Road/collector road intersection and construction management plans, there does not appear to be any significant reason related to traffic why the proposal should not proceed and the adverse effects on the environment will be no more than minor.



Alasdair David Angus Gray

1 February 2018

Attachment 1: Proposed Subdivision Layout

MEMORANDUM OF EASEMENT

PURPOSE	SERV. TENE.	SHOWN	DOM. TENE.
RIGHT OF WAY RIGHT TO CONVEY ELECTRICITY, TELECOMMUNI-CATIONS AND COMPUTER MEDIA & WATER RIGHT TO DRAIN STORMWATER & SEWAGE	LOT 203 HEREON	C	LOTS 32 & 33 HEREON
	LOT 204 HEREON	D	LOT 38 & 39 HEREON
	LOT 206 HEREON	E	LOT 50 & 51 HEREON
	LOT 207 HEREON	F	LOT 56 & 57 HEREON
	LOT 208 HEREON	G	LOT 60 - 62 HEREON
	LOT 209 HEREON	H	LOT 65 & 66 HEREON
	LOT 210 HEREON	I	LOT 71 & 72 HEREON
	LOT 211 HEREON	J	LOT 75 & 76 HEREON
	LOT 213 HEREON	K	LOTS 88 & 89 HEREON
	LOT 217 HEREON	L	LOTS 95 - 98 HEREON
	LOT 218 HEREON	M	LOTS 138 & 139 HEREON
	LOT 219 HEREON	N	LOTS 143 & 144 HEREON
	LOT 223 HEREON	P	LOTS 113 & 114 HEREON
	LOT 224 HEREON	Q	LOTS 122 & 123 HEREON
	LOT 225 HEREON	R	LOTS 127 - 132 HEREON
RIGHT OF WAY	LOT 222 HEREON	O	LOTS 109 & 110 HEREON
	LOT 300 HEREON	B	LOT 202 HEREON
RIGHT TO CONVEY ELECTRICITY, TELECOMMUNI-CATIONS AND COMPUTER MEDIA & WATER	LOT 222 HEREON	O	LOTS 109 & 110 HEREON & LOT 2 DP 306539
RIGHT TO DRAIN STORMWATER & SEWAGE	LOT 109 HEREON	S	LOT 2 DP 306539

NOTE:

1) ALL AREAS AND DIMENSIONS SUBJECT TO FINAL SURVEY AND APPROVAL FROM THE WAIKATO DISTRICT COUNCIL

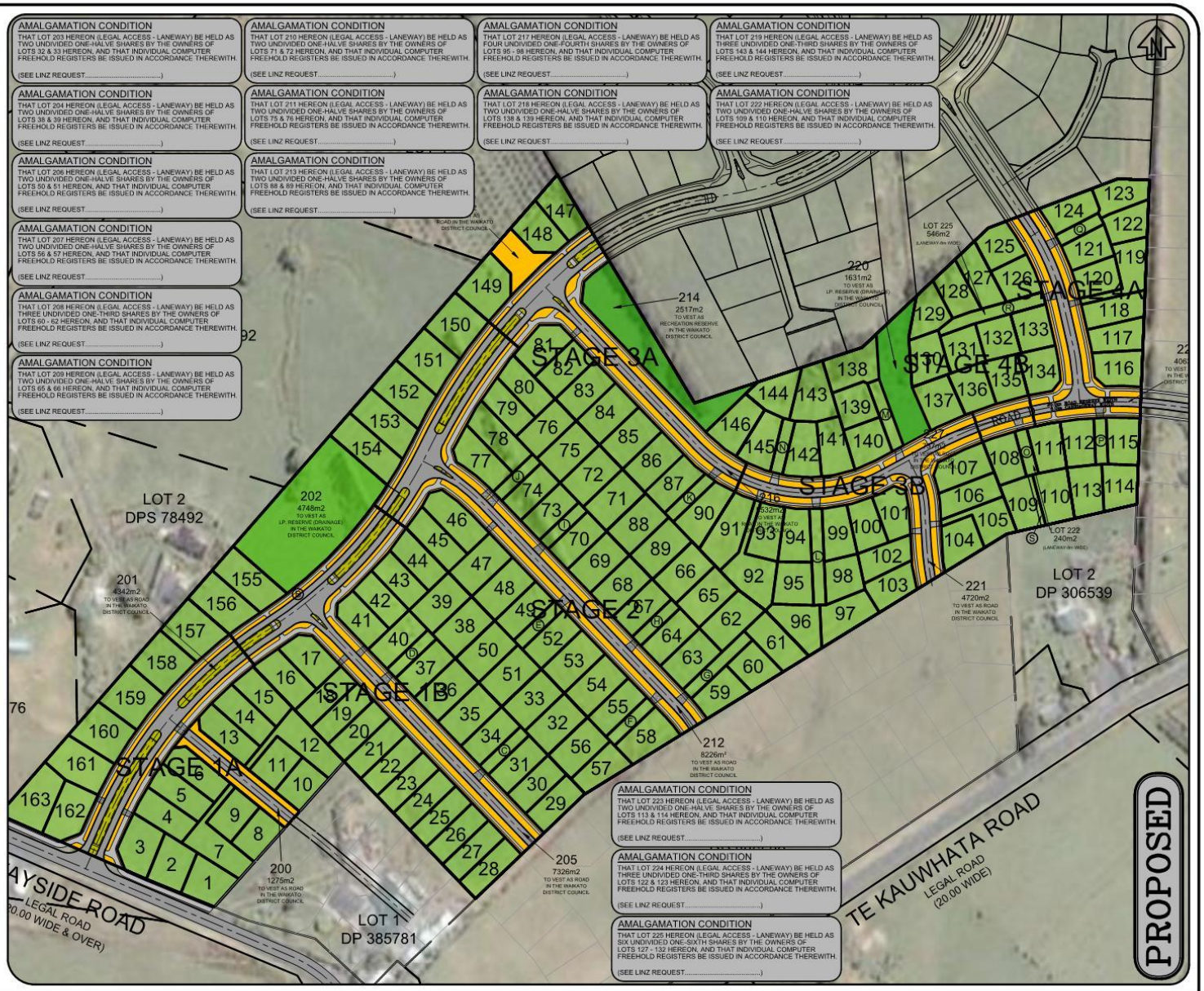
2) LEGAL DESCRIPTION: LOT 306 DP 495940 (CT. 729040)

3) TOTAL AREA: 16.5200 ha.

4) ZONE: LIVING ZONE TE KAUWHATA WEST

5) AERIAL PHOTO SUBJECT TO DISTORTION

6) ALL LEVELS ARE IN TERMS OF MOTURIKI DATUM



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No.	Amendment	Init.	Date.	Designed. WAB
1	APPLICATION SCHEME PLAN #14 29-8-17	WAB	08/17	Drawn. WAB 29 AUGUST 2017
2				Checked.
3				Approved.

S:\2014\14012 - TK LAND\CAD\FOR RC APPROVAL\14012 APPLICATION SCHEME #14 29-8-17.DWG

LOTS 1 - 163 BEING A SUBDIVISION OF LOT 306 DP 495940 WAYSIDE ROAD - TE KAUWHATA PREPARED FOR: TE KAUWHATA LAND LTD

Version #14

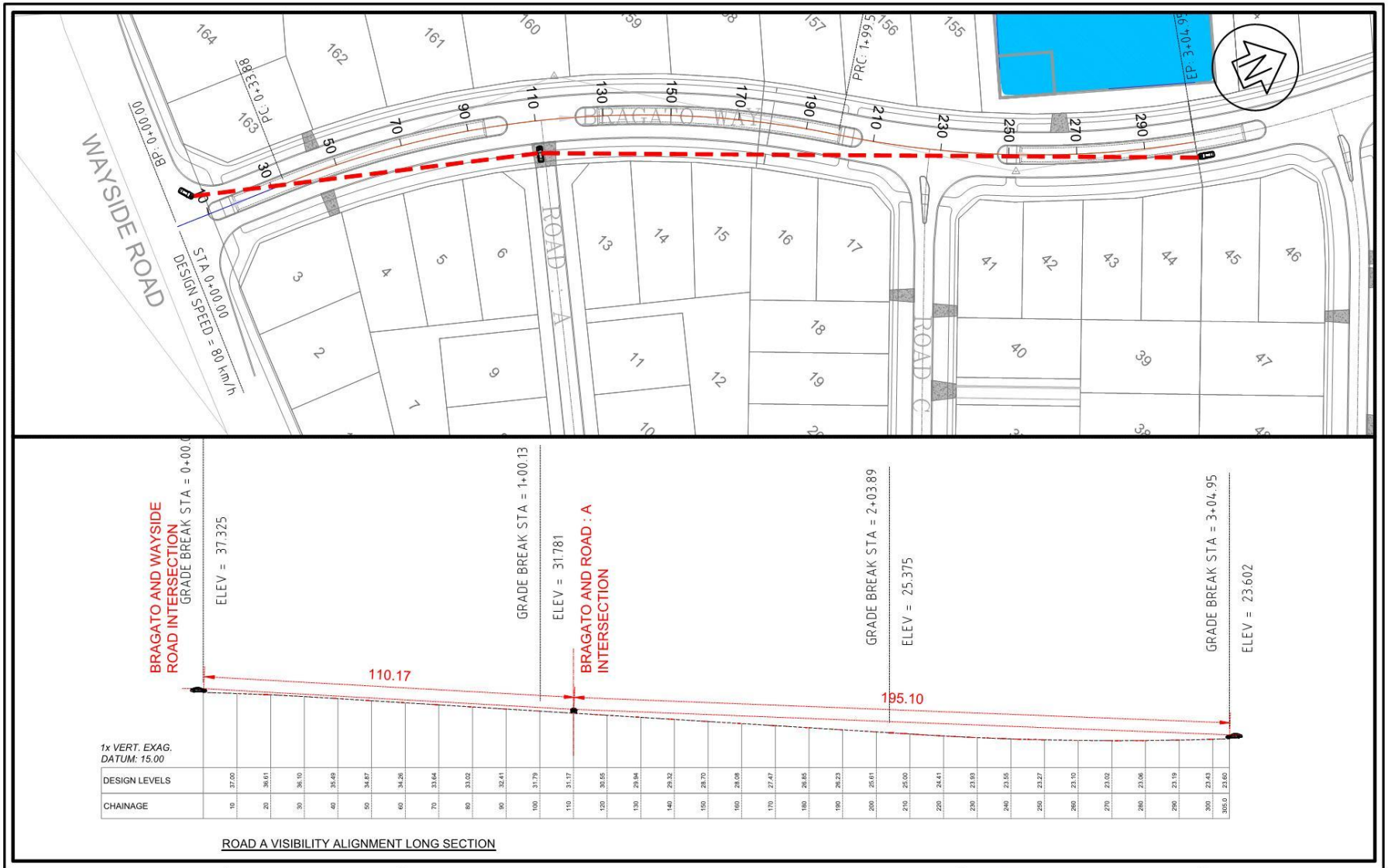
Firm's Name
Blue Wallace Surveyors Ltd.
25 Harwood Street, P O Box 38, Hamilton Central, HAMILTON.
Phone (07) 839 7799, Fax (07) 839 4455

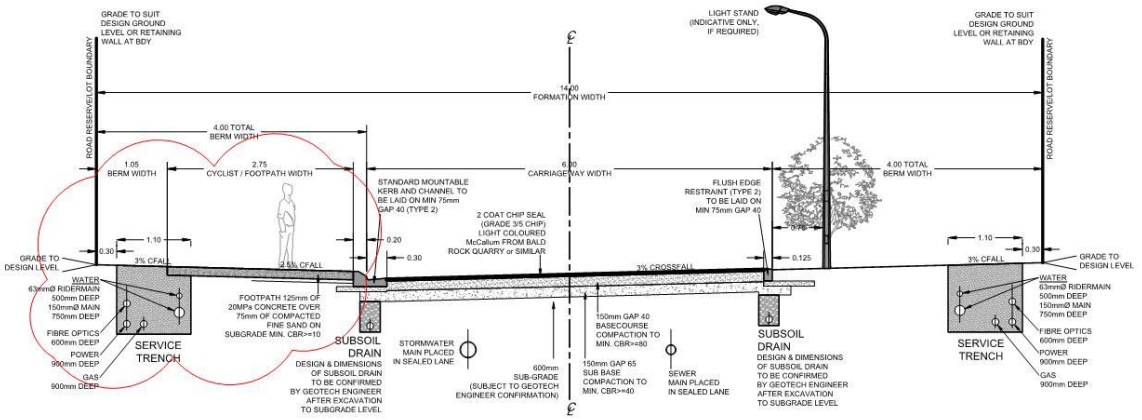
File Reference 14/012

Drawing No. 2 of 13

Attachment 2: Road A Drawings showing:

- Adequate visibility
- Sufficient space within the cross section for all necessary road and utility features.
- Comparisons of swept paths for car, 8m truck, 11m truck and semi-trailer design vehicles with 14m and 20m road widths.

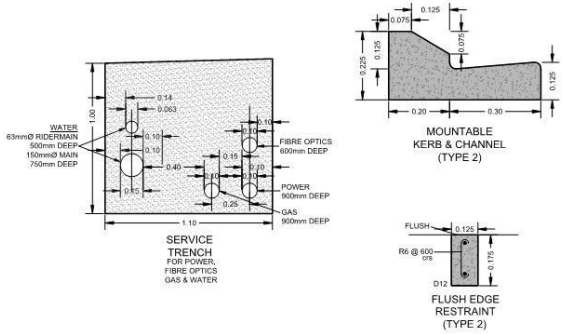




TYPICAL CROSS SECTION ROAD : A
14.00m LOT 200 ROAD CROSS SECTION

NOMINATED SUPERVISIOR
ENGINEERING PLANS FOR CONSTRUCTION

NAME: MURRAY WALLACE - REGISTERED PROFESSIONAL SURVEYOR
ADDRESS: 25 HARWOOD STREET, HAMILTON
E-MAIL: murray@bluewallace.co.nz
PHONE: Wk. (07) 839 7799 Mob. 021 823 768



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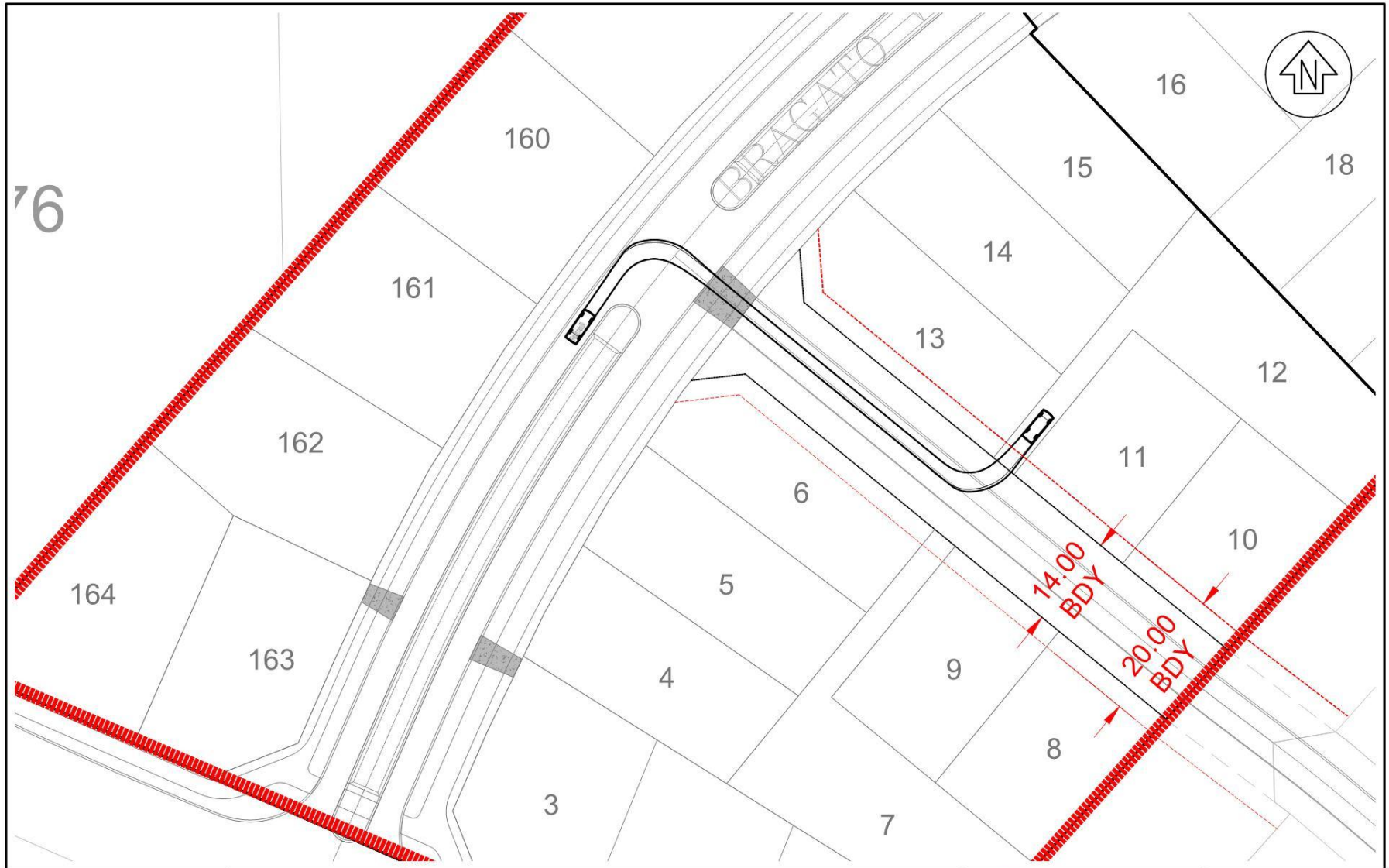
1				Checked.	
2				Approved.	
S:\2014\14012 - TK LAND\CAD\ENGINEERING\ROAD TYP X SEC SHEETS.DWG					

PROPOSED ENGINEERING WORKS - STAGE 1- 4
TYPICAL ROAD CROSS SECTIONS
24 WAYSIDE ROAD - TE KAUWHATA
PREPARED FOR: TKL DEVELOPMENT.

Firm's Name
Blue Wallace Surveyors Ltd.

25 Harwood Street, P O Box 38
Hamilton Central, HAMILTON.
Phone (07) 839 7799
Email office@bluewallace.co.nz

Drawing Reference: 14012-EN-354
Revision: 0



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DATE: OCTOBER 2017

No.	Amendment	Init.	Date.
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2			
3			

Designed. SM
Drawn. ###
Checked.
Approved.

S:\2014\14012 - TK LAND\CAD\ENGINEERING\TKL ROAD A RISK MANAGED DETAIL.DWG

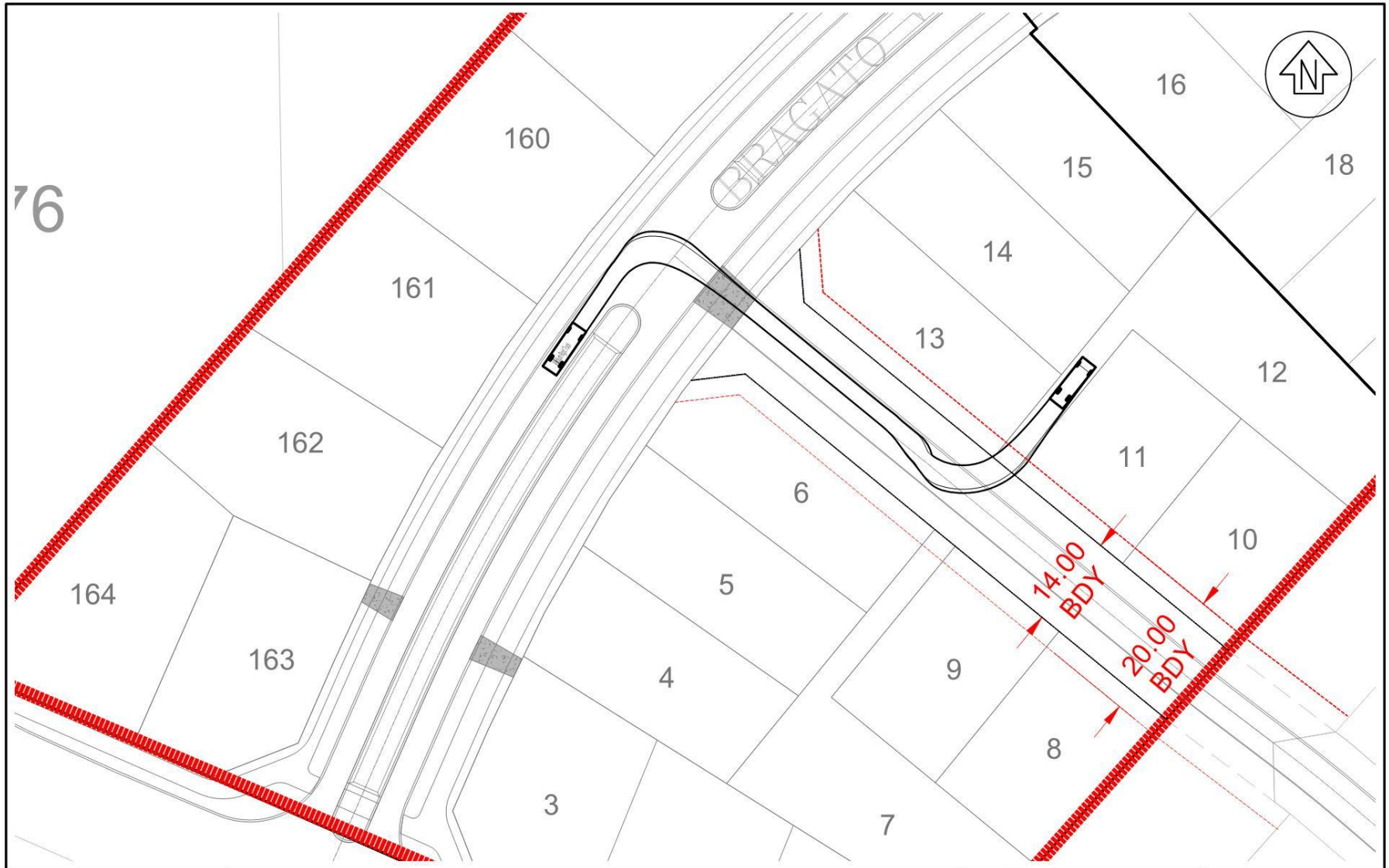
VEHICLE TRACKING - CAR

Blue Wallace Surveyors Ltd.

25 Harwood Street, P O Box 38
Hamilton Central, HAMILTON.
Phone (07) 839 7799
Email office@bluewallace.co.nz

Drawing Reference: 14012-SK-1A

Revision: A



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Designed. SM
Drawn. ###
Checked.
Approved.

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VEHICLE TRACKING - 8m Rigid

Blue Wallace Surveyors Ltd.

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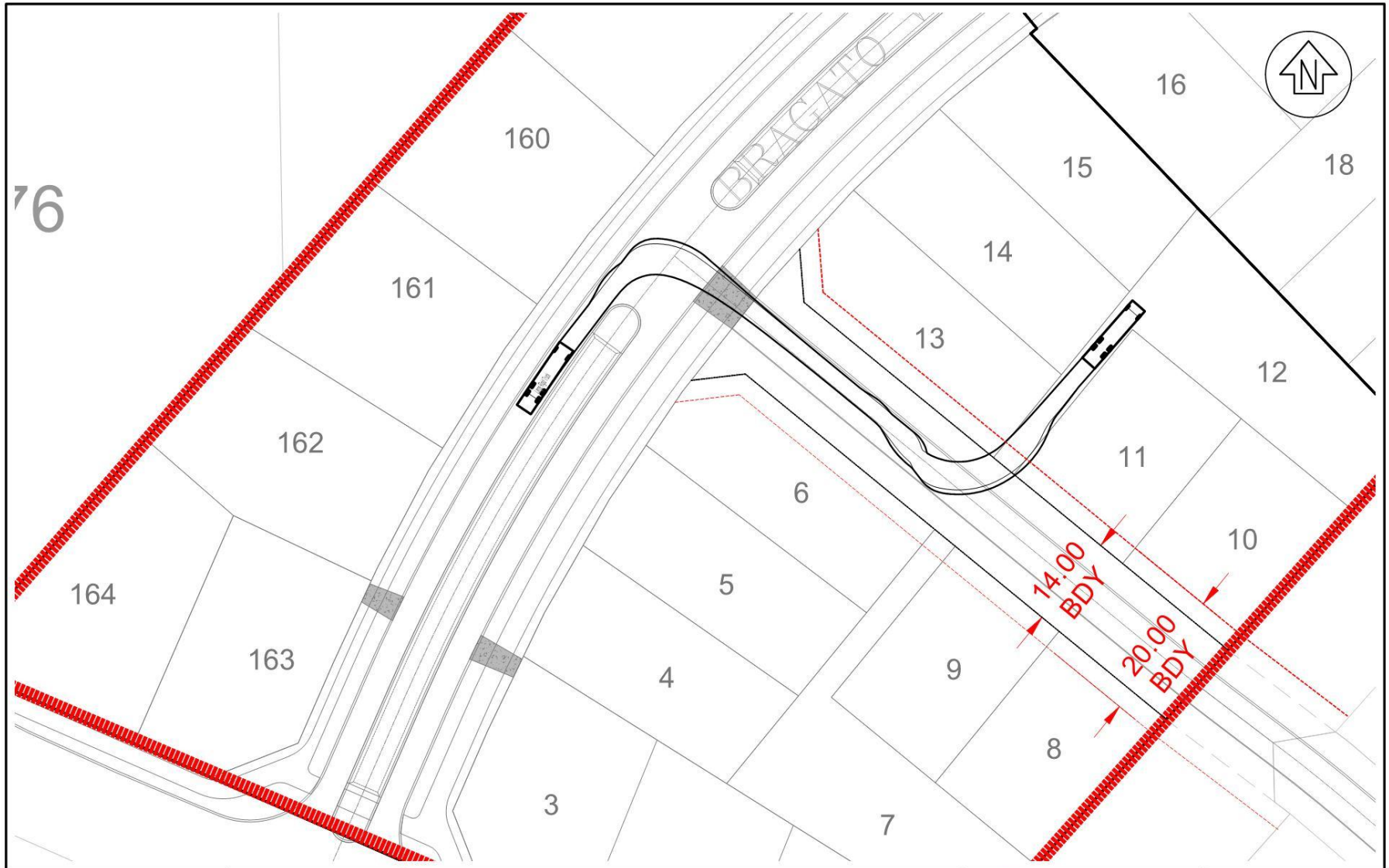
Hamilton Central, HAMILTON.
Phone (07) 839 7799
Email office@bluewallace.co.nz

Drawing Reference: 14012-SK-2A

Revision: A



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Designed. SM
Drawn. ###
Checked.
Approved.

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VEHICLE TRACKING - 11m Rigid

Blue Wallace Surveyors Ltd.

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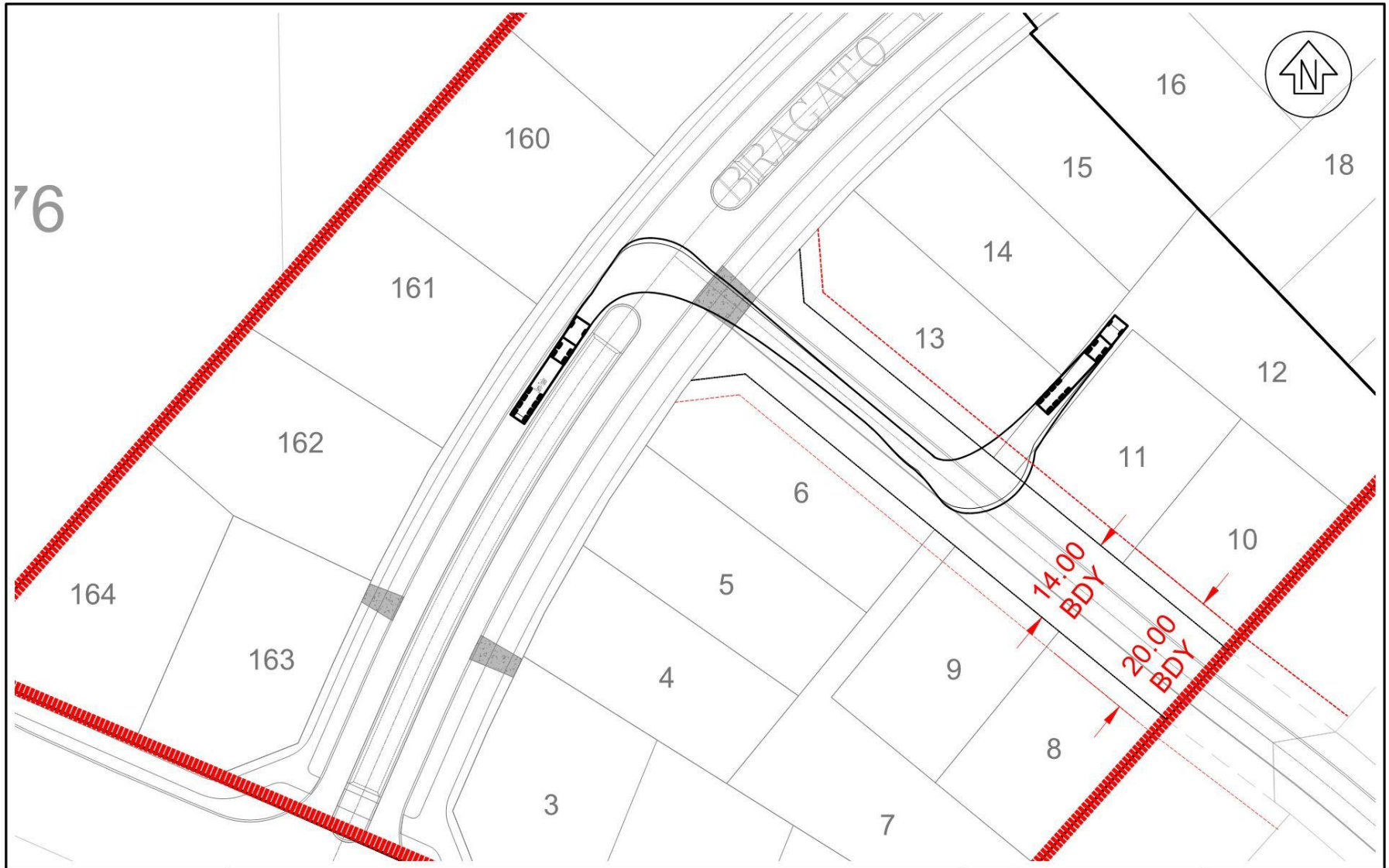
Hamilton Central, HAMILTON.
Phone (07) 839 7799
Email office@bluewallace.co.nz

Drawing Reference: 14012-SK-3A

Revision: A



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Designed. SM
Drawn. ###
Checked.
Approved.

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VEHICLE TRACKING - Semi-trailer

Blue Wallace Surveyors Ltd.

25 Harwood Street, P O Box 38
Hamilton Central, HAMILTON.
Phone (07) 839 7799
Email office@bluewallace.co.nz

Drawing Reference: 14012-SK-4A

Revision: A