Attachment D

# HAWEA SPECIAL HOUSING AREA DEED (INFRASTRUCTURE & AFFORDABILITY)

Between

**Universal Developments Hawea Limited**

And

**Queenstown Lakes District Council**

And

**Queenstown Lakes Community Housing Trust**

# HAWEA SPECIAL HOUSING AREA DEED (INFRASTRUCTURE & AFFORDABILITY)

Date: 2018

**Parties**

1. Universal Developments Hawea Limited (**Developer**)
2. Queenstown Lakes District Council (**Council**)
3. Queenstown Lakes Community Housing Trust (**QLCHT**)

**Background**

A. The Developer submitted to the Council the Hawea SHA EOI relating to a SHA on the Universal Developments Land.

B. The Council resolved on 28 June 2018 to approve in principle the potential development of the SHA subject to further consideration of certain matters.

C. The Council also resolved on 28 June 2018 that prior to recommending the SHA to the Minister the General Manager of Planning and Development was to proceed with negotiating a stakeholder deed that addresses the requirements of the Implementation Policy, including:

   i. the contribution to QLCHT, including doubling the contribution for Stage 1;

   ii. the proposed affordability mechanisms set out in section 13 of the Hawea SHA EOI, including a requirement to meet the price points specified;

   iii. a restriction on visitor accommodation;

   iv. infrastructure requirements;

   v. parks and reserves, including trails, footpaths and connections; and

   vi. qualifying development criteria for the proposed SHA.

D. Clause 4 of the Implementation Policy records an expectation that the outcomes agreed in respect of any SHA will be secured through a suitable and legally binding agreement to ensure their delivery in an appropriate and timely manner.

E. Clause 4 of the Implementation Policy also records an expectation that the Council will not enter into any agreement that fails to address issues of affordability and community housing to the satisfaction of the Council.

F. This Deed is entered into for the purposes of clause 4 of the Implementation Policy.

G. This Deed is limited to Infrastructure and Affordability. Nothing in this Deed shall limit the ability of the Council to enter into a further Deed/s as necessary to meet the purposes of clause 4 of the Implementation Policy.

**THIS DEED RECORDS:**

**Interpretation**

1. For the purposes of this Deed the following terms have the following meanings:

**Additional Infrastructure** means any infrastructure identified in a Revised Infrastructure Report that is required to address any additional water supply, wastewater, stormwater and/or transport effects as a result of changes to the residential development proposed in the Hawea SHA EOI.

**Capell Avenue Contribution** means a contribution by the Developer to the cost of the Capell Avenue Extension, being the lesser of:

a. one third of the total cost of construction of the Capell Avenue Extension (plus GST); and

b. $500,000.00 (plus GST).

**Capell Avenue Extension** means the formation of Capell Avenue between Nichol Street and Cemetery Road, and the link through Sentinel Park to Grand View Road, for vehicular use.

**Consent** means a resource consent(s) that enables the implementation of the Hawea SHA Outcome.

**Consent Application** means all reports, assessments, plans and other documentation and information necessary to apply for a Consent in accordance with clauses 7 and 8.

**Council** means the Queenstown Lakes District Council or the equivalent or replacement territorial authority.

**Developer** means Universal Developments Hawea Limited.

**Execution Date** means the date on which this Deed is executed by all parties.

**Government** means the New Zealand Government.

**HASHAA** means the Housing Accords and Special Housing Areas Act 2013.

**Hawea SHA EOI** means the Developer's Expression of Interest: Hawea – Expression of Interest for a Special Housing Area dated May 2018 as submitted to the Council and attached to this Deed as Schedule C and amended by the updated masterplan submitted to the Council and attached to this Deed as Schedule D, except that the references to the "Community Hub" shall be read as referring to the "Township Service Centre".

**Hawea SHA Outcome** means the development and offering to the market of a predominantly residential development consistent with the infrastructure requirements specified in clauses 13-3434 and the affordability requirements specified in clauses 37-4637 and generally of the urban design, layout, size, scale and density described in the Hawea SHA EOI, but none of the following activities may be located in the area referred to as the Township Service Centre:

a. town hall;

b. public library;

c. tennis club;

d. bowling club; and

e. community centre.

**Hawea Wastewater Upgrades** means the Council's planned upgrades to connect the Lake Hawea Township to the Project Pure Wastewater Treatment Plant by way of a new pump station and 12 kilometre pipeline, which are scheduled for 2020/2021.

**Hawea Water Supply Upgrades** means the Council's planned upgrades to the trunk main along Capell Avenue connecting to Cemetery Road, which is scheduled for 2019/2010, and to the trunk mains from the Scott's Beach bore field through to Capell Avenue and through Cemetery Road adjacent to Timsfield.

**Housing Accord** means the Queenstown Housing Accord entered into between the Council and the Government under HASHAA on 12 July 2017.

**Implementation Policy** means the Council's Housing Accords and Special Housing Areas Act 2013 Implementation Policy dated 26 October 2017, as may be updated from time to time.

**Minister** has the same meaning as in section 6 of HASHAA.

**NZTA** means the New Zealand Transport Agency.

**ORC** means the Otago Regional Council or the equivalent or replacement regional council.

**Parks and Open Space Strategy** means the Council's Parks and Open Space Strategy 2017, as may be updated from time to time.

**QLCHT** means the Queenstown Lakes Community Housing Trust.

**Revised Infrastructure Report** means a revised version of the Three Waters Reports and/or Transport Reports required in accordance with clause 35.

**RMA** means the Resource Management Act 1991.

**SHA** means a special housing area established under HASHAA.

**Stage One of the Hawea SHA Outcome** means the first stage of development of the Universal Developments Land in accordance with the Hawea SHA EOI.

**Three Waters Reports** means the:

a. Hawea SHA Development assessment of demand prepared by Watershed Engineering Limited, dated 10 May 2018, included as Appendix L to the Hawea SHA EOI, which is attached to this Deed as Schedule C;

b. Lake Hawea Special Housing Area infrastructure report prepared by Southern Land Limited, dated 14 May 2018, included as Appendix L to the Hawea SHA EOI, which is attached to this Deed as Schedule C; and

c. Lake Hawea Special Housing Area infrastructure peer review prepared by Holmes Consulting, dated 23 May 2018, which is attached to this Deed as Schedule E.

**Transport Reports** means the:

a. Proposed Residential Subdivision Lake Hawea Township overview transportation assessment prepared by Carriageway Consulting, dated 23 May 2018, included as Appendix N to the Hawea SHA EOI, which is attached to this Deed as Schedule C; and

b. Proposed Special Housing Area, Lake Hawea Township additional information prepared by Carriageway Consulting, dated 15 June 2018, included as Appendix N to the Hawea SHA EOI, which is attached to this Deed as Schedule C.

**Universal Developments Land** means the land that is defined in Schedule A.

**Visitor Accommodation** means the use of land or buildings for short-term, fee paying, residential accommodation where the length of stay for any visitor/guest is less than three months.

**Working Day** has the same meaning as in section 29 of the Interpretation Act 1999.

2. In this Deed unless the context otherwise requires:

a. a reference to a person includes any other entity or association recognised by law and the reverse;

b. words referring to the singular include the plural and the reverse;

c. any reference to any of the parties includes that party's executors, administrators or permitted assigns, or if a company, its successors in title or permitted assigns or both;

d. words importing any gender shall include the other gender;

e. clause headings are for reference only;

f. references to clauses and schedules are references to clauses of and schedules to this Deed;

g. expressions referring to "writing" shall be construed as including references to words printed, typewritten or otherwise visibly represented, copied or reproduced (including by facsimile or email);

h. a reference to a statute includes:

i. all regulations under that statute;

ii. all amendments to that statute;

iii. any statutes substituting for it which incorporates any of its provisions; and

iv. all periods of time or notice exclude the days on which they are given.

**Recommendation of the Hawea SHA**

3. The Council shall recommend to the Minister that the Universal Developments Land be established as a SHA within 10 Working Days of the Execution Date.

4. The Council shall in its recommendation to the Minister under clause 3 recommend the following criteria for qualifying developments within the SHA:

   a. the maximum number of storeys that buildings may have is two storeys;

   b. the maximum calculated height that buildings must not exceed is 8 metres; and

   c. the minimum number of dwellings to be built is 20 dwellings.

5. The Developer shall use all reasonable endeavours to provide to the Council any information the Council may reasonably require to enable it to make the recommendation to the Minister in accordance with clause 3, including, without limitation, information required to satisfy the Minister of the matters in section 16(3) of HASHAA.

6. The Council shall keep the Developer reasonably informed of the progress of any decision by the Minister following the Council's recommendation under clause 3.

**Hawea SHA Outcome**

7. Immediately after the Council has recommended to the Minister that the Universal Developments Land be established as a SHA under clause 3, the Developer shall:

   a. to the extent that it has not already, commence preparation of the Consent Application to obtain Consent for a residential development that will achieve the Hawea SHA Outcome;

   b. keep the Council reasonably informed of its progress; and

   c. engage in, and bear all costs associated with, any pre-application meetings and discussions with Council staff about the Consent Application prior to lodgement.

8. As soon as is reasonably practicable, but not later than six months after the Hawea SHA is established, the Developer shall lodge the Consent Application with the Council.

9. If the Consent is granted, the Developer shall use all reasonable endeavours to implement the Hawea SHA Outcome in a timely manner.

10. The Developer agrees that the Consent Application for Stage One of the Hawea SHA Outcome shall seek to provide for a minimum of 100 sections or dwellings, noting that titles for Stage One will not necessarily be processed as a single release.

**No Visitor Accommodation**

11. Subject to clause 12, the Developer agrees that no dwelling constructed on the Universal Developments Land under the Consent shall be used for Visitor Accommodation and agrees to secure the performance of this obligation by:

    a. prior to the disposal of any part of the Universal Developments Land, registering a restrictive covenant against the Universal Developments Land, in favour of the Council; or

    b. any other means considered acceptable to the Council, at its sole discretion.

12. The commercial letting of residential units or residential flats constructed on the Universal Developments Land under the Consent for up to three lets not exceeding a cumulative total of 28 nights per 12 month period shall be allowed in accordance with the permitted activity standards in the Council's Stage Two Proposed District Plan as at the date of notification, or as may be amended through the District Plan process. Commercial letting in accordance with this clause shall not constitute a breach of the restrictive covenant in clause 11a or alternative mechanism in clause 11b.

**Water Supply**

13. The existing water supply network is unlikely to have sufficient capacity to service any qualifying development on the Universal Developments Land, as confirmed by the Three Waters Reports.

14. The Developer and the Council agree that, subject to clause 15, the water supply effects of the Hawea SHA Outcome are likely to be addressed by the Hawea Water Supply Upgrades.

15. Prior to lodging the Consent Application, the Developer agrees to, at its sole cost, undertake further water supply modelling to determine the extent of any upgrades to the existing Hawea Bore Pump Station and Treatment Plant that are required to sufficiently and appropriately support the Hawea SHA Outcome.

16. The Developer agrees to, at its sole cost, design, obtain all necessary consents for, and construct the infrastructure upgrades, described in clause 15, if any are required.

17. The Developer wishes to reserve the opportunity to fund the Hawea Water Supply Upgrades to ensure that they are installed in a time and manner that suits the Hawea SHA Outcome. Should the Developer wish to consider doing so, it will give notice to the Council under this agreement. Any terms on which the opportunity may be provided by the Council are subject to future negotiation and agreement and not governed by this Deed.

**Wastewater**

18. The existing wastewater network is unlikely to have sufficient capacity to service any qualifying development on the Universal Developments Land, as confirmed by the Three Waters Reports.

19. A separate wastewater pipeline connecting to the Project Pure Wastewater Treatment Plant (**Separate Pipeline**), to be constructed alongside the pipeline that is part of the Hawea Wastewater Upgrades, is required to achieve the Hawea SHA Outcome.

20. The Separate Pipeline will be designed, approved, and constructed by the Council as part of, and at the same time as, the pipeline that is part of the Hawea Wastewater Upgrades. The Developer agrees to pay for all the costs of design, planning approvals, and construction that are attributable to the addition of the Separate Pipeline.

21. The Developer and the Council will discuss and agree on a process for identifying the costs referred to in clause 20 and the timing of payment of those costs in accordance with the following principles:

    a. the costs are those attributable to the addition of the Separate Pipeline, which may constitute either a proportion or a calculated amount of certain aspects; and

    b. the timing for payment of costs will generally be in advance of or at the time that certain costs become payable by the Council.

22. The Developer agrees that if sections are created and transferred prior to the completion of the Hawea Wastewater Upgrades the implementation of an interim wastewater measure will be required to service any qualifying development on the Universal Developments Land.

23. The Developer agrees to, prior to the transfer of the first section on the Universal Developments Land, at its sole cost, design, obtain all necessary consents for, construct, and implement one of the two interim measures set out in the Three Waters Reports (in the Council's order of preference):

    a. truck transfer; or

    b. temporary storage chambers.

24. The Developer agrees to, at its sole cost, design, obtain all necessary consents for, and construct any infrastructure that is necessary in addition to the Separate Pipeline and the interim measure in clauses 22 and 23 to address the wastewater effects of the Hawea SHA Outcome in accordance with the Council's planning and infrastructure requirements.

**Stormwater**

25. The existing stormwater network is likely to have sufficient capacity to service any qualifying development on the Universal Developments Land, as confirmed by the Three Waters Reports.

26. The Developer agrees to, at its sole cost, design, obtain all necessary consents for, and construct any stormwater infrastructure that is necessary to address the stormwater effects of the Hawea SHA Outcome in accordance with:

    a. the Three Waters Reports;

    b. the initial feedback received from the ORC, dated 15 March 2018, included as Appendix I to the Hawea SHA EOI, which is attached to this Deed as Schedule C; and

    c. the Council's planning and infrastructure requirements.

**Transport and Trails**

27. The existing transport and trails network is likely to have sufficient capacity to service any qualifying development on the Universal Developments Land, as confirmed by the Transport Reports.

28. The development of the land directly to the north of the Universal Developments Land, across Cemetery Road, will require the Capell Avenue Extension. It is likely that future occupants of the Hawea SHA Outcome will use the Capell Avenue Extension. For that reason, the Developer agrees to pay the Capell Avenue Contribution.

29. The Developer will pay the Capell Avenue Contribution within ten working days of the date of issue of the 100th lot in the development of the Universal Developments Land to achieve the Hawea SHA Outcome.

30. The calculation and process for payment by the Developer of the Capell Avenue Contribution will be addressed separately to this Deed. This Deed records the Developer's agreement to pay the Capell Avenue Contribution.

31. Clauses 28-30:

    a. for the purpose of Subpart 1 of Part 2 of the Contract and Commercial Law Act 2017, do not confer any benefit on, and are not enforceable by, any person who is not a party to this Deed; and

    b. do not impose any obligation on the Council to construct the Capell Avenue Extension.

32. The Developer agrees to, at its sole cost, design, obtain all necessary consents for, and construct any infrastructure that is necessary to address the transport effects of the Hawea SHA Outcome in accordance with the Council's planning and infrastructure requirements.

33. The Developer agrees to work with the Council to ensure that the walking and cycling shared paths and any associated infrastructure are integrated with the existing network of trails, including into the Sentinel Park subdivision.

**Parks and Reserves**

34. The Developer agrees that the development of the Universal Developments Land to achieve the Hawea SHA Outcome shall comply with the Parks and Open Space Strategy and include at minimum the provision of a 3,000m$^2$ local park.

**Changes in design**

35. Should the Developer amend the concept design from the concept design outlined in the Hawea SHA EOI such that it could reasonably affect the infrastructure requirements of the Hawea SHA Outcome, the Council shall, at the Developer's cost, prepare a Revised Infrastructure Report.

36. The Developer agrees to, at its sole cost, design, obtain all necessary consents for, and construct any Additional Infrastructure identified in a Revised Infrastructure Report.

**Affordability**

37. The Developer agrees that the Hawea SHA Outcome must result in:

    a. the provision to the QLCHT of 10 per cent of the total number of sections to be developed, which must comprise an area equivalent to 10 per cent of the residential component of the developed area; and

    b. the provision to the QLCHT within Stage One of the Hawea SHA Outcome of 20 per cent of the total number of sections to be provided to the QLCHT. The sections representing this additional 10 per cent of Stage One will be brought forward from a future stage.

38. The Developer agrees that the creation of any lot as anticipated by the Hawea SHA Outcome must involve the registration of a restrictive covenant against the title, in favour of the Council and on terms discussed and agreed by the Council, restricting the transfer of any lot unless:

    a. It has a fully constructed dwelling (certified as Code compliant by the Council) on it; or

    b. The transfer is by a Licensed Building Practitioner in the form of a land and dwelling package;

    c. The transfer is by a mortgagee exercising powers under subpart 7 of the Property Law Act 2007

39. The Developer may not sell more than one section or land and dwelling package to any purchaser, unless the purchaser is a Building Company which intends to sell land and dwelling packages that meet the requirements of clause 40. The Developer must

exercise good faith in relation to this clause to ensure it is not subverted through mechanisms such as use of companies or multiple use of nominee buyers.

40. Before entering into an agreement for sale and purchase for any lot or land and dwelling package (except with a Licensed Building Practitioner), the Developer will:

    a. vet the prospective purchaser in accordance with the Hawea SHA Purchaser Vetting Process attached to this Deed as Schedule F; and

    b. offer a 5 per cent deposit requirement for Kiwisaver Buyers whose scheme will not release deposits, and a 10 per cent deposit requirement for other purchasers.

41. Until the Hawea SHA Outcome is achieved, the Developer shall promote, so as to make widely known in the Queenstown Lakes District, land and dwelling packages for purchase with the following characteristics:

    a. two bedroom, two bathroom, single garage dwelling, with driveway and front yard landscaping for $464,000.00;

    b. two bedroom, one bathroom, double garage dwelling, with driveway and front yard landscaping for $464,000.00;

    c. three bedroom, two bathroom, single garage dwelling, with, driveway and front yard landscaping for $499,000.00;

    d. three to four bedroom, two bathroom, double garage dwelling with driveway and front yard landscaping for $550,000.00.

42. The Developer may, from time to time, propose to the Council amended or alternative land and dwelling packages where necessary or desirable because of demonstrated changes in building costs in the Queenstown Lakes District, demand, or government and other policies promoting home ownership and first home ownership. Should the Council agree that amendments or alternatives are appropriate, the parties will record the agreement by way of variation to this Deed. QLCHT agrees that its agreement to a variation under this clause will follow that of the Council's and that it will execute any deed recording the variation.

43. Unless the Council from time to time agrees, in any stage of the development, the Developer may not sell more than 30% of the lots without there being an associated building contract for that lot at the time of sale. The Developer may treat a lot as having been sold with an associated building contract at time of sale where the Developer is subsequently advised in writing:

    a. by the lot owner or a Licensed Building Practitioner that a contract for erection of a dwelling has been entered into in respect of the lot, or

    b. by a Licensed Building Practitioner that it will construct a showhome on the lot, which it has committed to maintaining as a showhome for not less than 12 months, or

c. by a Licensed Building Practitioner that it has contracted to complete a dwelling.

44. The Developer may, from time to time, propose to the Council amendments to clause 43. Should the Council agree that an amendment to this clause is appropriate, the parties will record the agreement by way of variation to this Deed. QLCHT agrees that its agreement to a variation under this clause will follow that of the Council's and that it will execute any deed recording the variation.

45. The Developer shall submit to the Council a written report every six months from the date of execution of this Deed confirming progress with and/or satisfaction of the requirements in clauses 38-44 of this Deed.

46. Clauses 38-45 do not apply to land identified in the Hawea SHA EOI as the "Community Hub" (which is now named the "Township Service Centre").

**HASHAA**

47. The Developer acknowledges that Council may:

a. enter into agreements with other persons relating to SHAs within the Queenstown Lakes region; and/or

b. recommend to the Minister that other areas be established as SHAs;

on such terms and conditions as Council requires (including terms and conditions that are the same as or that differ from those set out in this Deed).

48. The Developer acknowledges that the Council:

a. makes no representation or warranty that the Hawea SHA Outcome and/or the description of the proposal to develop the Universal Developments Land contained in the Hawea SHA EOI constitutes a qualifying development as defined in HASHAA; and

b. shall be entitled to refuse to formally accept or process any Consent Application that does not comply with clauses 7 and 8.

49. This Deed has been negotiated and finalised by the executive arm of the Council. This Deed does not bind, restrict or in any way fetter the Council's regulatory powers and obligations under the RMA, HASHAA, or any other relevant legislation.

50. Nothing in this Deed shall prevent the Developer from lodging any resource consent application relating to the Universal Developments Land under the RMA.

**Termination**

51. If the Housing Accord is terminated by either party to the Housing Accord before the Hawea SHA is established, the Council may give notice of immediate termination of this Deed to the Developer. The Developer acknowledges that the Council may, at its

sole discretion, terminate the Housing Accord and doing so shall not be a breach of this Deed.

52. The Council may give notice of immediate termination of this Deed to the Developer if the Developer amends or varies its concept plans, Consent Application, or Consent such that the Council considers, in its sole discretion, that the Developer will no longer achieve the Hawea SHA Outcome. If the Council considers that it has grounds to terminate this Deed under this clause, it shall:

    a. give the Developer 15 Working Days notice in writing of its intention to terminate, with reasons and with direction (if possible) as to how the matter can be rectified; and

    b. the Developer may, within 15 Working Days, address the matter in writing to the Council.

    The Council may then, in its sole discretion, determine whether to terminate.

53. Subject to clause 54, the Developer may at any time, in its sole discretion, determine that the Hawea SHA Outcome will not achieve the Developer's commercial objectives and serve notice in writing on the Council terminating this Deed. If such a determination is made:

    a. notice under this Deed must be served on the Council prior to or on the date on which the Developer commences any physical works under the Consent;

    b. this right to terminate shall lapse, and this clause shall have no further effect, if the right to terminate is not exercised by that date;

    c. the Developer shall not be required to give any reasons for termination under this clause; and

    d. if the Deed is terminated under this clause neither party shall have any claim against the other in respect of, or arising from, this Deed.

54. The following shall apply to any termination under clause 53:

    a. the Developer must, at the same time as serving a notice of termination under clause 53, deliver to the Council a formal surrender of any Consent obtained under HASHAA;

    b. the Developer shall, following termination, not be entitled to make any application for any form of consent or approval under HASHAA, and the Council shall be entitled to refuse to accept any such application;

    c. by terminating this Deed the Developer acknowledges and accepts that such termination brings to an end any expectations it may have of developing the Universal Developments Land under HASHAA; and

    d. the establishment of the Hawea SHA shall not be relied on as part of the receiving environment or permitted baseline to justify the imposition of any

objectives, policies, standards or rules relating to the zoning of the Universal Developments Land:

i. in any legal proceedings brought by or on behalf of the Developer; and

ii. in any application for resource consent under the RMA for development of the Universal Developments Land.

**Dispute Resolution**

55. If there is a dispute between the parties to this Deed in connection with this Deed:

a. that party will promptly give full written particulars of the dispute to the other party; and

b. senior representatives of the parties will promptly meet together and endeavour to resolve the dispute.

56. If the dispute is not resolved within 5 Working Days of the senior representatives of the parties first meeting (or any longer period agreed to by the parties) the dispute will be referred to mediation.

57. A party must use the mediation procedure to resolve a dispute before commencing any other dispute resolution proceedings.

58. The mediation will be conducted by a LEADR panel mediator chosen by the parties or, if they cannot agree on the mediator within five Working Days of a mediator first being suggested by either party, by the President of the New Zealand Law Society or the President's nominee.

59. The procedures and timeframes for any mediation will be fixed by the mediator.

60. The parties must continue to comply with their obligations under this Deed pending resolution of any dispute.

**District Plan Review**

61. The establishment of the Hawea SHA shall not be relied on as part of the receiving environment or permitted baseline to justify the imposition of any objectives, policies, standards or rules relating to the zoning of the Universal Developments Land:

a. in any submission made by or on behalf of the Developer in the District Plan Review being conducted by the Council;

b. in any legal proceedings brought by or on behalf of the Developer in respect of such submission; and

c. in any related application for resource consent under the RMA for development of the Universal Developments Land.

**Assignment**

62. Once the Universal Developments Land is declared to be a SHA under HASHAA, and prior to the Developer completing its obligations under this Deed, the Landowner and the Developer shall not transfer or dispose of any part of the Universal Developments Land without the prior written consent of the Council, which shall be given subject to:

    a. the Council, acting reasonably, approving the proposed purchaser, assignee, or successor; and

    b. a requirement for the proposed purchaser, assignee, or successor to enter into a deed of covenant with the Council, in a form acceptable to the Council, to be bound by the terms of this Deed as if that party were the Developer.

63. Clause 62 shall not apply in respect of the sale or transfer of an individual serviced lot or a road or reserve lot as anticipated by the Hawea SHA Outcome following the completion of the subdivision (in whole or in part) of the Universal Developments Land.

**General Provisions**

64. Each notice, demand or other communication to be given or made by any party to this Deed:

    a. must be made in writing and be signed by the party making the demand or giving the notice or other communication or their authorised officer;

    b. must be given or made to the recipient at the address or the email address and marked for the attention of the person (if any), from time to time designated by the recipient; and

    c. will not be effective until received by the recipient:

        i. (if given or made by letter) when left at the address of the recipient or 3 Working Days after being put in the post, postage prepaid, and addressed to the recipient at that address; or

        ii. (if given or sent by email) upon acknowledgement or receipt of a return email sent by or on behalf of the recipient (except that return emails generated automatically shall not constitute an acknowledgement);

    provided that any notice or communication received or deemed received after 5pm on a Working Day in the place to which it is sent or on a day which is not a Working Day in that place, is deemed not to have been received until the next Working Day in that place.

65. The initial address, email address and person (if any) so designated by each party are set out in Schedule B.

66. Nothing in this Deed shall be construed to constitute a partnership or joint venture between the parties.

67. No variation to this Deed shall be binding unless the variation is in writing and signed by the parties. The Council and QLCHT shall each give reasonable consideration to any proposals by the Developer requesting a variation of this Deed.

68. Any failure by a party to enforce any clause in this Deed, or any forbearance, delay or indulgence granted by that party to any other party, will not be construed as a waiver of the first party's rights under this Deed.

69. If a final decision is made by a Court that any term of this Deed is unlawful and/or unenforceable it will be severed from this Deed (to the extent that it is unlawful and/or unenforceable) and the rest of the Deed will remain in force.

70. The provisions of this Deed are directly enforceable by the parties against the other parties through operation of law without reference to any resource management procedures under the RMA.

71. This Deed will be kept confidential between the parties and no party will disclose to any third party the details of this Deed except:

    a. as required by law; or

    b. to a party's professional advisers, financiers or other consultants for the purposes of complying with this Deed.

**Counterparts**

72. This Deed may be executed by the parties executing counterpart and/or faxed/scanned copies which shall together constitute a completed Deed.

**Schedule A**

**Universal Developments Land**

That land shown outlined in dashed bright green on the attached plan being approximately 32 hectares – part of Lot 2 Deposited Plan 343855.

**Schedule B**

**Initial Service Details of the Parties**

**Developer**

| | |
|---|---|
| Address: | C/- Deloitte, Level 13, Otago House, 481 Moray Place, Dunedin, 9016 |
| Email Address: | lane.hocking@yahoo.com |
| Party Designated (if any): | Lane Hocking |

**Council**

| | |
|---|---|
| Address: | Private Bag 50072, Queenstown |
| Email Address: | tony.avery@qldc.govt.nz |
| Party Designated (if any): | General Manager, Planning and Development |

**QLCHT**

| | |
|---|---|
| Address: | PO Box 1748, Queenstown |
| Email Address: | Julie@qlcht.org.nz |
| Party Designated (if any): | Executive Officer |

**Schedule C**

**Hawea SHA EOI**

# Hawea –

## Expression of Interest for a Special Housing Area

# Universal Developments Hawea Limited

**May 2018**

WILLIAMS & CO.

PLANNING / URBAN DESIGN / DEVELOPMENT

www.williamsandco.nz

## EXECUTIVE SUMMARY

Wanaka-based Universal Developments proposes developing 32 hectares of vacant land in Hawea for approximately 400 sections, with associated playground, reserves and a community hub.

Guided by a comprehensive Master Plan, this Expression of Interest (EOI) for a Special Housing Area recognises Hawea's unique community characteristics and addresses housing supply and pricing issues in the township and district.

The site is unproductive flat land directly adjacent to the existing township and is ideally placed to provide for the logical growth of Hawea, with infrastructure readily available.

As a locally owned and operated company, Universal has listened carefully to feedback to date from its community. As a result, it has scaled back this proposal from the 1000 sections envisaged initially.

At its heart, the Master Plan focuses on providing affordable housing for the district.

The shortage of affordable housing across the District including Hawea is acute. This is reflected in the 70 percent jump in average house prices in Hawea over the past five years – from $380,000 in 2013 to $650,000 currently and $1,000,000 District wide.

Addressing this issue head on, Universal has brought together a number of features in this EOI to assist first home buyers into the housing market in a way that is both effective and sustainable.

The proposal includes fixed pricing for land and house specifications between $464,000 and $550,000 – all significantly below average prices for Hawea and the wider Queenstown Lakes District.

Being within the $550,000 local ceiling for first-home buyers to access extra financial support through the KiwiSaver HomeStart scheme is a major benefit of this pricing.

10% of the sections to be developed will be gifted to the Queenstown Lakes Community Housing Trust. In addition, a further 10% of sections in Stage One will be gifted by bringing forward the contribution from a later stage. This initiative of doubling the contribution in Stage One recognises Universal's support for the Trust.

Universal has a track record of delivering new housing quickly and to a high standard. The proposed Hawea development will meet the same criteria, contributing to a more sustainable and self-sufficient township where locals can live, work and play.

## 1. THE CHALLENGE

Hawea and the Upper Clutha area is facing the same challenges as the wider District and Region with escalating house prices and constrained supply of land. Hawea house prices have grown 70% in the last five years from $381,000 in 2013 to $650,000 in 2017[1] whilst the District's average pricing sits around $1,000,000. The extreme price appreciation is against a backdrop of zoning that has had a theoretical available supply. As the letter from Ignite Wanaka (**Appendix [A**]) illustrates, the shortage of housing at an affordable price point is a significant constraint and challenge for the Upper Clutha community. An illustration of the typical situation facing first home buyers described by First National Real Estate again demonstrates the very real challenges first home buyers are facing. Copies of these observations are contained in **Appendix [B]**.

QLDC has also recently prepared a development capacity assessment that has highlighted a shortfall, and considerable demand growth in the lower value bands, generally under $580,000[2]. The Universal Developments proposal provides the opportunity to assist in the delivery of housing supply in this much needed price band - a challenge the QLDC report identifies is not being met by existing zoning. Accordingly, a different approach to reliance on traditional zoning is required.

The use of the HASHAA legislation is considered a key part of this solution. As The Mayoral Housing Affordability Taskforce Report 2017 highlights there is need for both scale and innovation if we are to address what the report highlights as *'potentially the greatest challenge our District faces'*[3]. This proposal provides for both scale and innovation to address the challenge.

## 2. MASTER PLAN & SITE

A master plan (**Appendix [C]**) will guide development and will ensure the development occurs in a well planned, coordinated and sustainable manner. The master plan provides for approximately 400 sections/homes, reserves/playground and a Community Hub/Commercial area to provide for ancillary uses over a 32ha area. Strong street connections drawing reference from the existing street network will ensure a connected and legible development. Capell Ave will form the 'heart' and focus of the development as it enables connection directly through the existing township and link to the lakefront.

[1] REINZ

[2] QLDC Housing & Business Development Capacity Assessment 10 May 2018 para 38

[3] The Mayoral Housing Affordability Taskforce Report 2017 pg 3


**Figure 1:** Master Plan

As will be discussed in more detail in this EOI the proposal and site are considered ideally placed given a number of key factors. These factors are considered difficult to replicate. They include:

- The site is directly adjacent to an existing urban area;
- The site is easy to service with infrastructure;
- The site is not visually sensitive, ecologically sensitive, productive nor located along the main entry or lakefront of Hawea;
- The ability to integrate with roads and with a significant frontage to Cemetery Road which already accesses residential housing;
- The site is held in one ownership not fragmented into many titles;
- The site is flat land and north facing.

This results in a strong opportunity for high quality urban place-making and the development of a community that can compliment and strengthen the sustainability and liveability of Hawea.

## 3. INNOVATION

Universal has analysed the challenges facing first home buyers and what can be done differently. In this regard **Appendix [D]** includes letters from three mortgage brokers who specialise in the first home buyer market, detailing the barriers for first home buyers. As a result Universal is promoting a number of initiatives as part of this EOI to ensure strong uptake from first home buyers and an affordable product. The following are proposed:

- Fixed pricing for house and land packages between $464,000 and $550,000. The following are examples of options that will be available:

1. $464,000 – 2 Bed, 2 Car Garage with driveway and front yard landscaping
2. $499,000 – 3 Bed, 1 Car Garage with driveway and front yard landscaping
3. $550,00 –3/4 Bed, 2 Car Garage with driveway and front yard landscaping

The prices are at or below the $550k Kiwi Saver Home Start Grant threshold therefore first home buyers will be able to access their Kiwi Saver savings and be eligible for up to an extra $20,000 gift toward the purchase.

- Scale to discourage potential speculation on purchases of bare land.
- A vetting system of potential purchases to avoid speculation.
- A 'one stop shop' to assist first homebuyers navigate the home build and KiwiSaver process and assist with house and land package purchase.
- Lower deposit requirement (5% rather than 10%) for first home buyers where required.
- A longer due diligence period to better align with the Kiwisaver first home buyer approval process.
- In addition to Universal's commitment to the provision of 10% of the sections to the Queenstown Lakes Community Housing Trust a further 10% of sections in stage one will be gifted by bringing forward the contribution from a later stage. This initiative of doubling the contribution in Stage 1 recognises Universal Development's strong support for the Trust's activities.
- Provision of a reserve/playground in Stage 1 and initial Community Hub/Commercial offering to ensure ancillary activity is available immediately whilst providing room for the Community Hub to grow with the community.

## 4. CONSULTATION & COMMUNITY FEEDBACK

Consultation has been an integral component of this proposal and the decision to lodge an EOI.

The final form of this EOI is a direct reflection of considering and responding to community feedback.

Of particular significance is the decision to scale back the proposal to an area that will provide for around 400 dwellings when an area providing for 1000 formed part of the consultation phase.

## 5. UNIVERSAL DEVELOPMENTS

Universal is a company owned by Lane Hocking who, with his family, lives locally in Wanaka.

Universal has a proven track record of developing high quality developments in a timely manner within the Upper Clutha basin. Being a locally owned and operated company, Universal has a strong tie between the development model of the company and the community outcomes it promotes. As the EOI will demonstrate, Universal is committed to addressing the housing supply and affordability issues facing the District. It has investigated and adopted a number of initiatives that when combined provide a compelling set of tools which ensure the development delivers much need housing to the target market.

Universal is sensitive to the importance of community engagement as part of any development.

Universal has undertaken open days on site and was part of a community meeting held by the Hawea Community Association to discuss the proposal. Universal has listened carefully to community feedback and as noted above, scaled back the proposal from an initial consideration of 1000 sections to approximately 400 sections.

Universal will be able to deliver this project in a timely manner as bank finance will not be needed for development to commence.

# ASSESSMENT OF THE QLDC LEAD POLICY

## 6. LOCATION

The subject site encompasses 32ha of Lot 2 DP 343855 having a total area of 34.5 ha. Lot 2 is contained in one certificate of title owned by Universal. A copy of the titled is contained in **Appendix [E]**.

The entire site has frontage to Cemetery Road, and directly adjoins Capell Ave - an unformed legal road that enables direct connection back into the established part of Hawea. It is directly opposite Sentinel Park, a recently completed residential subdivision, and Grandview Drive.

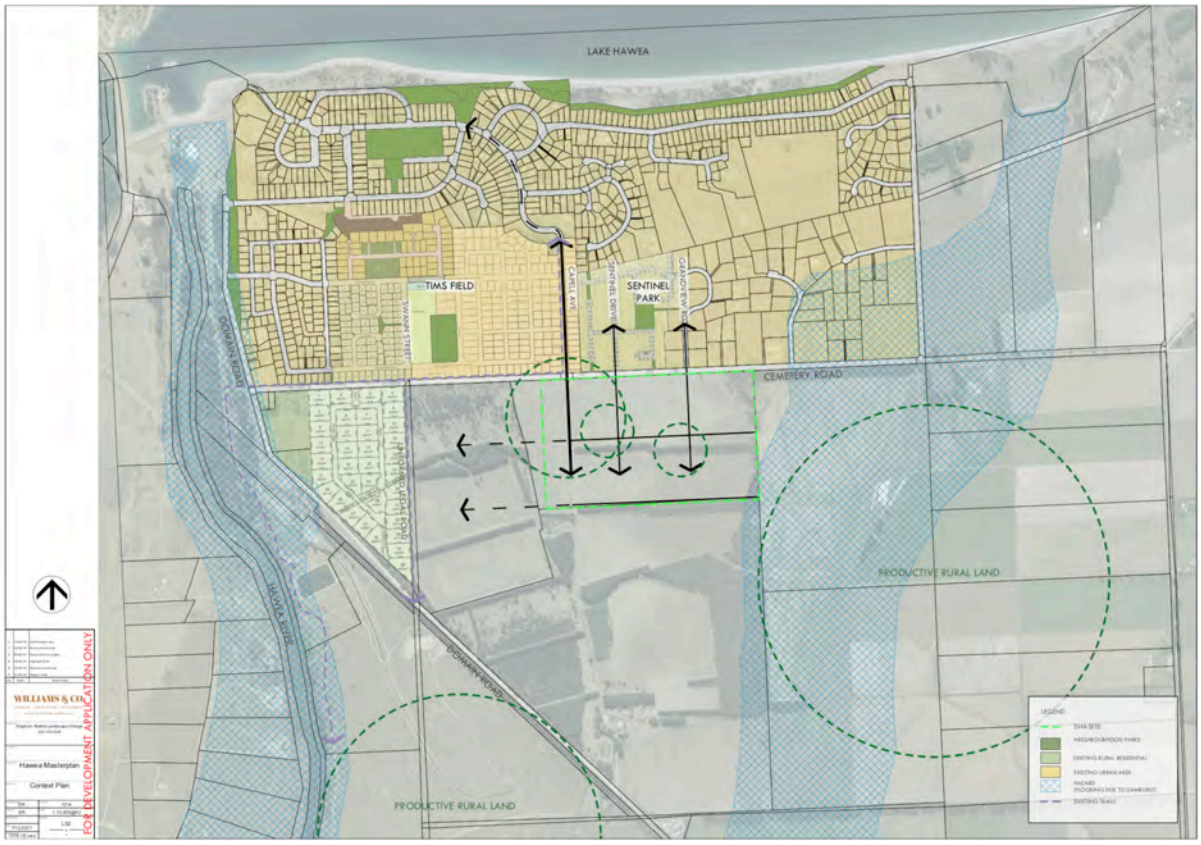


**Figure 2:** Context Plan

**Site Attributes/Consideration**

The site is located directly adjacent to the existing urban extent of Hawea, which is advantageous in providing for a logical expansion of the township. In this regard the following characteristics of the site are considered relevant:

- The land is pine covered and unproductive.
- The site is not sensitive in a landscape/visual sense.
- Is bound to the east by the overland flow path from the Gladstone Gap hazard flow, providing a logical eastern boundary.
- Is bound to the west by Rural Residential development.
- Is bound by Cemetery Road to the north, which already provides access to urban development.

- Development on the subject site would not compromise the character of the existing waterfront setting of the township as it is located away from the foreshore and older area of Hawea.
- Is not located on one of the primary accesses to the township and is very difficult to see from the state highway.

Accordingly, it is considered the site is well placed to contribute to the supply of housing in terms of logical expansion, avoiding hazards, and sensitive landscape areas without detracting from the existing setting of Hawea. Therefore, it is requested that Council's Lead Policy is adjusted to provide for this site within Council's categorization of land as a Category 2 area.

A landscape and urban design review of the existing context has been prepared by R.A Skidmore Ltd and is contained in **Appendix [F].** This assessment confirms the site is not within an Outstanding Natural Landscape and that its characteristics place it at the lower end of the landscape spectrum. Further, it confirms the development of the site can provide for a logical and co-ordinated pattern of growth for Hawea.

## 7. MASTER PLAN


**Figure 3:** Master Plan

The philosophy underpinning the Master Plan has been to ensure the development contributes to the Hawea township in a positive way. This is considered to be achieved if the Master Plan contributes to the township becoming a more sustainable, inclusive, liveable community.

Accordingly, the vision has been to create a deisgn that can positively contribute to Hawea as a thriving community for locals to live, work and play.

In this respect the existing Township and Rural Residential zoning in place has only created two forms of housing and very little capacity for complimentary activities that contribute to the community being more sustainable and liveable i.e. where people can live, work and play without having to travel to Wanaka or further afield. In the case of Hawea, at present a majority of residents need to travel to Wanaka on a regular basis. This not only makes the existing Hawea community less environmentally sustainable but also puts pressure on infrastructure and services in Wanaka. This is unusual, given Hawea is the largest of all of the District's Townships with an existing population of 2,172 people in 2013. It is expected the 2018 census will show a significant increase in population.

The Master Plan brings together a mix of housing options and ancillary community and commercial spaces for Hawea that will enhance the community and township. The ability to accomplish this is greatly assisted by the scale of the site, which enables greater flexibility to accommodate a mix of activities.

In this respect the objectives of the master plan are to assist the delivery of:

- Reserves, a playground and Community Hub space in addition to much needed housing supply.
- A design that encourages a live, work, play community.
- Connected existing and proposed neighbourhoods supported by cycle and walkways, and local road networks.
- Vibrant communities, connected to employment opportunities and high quality amenities
- Safe communities for everyone to enjoy.
- An efficient and safe street network.
- Connection to the environment and in particular recognition of the night sky.
- New housing with a variety of housing types.

The master plan is considered to have addressed the above objectives by providing:

- A development area located where street connections are known (Grandview Road and Capell Ave), and adjacent to the portion of Cemetery Road with an established character - namely Sentinel Park with its formed access and post and rail treatment to the road.
- A street pattern that responds to the existing connection points and in particular the opportunity for Capell Avenue (which connects back into the 'original' area of Hawea) to become a future 'heart' of the development.
- A street layout providing for a predominance of east-west orientated lots to maximise solar gain.
- Extensions of the existing cycle and walking trails.
- New Parks and Reserves within walking distance of the Hawea township.
- A Community/Commercial Hub to provide for ancillary activities to compliment the proposed residential area and wider community of Hawea.
- Locating the Community/Commercial Hub on Cemetery Road and Capell Avenue to strengthen ties to the existing township.
- A scale of development - approximately 400 sections - that will deliver supply to address affordability issues whilst being sympathetic to the scale and character of Hawea.

## 8. HAWEA COMMUNITY PLAN/PROPOSED DISTRICT PLAN

The Hawea Community Plan was developed in 2003 providing a vision for Hawea with a 2020 time horizon.

Since 2003 house prices have grown across the District. Hawea is no different as noted above having grown 70% in the last five years[4] and population growth of 36% between 2006 to 2013[5]. Hawea has and is experiencing rapid growth. Accordingly, it can no longer be characterised as a 'small' community in the manner it would have been in 2003.

Since the 2003 report was completed the Hawea Community Association have prepared a document to inform their submission on the current District Plan Review titled 'Hawea Community Plan Review and Recommendations for the Upcoming District Plan Review' - this report was completed in 2015. Of relevance, both these documents referred to the concept of Cemetery Road being a form of boundary in recognition of both the existing zoned capacity north of Cemetery Road and also where land to the south of Cemetery Road was largely undeveloped.

However, the District and the Upper Clutha area have a significant demand for and shortage of housing and an unaffordability issue that has evolved since the Community Plan was developed in 2003. The 2015 review also began to acknowledge the need to review the concept of a boundary and in that case suggested it move south to encompass land between Domain Road, Cemetery Road and an unformed legal road (to the west of this site).

It is considered important that the 2015 review was cognisant that development south of Cemetery road is logical over time. In that case it looked to identify the existing Rural Residential zoned land, but as this EOI clearly identifies, there is strong logic to focusing development around Capell Ave and the ability to tie development south of Cemetery Road with the existing township. This is an opportunity not directly provided for by development west of the subject site (where a less connected network is available) and one that doesn't appear to have been explored as part of the 2015 review. In that case the land south of Cemetery Road appears to largely be identified due to the fact it was already zoned Rural Residential rather than its ability to positively connect with and provide for the logical and planned growth of Hawea.

Analysis of the concept of containing development north of Cemetery Road as identified appears to be premised on two points:

1. **Cemetery Road was where the extent of zoning was at the time.**

The extent of existing zoning is simply aligned with the road. However, this concept itself is already compromised by the fact that rural residential zoning providing for 36 houses exists south of Cemetery Road, adjacent to this site. The 2015 Community Association review also sought to extend the boundary south as discussed above, again acknowledging and supporting growth south of the road.

[4] Realestate.co.nz

[5] www.qldc.govt.nz/planning/other-planning-information/population-and-growth/

2. **There is sufficient capacity/undeveloped land zoned for development north of Cemetery Road**

As will be discussed in detail below this theoretical capacity has contributed to neither the supply nor the affordability of housing. Housing prices in Hawea, like everywhere else in the District have continued to grow rapidly even with this existing capacity and zoning.

It is also considered relevant that unlike in other situations where for example, a change in topography or feature such as a river or particular landscape change distinguishes the extent of zoning, in Hawea it simply follows an existing road (Cemetery Road). The zoned land to the north of the road is topographically and visually indifferent to the land south of Cemetery Road. Therefore, it is considered the subject site would be the 'next step' for the development of Hawea and as noted above already acknowledged in the Communities Review in 2015 seeking to expand the boundary south of Cemetery Road.

The principles of the Community Plan and Review in 2015 are therefore considered more relevant when considering the proposal and potential for growth. These principles seek to ensure development occurs in a coordinated and logical manner. This proposal and the master planning process that has been undertaken will ensure the development does occur in a coordinated and logical manner and in particular the master plan has been outward looking to ensure it delivers a mix of activities that can contribute to both the success of the development but also the existing township. Accordingly, a key principle underpinning this proposal is that the development can positively contribute to the growth of Hawea and to the vision for the Township as expressed in the Community Plan whilst enabling growth in a logical location south of Cemetery Road.

**Hawea 2020: The Vision**

> *Hawea is an environmentally sustainable community that maintains the highest possible environmental standards. All stormwater and sewage discharges are to land, so that water is maintained at the highest quality possible.*

As discussed in preceding sections of this report the development will connect to existing reticulated infrastructure and therefore ensure the environmentally sustainable community aspiration in terms of services is maintained. In a wider sense, the Master Plan provides for a Community Hub intended to provide for potential community services or commercial uses that would then reduce the need for residents to drive to Wanaka for all activities. This is considered to positively contribute to the sustainability of the community. Providing a Community Hub will also positively contribute to social infrastructure and cohesion providing further opportunities for people to meet and interact with other members of the community.

> *Development occurs in the Hawea area, but only where it is well planned, and is within the capacity of the receiving environment. Development is largely contained within current zoning to ensure efficient service provision, and the retention of the surrounding rural character. There is no ribbon development, and the township and rural residential areas are distinct from the surrounding rural areas.*

The proposed development will be guided by a Master Plan ensuring it is well planned and well connected to the existing township. The particular nature of an SHA and requirement for a developer deed will also ensure the development proceeds as envisaged by the master plan.

The proposed development sits outside the existing zoned extent of Hawea but as discussed in the preceding sections of this report it can be serviced and proposed upgrades to existing services will ensure the development can be accommodated whilst improving the efficiency of service provision. These factors along with the ability to avoid any sensitive landscape areas means that the development is within the capacity of this receiving environment.

The particular nature of the site with a mix of open land and pine trees and wilding pines has meant it has not been productively farmed. The master plan will ensure there is no 'ribbon development' and promote a stronger rural urban edge given the unproductive nature of the site in comparison to the active farmed land to the east and south.

> *Development is not visible from the Hawea River, and there is no development on the edges of the Lake as seen from the Township. There is no development between the Hawea Township and John's Creek.*

As discussed above one of the key reasons for identifying the subject site for development is that it offends not one of these key attributes, including importantly, the lake edge that is regarded as one of the defining characteristics of Hawea.

> *The residential areas retain their low-density character; there are no high fences or street lights like Auckland or Dunedin. Areas of increased density may be provided, but only in confined areas. The unique village feel is retained.*

The master plan will ensure the character of the community is maintained through an extension of the existing roading pattern and controls to ensure fences and lighting are in keeping with the character of Hawea. The location of the site to the south of the historical extent of the township adjacent to more recent developments of Timsfield and Sentinel Park will ensure the existing character of the township is maintained. In addition, the ability to master plan and provide for community elements that might otherwise be difficult to retrofit into the existing urban fabric such as additional commercial space will ensure the development can occur whilst being sympathetic to the scale and feel of Hawea.

> *There is a strong community focus, providing a safe and pleasant environment for all ages of residents; young families through to the retired. Hawea is an area for locals, and while it attracts tourism, this is low-key and passive. Residential areas are connected by pedestrian and cycle access, and there is excellent communication between them.*

As discussed above the proposal can retain and positively contribute to the community focus and character of Hawea. Pedestrian and cycle connections are proposed as part of the master plan and reserves and open space can positively contribute to the social infrastructure of the community. Affordability will allow for the 'all-ages' goal of the community by allowing young families for example the ability to be part of the community.

*The Domain is a central focal point for community activities, it is linked to the residential areas by pedestrian and cycle tracks. There are extensive pedestrian and cycle ways linking the community. Importantly, there is access along the Hawea River between Lake Hawea Township and Wanaka, and there is a walkway between Lake Hawea Township and John's Creek.*

Of particular relevance the development would strengthen the connection of Hawea to the Domain by providing closer links to the Domain. It will also strengthen the use of the Domain with additional people and therefore provide a catalyst for more activities and formal use of the Domain.

*There is a low-key commercial area providing for the Hawea Community, which has regular market days. Businesses are locally owned, and there are no chain stores or chain restaurants. Buildings have an alpine character, and reflect the surrounding environment.*

*People live here because of the strong community, the landscape values, the small school, the outdoor recreation opportunities, and the slower pace that Hawea provides.*

The master planned nature of the development provides the opportunity to ensure the proposal positively contributes to the existing Community through provision of reserves, open space and community infrastructure whilst enabling residential growth. Accordingly, the proposal is considered to be complimentary to these aspirations.

**Summary**

This EOI has carefully considered the Community Plan. House prices have risen significantly since 2003 when the plan was prepared and the very real challenges this District faces around affordable housing were not part of the considerations in 2003. As this EOI demonstrates and the Master Plan provides for, the development can integrate with and positively contribute to Hawea. Accordingly, simply waiting for existing zoned land to be developed will not address the escalating house prices and land supply issues. As demonstrated over the past 15 years whilst existing zoning has been in place, in order to change the status quo of housing unaffordability, a different approach is needed.

The Community review in 2015 acknowledged and sought to provide for development south of Cemetery Road. If further growth is to occur the vision, as discussed above, emphasises the desire for growth to proceed in a coordinated and planned manner. The proposal, through the use of a master planning approach will ensure this occurs, and in a logical location well placed to provide positive benefits to the community.

The site's location ensures it does not offend the landscape qualities and lakefront character. The values identified in the plan and the provision of a Community Hub and reserve space ensure the development occurs whilst achieving the stated vision of the Community and strengthening the ability for Hawea to establish long term as a stand-alone settlement, sustainable both in environmental and community terms.

**Proposed District Plan**

The Proposed District Plan, although initially not providing for any urban growth boundaries in relation to townships, in part due to the fact the Townships are to be reviewed in a later stage of the District Plan Review, now proposes an urban growth boundary for Hawea.

This boundary concept is still to be confirmed as the district plan process continues and appeals specifically relating to this issue are yet to be considered. However, in addition to the discussion above the following is noted:

- QLDC did not promote or support an urban growth boundary for Hawea or any township through the District Plan Review.
- In coming to a decision to provide an urban growth boundary for Hawea the PDP Hearing Panel only received one submission on this issue - from the Hawea Community Association. In that submission the Hawea Community Association sought part of the boundary be drawn south of Cemetery Road.
- No expert evidence in support of a boundary was provided.

Key to the discussion on this matter in the PDP considerations was the desire to ensure growth occurred in a 'well-planned and coordinated fashion'[6]. As the master plan demonstrates, development as provided for in this EOI will ensure Hawea grows in a well-planned and coordinated fashion.

## 9. CONSULTATION & COMMUNITY FEEDBACK

Consultation has been an integral component of the consideration and development of this proposal.

In this respect the final form of the EOI is a direct reflection of considering and responding to community feedback, no less significant than the decision to 'scale back' the proposal. Initially, 1000 sections were envisaged, however the proposal now provides for an area that would accommodate approximately 400 sections.

**Community Consultation**

Drop in sessions were hosted onsite by Universal on both Saturday 3rd March and Saturday 10th March. Attached **Appendix [G]** is a copy of the flyer that was distributed regarding the drop in sessions. The drop in sessions were advertised via:

- Distribution of the flyer in mail boxes to Hawea residents,
- Wanaka Sun over two weeks,
- Otago Daily Times two Saturdays,
- Radio Wanaka for two weeks,
- Hawea Community Association who distributed information to their contact list.

The drop in sessions were undertaken to give people the opportunity to find out more about the proposal, the developer and draft Master Plan. Information on the proposal, A1 boards illustrating the Draft Master Plan and information sheets outlining the key facts of the proposal were available along with the opportunity for people to provide contact details to be kept up to date with the proposal going forward.

[6] Report-16.2-UC-Mapping- Urban-Wanaka and Lake Hawea Final para 455

The two sessions were well attended by members of the community and public generally with approximately 150 people attending on the first Saturday and 80 people on the second Saturday.

Providing for growth and the development associated with a more liveable community inevitably raises some reservations and concerns within an existing community. Some of this sentiment was expressed at the drop in sessions. This is understandable as change can bring uncertainty and nervousness in a community. However, in this case the location of the site directly adjoining the existing township can ensure it is well connected but does not impose an increase in density or retrofitting within existing residential sites to accommodate growth. Therefore in this case the impact of any change can be well managed.

Positive feedback was also communicated at the drop in sessions with people excited about the potential for Hawea to become more sustainable and self-sufficient with shops and other amenities, which at present they have to drive to Wanaka for. Some residents who had also been in the community longer term recognised the opportunity growth and more affordable housing would bring for their children to be able to buy, live in and be part of the community, which they considered was out of reach at present. Attendees also highlighted the lack of business opportunities in Hawea which they thought could be addressed through the proposal to again avoid them having to drive to Wanaka for work but also to create additional opportunities for employment within the existing community.

In addition to the drop in sessions information has been provided to the following groups:

- Hawea Community Association – Initial meeting to discuss the proposal along with follow up summaries following drop in sessions. Consultation is ongoing.
- Knitting Hawea – Presentation of the Master Plan and discussion around the proposal.
- Hawea Golf Club – Provision of Master Plan and information outlining the proposal provided for distribution to members.
- Wanaka Chamber of Commerce – Meeting to discuss proposal and Master Plan.

The consultation has been extensive and thorough ensuring the Community has a good understanding of the proposal. Importantly, the consultation has resulted in changes to the proposal - most significantly, the change in scale to that now proposed in this EOI. The applicant is also committed to continuing consultation moving forward.

Consultation with the following bodies has taken place:

**Statutory Bodies**

New Zealand Transport Authority (NZTA) – Attached **Appendix [H]** is a letter confirming no upgrades would be required to the State Highway network resulting from the proposal.

Otago Regional Council (ORC) – Attached **Appendix [I]** is confirmation ORC does not forsee any issues in principle with the proposed development.

Ministry of Education – Universal has had several discussions with representatives of the Ministry that have highlighted they still see capacity within the existing school site at Hawea Flat.

**Queenstown Lakes Community Housing Trust**

In consultation with the Housing Trust Universal Developments has confirmed its commitment to providing a 10% contribution to the Trust, which would equate to approximately 40 sections over the entire development. This is considered to represent a significant addition of product to the Trust.

As discussed above Universal is committed to ensuring the Trust can meet its objectives in the most efficient and timely manner. To facilitate this Universal will front load its 10% contribution into the beginning of each stage.

In addition, Universal will double up on the contribution provided in Stage One by bringing forward its contribution from later stages. Meaning a 20% contribution in Stage 1.

This is considered by the Trust to represent a significant and unprecedented initiative and is illustrative of Universal's commitment to addressing the housing challenges facing the District.

Attached **Appendix [J]** is a letter outlining the Trust's support for the proposal.

## 10. ADEQUATE INFRASTRUCTURE

Consultation with QLDC's infrastructure team has confirmed adequate servicing can be provided to the development in terms of Water and Waste Water provision, **Appendix [K]** contains details from the Infrastructure team. In summary, QLDC identifies that *'future water and wastewater upgrades are sufficient to support your development'*.

In addition, Universal has engaged Southern Land Ltd to provide a detailed assessment of infrastructure. That assessment incorporates modelling from Watershed undertaken in consultation with the QLDC Infrastructure team. The report has identified measures to ensure development can proceed in a timely manner without reliance on the timing of the wider upgrades. Although the upgrades are funded and timings programmed the additional measures provide certainty that development can proceed in a timely manner. A copy of this report is attached, **Appendix [L]**.

Accordingly, the proposal meets the requirement set out in Appendix B – Infrastructure Requirements of the Lead Policy. Infrastructure exists and additional capacity to accommodate the development is planned and programed in the Councils Long Term Plan.

As required by QLDC's code of practice, stormwater would simply be discharged to ground via rain gardens and similar filtration systems. A method that has been successful on subdivision already developed on Cemetery Road.

Testing and assessment has also been provided by e3 Scientific (**Appendix [M]**) considering NES related matters. This work has confirmed the land is suitable for residential development.

A traffic assessment has been prepared by Carriageway Consulting (**Appendix [N]**). This assessment confirms the proposal will have minimal effect on the surrounding roading network. Specifically, this assessment confirms that adequate capacity exists to accommodate additional traffic within the existing network. As noted above NZTA have also provided a letter confirming no upgrades of the State Highway network are necessary.

## 11. FACILITATION OF AN INCREASE IN LAND FOR HOUSING SUPPLY

The land is currently zoned Rural General/Rural and given the site encompasses 32ha, the proposal can provide a significant contribution to the increase in land for housing supply over and above what is currently provided for in the District. In this respect, as noted above the master plan can provide for approximately 400 sections and therefore homes across the site - this represents a significant opportunity to increase the supply of land for housing. Given the site directly adjoins the existing urban edge of Hawea on flat land it can provide this supply in a very efficient manner.

## 12. DEMAND FOR QUALIFYING DEVELOPMENT/RESIDENTIAL HOUSING IN APPROPRIATE LOCATIONS

It is well documented the Queenstown Lakes District has an affordability issue. In 2016, Infometrics reported the median salary for the district was $49,780; the median house price in this same year was $803,241. This provides a ratio of house price to income (liveability ratio) of 15, this compares to Auckland's liveability ratio of eight for the same period.[7] Within this pricing framework the median house price for Hawea was $381,000 in 2013 rising to $650,000[8] in 2017, a 70% increase.

The significant increase in property prices that the District and Hawea has experienced is against a backdrop of theoretical capacity within existing zoned areas, Hawea is no different. Given that prices have continued to rise rapidly it is apparent other factors such as land banking, lack of competition, family ownership structures, fragmented land parcels etc all influence the timing that land is brought to the market.

A Council report recently recognised the disconnect between the level of currently zoned land, prices and delivery of product to the market. It identified significant levels of housing supply are provided by a small number of developers[9]. Again, Hawea is no different, with zoned land either contained within a single large ownership or fragmented small ownership making access and development timing uncertain. Recent significant increases in median house prices illustrate this principle very well - simply relying on existing zoned areas will not have any meaningful impact on supply and affordability issues the District is facing.

The letter of support from the QLCHT (**Appendix [J]**) further emphasises this demand with the QLCHT having a waiting list of 500 households, of which 20% are in the Wanaka area. As do the letters from Ignite Wanaka (**Appendix [A]**) and First National (**Appendix [B]**)

Therefore, this proposal is in a strong place to deliver much needed additional supply to a market exhibiting significant affordability issues and extremely high demand for more affordable housing.

The recently completed QLDC Housing & Business Development Capacity Assessment also highlights this matter. It identifies both the existing shortage and the increasing demand in the affordable price bracket, further it recognises limited additional feasible supply in this affordable bracket into the long-term[10] - again highlighting the opportunity this proposal has to ensure affordable housing is

[7] QLDC 10 Year 2018 - 2028 Plan Volume 2 pg39
[8] www.qv.co.nz/suburb/lake-hawea
[9] Inclusion of Wanaka in the Housing Accords and Special Housing Areas Act 2013 Implementation Guidelines (Lead Policy)
[10] QLDC Housing & Business Development Capacity Assessment para 38

delivered to the market. Providing housing in Hawea is not just providing housing to meet demand in Hawea but is a key piece of the solution in addressing housing affordability for the Queenstown Lakes District as a whole.

The location is considered appropriate because the site:

- Is not landscape sensitive or at the entry/gateway to town, nor within an Outstanding Natural Landscape or adjoining the existing lakefront.
- Is unproductive rural land.
- Directly adjoins the existing urban extent of Hawea and would be accessed from existing roads that service the existing township.
- Is topographically similar to newer developments within Hawea, being Timsfield and Sentinel Park.
- Directly adjoins the more recent urban development within Hawea -Timsfield and Sentinel Park and therefore provides for a logical connection to the form and character of this newer part of the township.
- Being located behind the older parts of Hawea and lakefront it will preserve the character of these areas.
- The site is located where it would provide for the logical growth of Hawea.
- Is located in the position which avoids natural (lake, river) and natural hazard impediments.
- Offers major opportunities to positively contribute to the social infrastructure and amenities of Hawea so the town can be more self-sufficient and therefore more sustainable.

## 13. AFFORDABILITY

**Scale & Location**

Scale of development is considered critical to the ability to deliver an affordable product. In this respect the proposal is in a unique position to be able to comprehensively plan and deliver a greater number of sections and houses to the market.

There has been some concern raised about why this development should occur now when zoning already exists within the established area of Hawea.

As discussed above, existing zoning has not translated to affordability as demonstrated by the escalation of housing prices in the District and Hawea. Part of the solution to affordability is the provision of additional supply. Delaying development until existing zoned areas are developed means that affordability will not be improved - bringing this development forward through the SHA process is considered absolutely critical to addressing the affordability challenges facing the District.

**Housing**

Universal is committed to ensuring a truly affordable product can be delivered and has been working closely with building companies to ensure packages can be provided within the development at very competitive pricing.

House and Land packages will be delivered to the market within the KiwiSaver HomeStart Grant house price cap - currently $550,000 for a new house within the Queenstown Lakes District. It is considered this is a good benchmark for an affordable price point and pricing at this level has not been delivered to the market within the Queenstown Lakes District with any certainty in the past.

The Kiwi Saver Home Start scheme enables existing KiwiSaver members to access up to an additional $10,000 ($20,000 for a couple) for the purchase of a new house and land[11]. This is considered a significant benefit of the SHA proposed by Universal.

Fixed pricing for house and land packages between $464,000 and $550,000 is proposed. The following are examples of options that will be available:

1. $464,000 – 2 Bed, 2 Car Garage with driveway and front yard landscaping
2. $499,000 – 3 Bed, 1 Car Garage with driveway and front yard landscaping
3. $550,00 –3/4 Bed, 2 Car Garage with driveway and front yard landscaping

Attached **Appendix [O]** are plans illustrating these examples. Universal has commitment to these product types and pricing from Stonewood Homes, Mike Greer Homes, GJ Gardner and Landmark Homes, Golden Homes and Signature Homes. Universal is also working on agreements with several other home building companies. This ensures not only a competitive market for purchasers when choosing a builder but also creates building capacity. These companies have each committed to ensuring a minimum of five house and land packages are available at any one time and in the first phase of development to build show homes illustrating these price points - again assisting first home buyers to understand and actually see what these price points will deliver to them in terms of a finished home.

Given the median house price in Queenstown Lakes District is circa one million dollars and $650,000 in Hawea these prices represent levels unseen in the Queenstown Lakes District for some years. On this basis the proposal will provide a significant contribution to the affordability of our District.

**Focus on First Home Buyers**

After much consultation with banks, mortgage brokers and real estate agents, Universal is fully aware that buying a property for a first home buyer can be a difficult, stressful and time-consuming process. This combined with the expensive and very competitive market make it extremely difficult for a first home buyer to secure a property of their own.

The current market dictates that property purchase decisions have to be made very quickly with due diligence completed and pre-approved finance in place. Without this a potential purchaser normally misses out. Typically, in the QLDC, the first home buyer is unwilling to complete the pre-approvals as the property is likely to go beyond their budget meaning the approvals are simply another expense without reward. With fixed prices within the approved KiwiSaver range and the removal of auctions on affordable product the first home owner can be rest assured the price will not have gone beyond $550,000 by the time they secure their pre-approvals.

[11] KiwiSaver HomeStart grant http://www.kiwisaver.govt.nz/new/benefits/home-sub/

Creating greater certainty around the cost is challenging for first home buyers as they typically need to deal with a developer for a section and then go to building companies to then try figure out how much it will cost to build a house on that section. By providing products with price points below the KiwiSaver HomeStart level a package rarely, if ever, available in the Queenstown Lakes District will be offered.

This approach will greatly assist the first home buyer and therefore the ability for first home buyers to successfully buy into the development. Mortgage specialists have identified the 10% deposit as a further challenge to some purchasers. Consequently, Universal will offer a reduced deposit requirement for first home buyers where appropriate - 5% instead of the standard 10%. Extending the due diligence period is also proposed for first home buyers. This better aligns with the specific approvals first home buyers are required to go through when gaining access and approval to KiwiSaver funds.

While Universal believes the scale of the project will disincentivise speculation it has also created a suite of rules to ensure speculative behaviour is further dampened.

Universal propose the following:

- A limit on the number of sections a single purchaser can purchase.
- Applying a vetting system to ensure genuine home buyers have priority.
- A developer covenant restricting re-sale of sections within 2 years.
- A full 10% deposit for non-KiwiSaver buyers.

**Housing Trust Contribution**

As discussed above Universal has already been in consultation with QLCHT and 10% of the sections to be developed will be gifted to the Queenstown Lakes Community Housing Trust. In addition, a further 10% of sections in stage one will be gifted by bringing forward the contribution from a later stage. This initiative of doubling the contribution in stage 1 recognises Universal Development's support for the Trust.

The above measures are considered to demonstrate how Universal has taken an active approach to better understanding the challenges and develop a suite of measures to address and ensure affordability.

## 14. ACCORDANCE WITH COUNCILS OVERALL STRATEGIC DIRECTION FOR URBAN DEVELOPMENT

Council Lead Policy criteria states:

*The Council will consider proposed special housing areas in light of its overall strategic direction for development in the District. This includes ensuring that urban development occurs in a logical manner:*
*• to promote a compact, well designed and integrated urban form;*
*• to manage the cost of Council infrastructure; and*
*• to protect the District's rural landscapes from sporadic and sprawling development*

As discussed above, the proposed SHA site is located directly adjacent to the existing urban edge of the Hawea Township. Given the natural constraints to the east and west, the site represents the only logical place for the township to grow. Cemetery Road already provides access to urban development on one side and adjoins the site along approximately 1.2km of the site's north boundary. Satisfying the above criteria qualifies this proposal as ideal for development.

The master plan has illustrated how the township's existing street network can be extended into the subject site to ensure development is integrated with continuity. Detailed design consideration will ensure a well thought-out subdivision. In addition, Universal has a strong track record of delivering well-designed subdivisions.

Council is already proposing upgrades to infrastructure in Hawea that can accommodate the proposed development and therefore there will be no additional cost to Council in terms of infrastructure demand from the proposal. The Long Term Plan has already established funding and timing for infrastructure works in Hawea

The master-planned and comprehensive nature of the proposal ensures it will not result in sporadic or sprawling development. The site is not particularly visually sensitive due to its distance from the primary entrances to Hawea, distance from the Lake Hawea foreshore nor is it located within an Outstanding Natural Landscape. The land has not been actively farmed for a number of years. Accordingly, the proposal is considered to align with Council's strategic direction for growth and urban development generally.

## 15. PREDOMINANTLY RESIDENTIAL

Section 14(2) of HASHAA states that a development is 'predominantly residential' if:

*(a) the primary purpose of the development is to supply dwellings, and*

*(b) any non-residential activities provided for are ancillary to quality residential development (such as recreational, mixed use, retail, or town centre land uses)*

As discussed above the master plan provides for predominately residential sections. However, it is considered another significant benefit and opportunity of the proposal to provide for ancillary activities that support residential development - in this case not only the proposed subdivision but also the wider Hawea township. The ability for this development to contribute to the self-sufficiency and sustainability of Hawea through reduced reliance on Wanaka for day-to-day amenities is considered a significant benefit of the proposal. The master plan has been specifically designed to provide the Community Hub (providing ancillary activity) to be located adjacent to Cemetery Road and along an extension of Capell Avenue so it can form a node and have strong connection to the existing township.

Accordingly, any non-residential activity is considered to enhance both the proposed development and existing residential environment of Hawea and is considered ancillary to the residential development.

## 16. BUILDING HEIGHT

The draft master plan confirms the predominant style of development would be lower density residential and therefore an 8m height limit or two-storey form would be anticipated.

## 17. MINIMUM NUMBER OF DWELLINGS

The Master Plan would yield approximately 400 sections. The scale of development and potential number of dwellings is considered to be a significant positive contributing to the objectives sought through HASHAA and the potential for QLDC to address the shortage of affordable housing in the District.

## 18. RESIDENTIAL DEVELOPMENT QUALITY

Universal has been cognisant of the need to ensure the quality of the development without overly prescribing design as achieving affordable product is very challenging given building cost in the District.

In this respect a set of design guidelines are proposed, **Appendix [P]** to guide development and would apply to each section. These will ensure well established 'good urban design principles' for single lot housing are adopted such as:

- Ensuring garages do not dominate the streetscape.
- Street fencing is not higher than 1.5m to provide passive surveillance of the street.
- Requiring the house to sit forward of the garage to encourage the house to 'front' the street.
- Encouraging street articulation through presence of an entrance or porch visible from the street.

These guidelines will ensure an effective design response and quality of residential housing within the development without being overly prescriptive and running the risk of adversely impacting the ability for the housing to be achieved at an affordable point.

All streets will provide for footpaths on both sides of the street with street tree planting adding to the overall quality and feel of the development. The public realm and contribution the streetscape makes to the development has been a focus of consideration for Universal. In this respect indicative road cross sections are contained in **Appendix [Q]** illustrating the streetscape qualities.

Street lighting and lighting externally within sites will be managed to ensure the preservation of the night sky, a particularly important attribute of the Hawea environment.

Universal has also investigated the provision of solar systems for housing and has secured an arrangement with Infinte Energy NZ (a Central Otago owned company) to incentivise and subsidise use of solar infrastructure. A copy of this agreement is contained in **Appendix [R]**, which confirms that a free upgrade or free solar inverter will be provided to every home owner who purchases a

solar system. Universal is also exploring with a large New Zealand power company the opportunity for an embedded solar network that would enable individual home owners to connect to a community network and battery system. Combining subsidised solar infrastructure with an embedded community solar network would be a compelling solution to both cost and sustainability issues.

A plant list has been prepared to assist future lot owners with choosing plants that will grow well in the particular climate and contribute to the bio-diversity and ecological values of the wider area. A copy of the list is contained in **Appendix [S]**. The plant list also seeks to provide a level of continuity to the front yard of individual sections so collectively they contribute to the quality of the public realm and streetscape.

Contained in **Appendix [T]** is a detailed assessment of the proposal against the QLDC 'Quality and Design Outcomes' contained in Attachment C of the QLDC Lead Policy.

## 19. TIMELY DEVELOPMENTS

Universal has a proven track record of progressing developments in a timely manner. Universal's development of the Wanaka Primary School site (25 sections) was titled and delivered within 2 years. Another Universal project, Scurr Heights was settled in June 2016 and currently has 100 sections sold and waiting for title.

Universal has bought and settled the Hawea site without finance and has significant working capital available and therefore will not be relying on pre-sales for development to commence. Should consent be granted Universal stands ready to start the project immediately.

## 20. CONCLUSION

This expression of interest has addressed the QLDC Lead Policy criteria for recommending Special Housing Areas to the Government. It has been demonstrated that there is a strong rationale and logic to this proposal. Accordingly, it is requested that Council's Lead Policy is amended to provide for this site within Councils categorization of land as a Category 2 area.

In summary:

- The site is a logical location for the growth of Hawea.
- The Master Plan will ensure development occurs in a logical and coordinated manner.
- Infrastructure is easily accessible and the subdivision can contribute to the efficiency of upgrades already planned for Hawea.
- The land is not visually sensitive, ecologically sensitive, productive nor located along the main entry or lakefront of Hawea.
- The subdivision will adjoin the developing portion of Hawea and therefore comfortably integrate with this evolving part of the township.
- The proposal will provide a significant contribution to the affordability issues facing the District.

- The proposal will contribute to the self-sufficiency and sustainability of the Hawea community.

Queenstown Lakes District was one of only three regions in New Zealand where home affordability got worse in the three months to February 2018.[12]

Taking into account the points outlined in this EOI it is considered both the subject site and the proposal are exactly the type of initiative the HASHAA legislation and SHA process were developed to enable.

Waiting for infill of existing urban areas will only exacerbate house price and affordability issues.

[12] https://www.odt.co.nz/regions/central-otago/co-lakes-house-price-now-154-times-average-annual-wage

**List of Appendix**:

| | |
|---|---|
| **[A]** | Ignite Wanaka Chamber of Commerce - Letter |
| **[B]** | First National - Letter |
| **[C]** | Master Plan |
| **[D]** | Mortgage Broker - Letters |
| **[E]** | Certificate of Title |
| **[F]** | R A Skidmore - Landscape and Urban Design Review |
| **[G]** | Hawea Drop in Session - Flyer |
| **[H]** | New Zealand Transit Authority - Letter |
| **[I]** | Otago Regional Council - Correspondence |
| **[J]** | Queenstown Lakes Community Housing Trust - Letter |
| **[K]** | QLDC Infrastructure - Correspondence |
| **[L]** | Southern Land Infrastructure - Report |
| **[M]** | e3 Scientific – Soil Assessment |
| **[N]** | Carriageway Consulting – Traffic Assessment |
| **[O]** | House Designs |
| **[P]** | Design Guidelines |
| **[Q]** | Street Cross Sections |
| **[R]** | Infinite Energy NZ - Letter |
| **[S]** | Recommended Plant List |
| **[T]** | Assessment of QLDC Quality Design Outcomes |

ignite Wanaka NZ
Chamber of Commerce

11 May 2018

To Universal Developments

Ignite Wanaka Chamber of Commerce supports the Wanaka business community and serves its membership by being their voice around the future opportunities as well as how we are going to deal with issues that we are facing.

The recurring issue from our recent membership survey is that the number one problem facing the Upper Clutha business community is the difficulty in obtaining and retaining staff due to the high cost of living here, and in particular the high cost of housing.

This is twofold. Firstly, businesses have identified a critical shortage of both long and short-term rentals. With a simple demand and supply imbalance the prices of what is available has risen significantly faster than wages. This situation has brought about major concern around whether our workforce is able to afford to stay and live a healthy life here in the Wanaka community. Secondly there is a critically limited opportunity for permanent staff to enter the housing market due to prices being unachievable and unrealistic. Our business community believes that moves towards solving this issue will be the key to helping them obtain and retain staff and therefore capability.

What we firmly believe is that we need to focus on improving the lives for our people, employers and employees. To do this we need to look for sustainable solutions and finding affordable housing so that our workforces can meet their basic human needs and our businesses can continue to operate successfully into the future.

As the Chamber we will support any development project with plans that fit into the affordable bracket, is aligned with excellent environmental practices and community values, and that is going to help solve the most significant issue our business community faces.

Yours sincerely

Bridget Legnavsky

On behalf of Ignite Wanaka Chamber of Commerce

7/5/18

First Home buyers are struggling to get into our Wanaka market and they need support and assistance to get started. They already find it difficult to buy an established property here, even if it is smaller, older or tired. But if they are considering building as a way of getting onto the property ladder, where they want to build their own design and keep it within a tight budget, then this is almost impossible for them in Wanaka and Albert Town where sections start in the mid $300,000's.

Recently First National held an auction for a property that we considered 'entry level'. A modest 88m2 home on 1408m2 in the country. This type of property is few and far between. With an RV of $400,000 we, and especially the Vendor, were pleasantly surprised when it reached $662,000 after a lot of spirited bidding.

This story is not the exception though, and for the unfortunate 'first home buyer', and there are plenty of them, this is a common story where they often miss out due to the lower priced property being pushed up by demand and selling for more than expected.
Wanaka and the surrounding area is a desirable area that appeals to all types of people and there needs to be a solution where there is affordable land to accommodate them.

Yours sincerely

Lynette Winsloe

First National Wanaka

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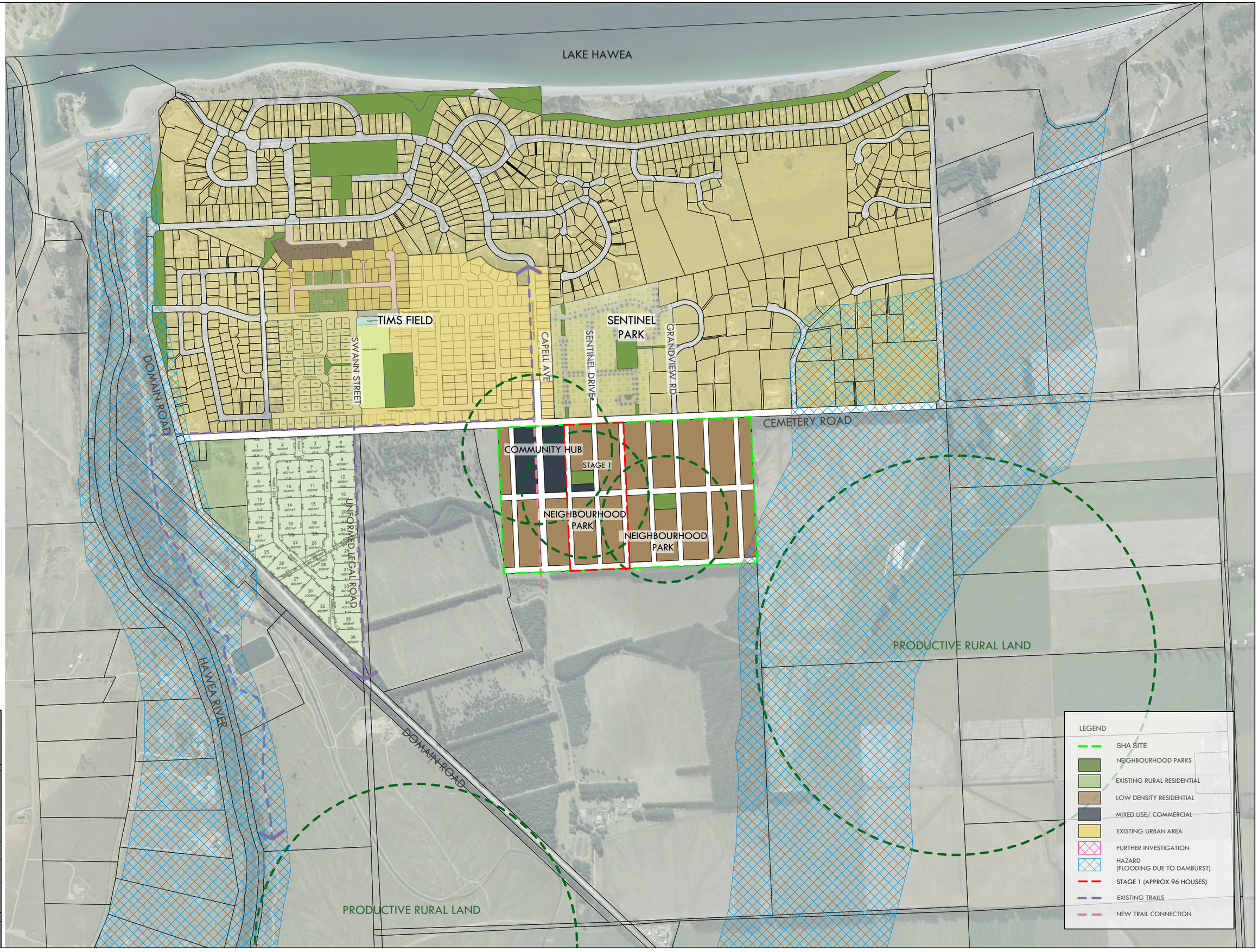
info@firstnationalwanaka.com | www.firstnationalwanaka.com | Infinity First National Wanaka Limited Licensed (REAA 2008)




| No. | Date | Issue Notes |
|---|---|---|
| U | 14/05/18 | Add Western lots |
| T | 09/05/18 | Move central road |
| S | 08/05/18 | Revise SHA boundary |
| R | 06/05/18 | Highlight SHA |
| Q | 02/05/18 | Remove west block |
| P | 01/05/18 | Stage1 Draft |

WILLIAMS & CO
PLANNING / URBAN DESIGN / DEVELOPMENT
www.williamsandco.nz

Design Firm: Stephen Riddle Landscape Design
022 105 0225

Consultant:

Project Title: Hawea Masterplan

Sheet Title: Indicative Masterplan

| | |
|---|---|
| Project Manager: SR | Project ID: 1014 |
| Drawn By: SR | Scale: 1:10,000@A3 |
| Reviewed By: | Sheet No: L01 of 3 |
| Date: 7/12/2017 | |
| File: 1014-1E.vwx | |

FOR DEVELOPMENT APPLICATION ONLY

Gmail by Google

**Tim Williams <tim@williamsandco.nz>**

# Hawea - SHA

**Stewart Mitchell** <Stewart.mitchell@loanmarket.co.nz> Mon, May 14, 2018 at 9:16 AM
To: Tim Williams <tim@williamsandco.nz>

Morning Tim

Please see below list of issues that from our experience are very challenging for 1st home buyers causing stress and uncertainty:

- Properties without a set price
- Finance expires after 12 months so ideally title is issued within 12 months
- Price cap within $550,000 for new build so can gain access to homestart grant
- 'turn key' helps as the whole build process can be stressful for some plus they will be paying rent and build costs which some struggle with
- Clients require better education by building companies about the process. We spent a lot of time from our perspective but quite regularly there appears to be a short fall from building sales rep in educating
- Allow 15 working days  if required for first home buyers so they feel a little less pressured throughout the process. Note homestart and kiwisaver take up to 15 working days for approval from point of application

Hope this helps

**Regards**

# COMPUTER FREEHOLD REGISTER
# UNDER LAND TRANSFER ACT 1952

**Search Copy**

R.W. Muir
Registrar-General
of Land

| | |
|---|---|
| **Identifier** | **180128** |
| **Land Registration District** | **Otago** |
| **Date Issued** | 25 March 2009 |

**Prior References**
34539

| | |
|---|---|
| **Estate** | Fee Simple |
| **Area** | 34.4670 hectares more or less |
| **Legal Description** | Lot 2 Deposited Plan 343855 |

**Proprietors**
Universal Developments Hawea Limited

**Interests**

Saving and excepting all minerals within the meaning of the Land Act 1924 on or under the land

Subject to Section 315 Land Act 1924

Land Covenant in Transfer 5337316.3 - 9.9.2002 at 9:00 am

8101037.5 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 25.3.2009 at 9:02 am

Appurtenant hereto is a right to convey water, pump water, convey electricity and locate a bore created by Easement Instrument 8101037.6 - 25.3.2009 at 9:02 am

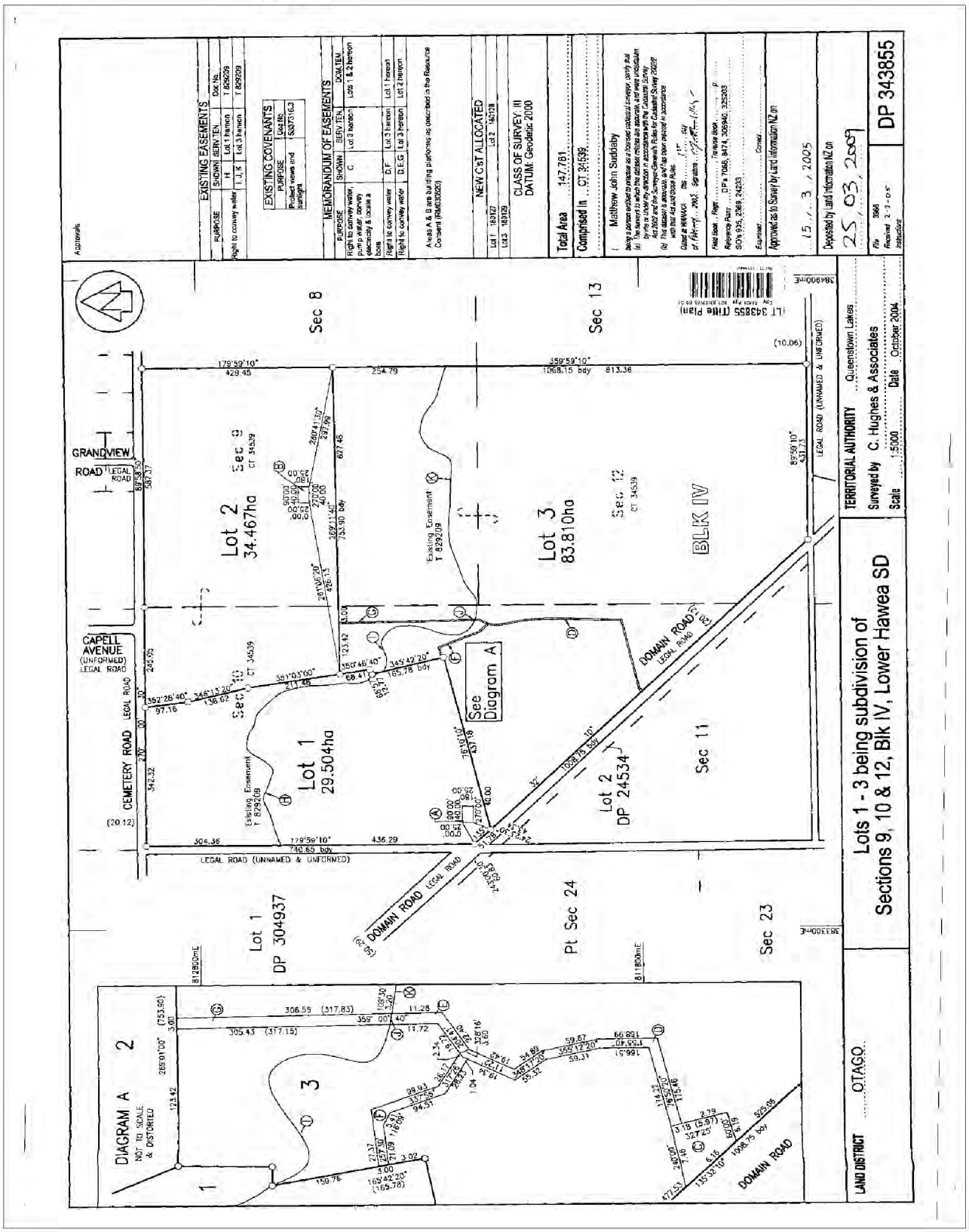
The easements created by Easement Instrument 8101037.6 are subject to Section 243 (a) Resource Management Act 1991

9084530.1 Notice pursuant to Section 195(2) Climate Change Response Act 2002 - 31.5.2012 at 9:52 am

9126179.1 Notice pursuant to Section 195(2) Climate Change Response Act 2002 - - 18.7.2012 at 12:17 pm

10502462.1 Variation of the conditions of the easement created by Easement Instrument 8101037.6 - 25.7.2016 at 4:03 pm

**Identifier** **180128**



# Proposed SHA at Hawea

## Landscape and Urban Design Review

Prepared for Universal Developments Hawea Ltd by:

R . A . Skidmore
urban design ltd

**May**
**2018**

# Proposed SHA at Hawea

## *Landscape and Urban Design Review*

## Contents



*Cover image: Google Earth*

# 1 Introduction

1.1 RA Skidmore Urban Design Ltd. has been requested by Universal Developments Hawea Ltd to carry out a landscape and urban design review in relation to a proposed Special Housing Area ("SHA") at Hawea.

1.2 The following review is based on the indicative masterplan (revision dated 14/05/18) contained in the expression of interest document.

1.3 In carrying out the review, I visited the site and surrounding environs on the 21st April 2018. On the same day I also attended a community meeting where the proposal was discussed.

1.4 I have provided feedback and input as the proposal has been tested and refined.

# 2 The Site and its Context

[See Attachments 1 and 2 to view the Site in its context]

## *The Site*

2.1 The subject property (the "Site") is located at the southern periphery of the township of Hawea. Its northern boundary fronts Cemetery Road. It has an area of 34.5 ha. 32ha of this is proposed as the SHA. The land is flat and contains areas of pine plantation and pine shelterbelts defining open pasture areas. The Site is currently zoned Rural in the Queenstown Lakes District Plan.

## *Site Context*

2.2 Like much of the District, the settlement of Hawea is located within a spectacular mountain setting. It sits on the southern shores of Lake Hawea, the northernmost of the Otago glacial lakes. Both Lake Wanaka and Lake Hawea were created by advances of great glacial systems which extended down from the alps to fill the valley and carve out the valley floor. The southern foreshore of the lake, the location of the existing township, was created by moraine that mounded and dammed the lake. The Hawea River drains from the southwestern corner of the lake and then joins the Clutha River which drains from Lake Wanaka.

2.3 The Hawea dam construction began in 1955. The raising of the Lake level ended in around 1958. Following the influx of workers involved in the construction of the dam, the settlement gradually developed, primarily as a holiday destination.

2.4 Today, the main entrance to Hawea is from the direction of Wanaka across the dam at the head of the Hawea River. Dwellings in the northern area of the older part of the settlement enjoy an outlook over Lake Hawea extending to the north. The settlement has a somewhat circuitous network of streets that traverse the undulating moraine topography. While there has more recently been construction of larger houses within the established settlement, it retains an informal character with a predominance of modest houses of various styles. The settlement is well vegetated, and the streets have an informal character without formal kerb and channelling.

2.5 More recently there has been considerable expansion of the settlement to the south (see Attachment 3, Photograph 1). A distinct terrace at the southern edge of the older settlement creates a separation between the older and newer settlement pattern (see Attachment 3, Photograph 2). Two residential neighbourhoods to the south of the terrace, Tims Field and Sentinel Park, are currently being developed. Further to the east, more undulating land has been developed with larger lots.

2.6 Properties immediately to the north of the site are accessed internally, turning their back on Cemetery Road which runs east-west in this location. Cemetery Road currently forms the southern edge of the settlement. Immediately to the west of the Site, subdivision consent has been granted for a neighbourhood containing lots of around 4,000m$^2$.

# 3 Landscape Considerations

3.1 Around 95% of the Queenstown Lakes District is identified as an Outstanding Natural Landscape ("ONL") in the District Plan. While located in a spectacular setting, the Site and the surrounding rural environment is not identified as an ONL and nor does it exhibit particular landscape sensitivity.

3.2 The Site has a rural character, although it does not exhibit the same productive elements other land in the wider Hawea Basin exhibits, such as centre pivot irrigators or pasture grass. The land currently is visually defined by mature pine trees enclosing grass areas and wilding pines. It does not exhibit any particular features that create a sensitive rural environment.

3.3 At a broad level, the mountain ranges that generally have a north-south orientation provide eastern and western enclosure to the settlement of Hawea and the Hawea Flats behind (see Attachment 4, Photographs 3 and 4). The enclosing mountains provide a distinctive landscape setting and contribute to the character of the area.

3.4 Water bodies also provide distinct edges and enclosure. Lake Hawea to the north creates a clear edge and provides a visual and recreation amenity that strongly contributes to the settlement's sense of place. The Hawea River creates a strong edge to the western extent of the settlement. The land is terraced down to the river so that it is not highly visible from the settlement. Existing trails along its bank provide

connectivity and contribute to the recreational values of the township. Considerably further to the south, the Clutha River also creates an edge to the productive flat lands.

3.5 The flat topography of the Site presents no constraints to urban development. Development of the land would not adversely impact on the key landscape features in the surrounding environment. To the east, an identified flood hazard area limits the extent of development eastward.

3.6 Development of the Site as an extension of the Hawea settlement would form part of the newer settlement pattern immediately to the north of Cemetery Road. The visual separation created by the terrace to the north creates a distinction between the older established part of the settlement and the newer area on the flats behind.

3.7 Cemetery Road currently defines the southern extent of the Hawea settlement. However, consent has been granted for subdivision of the land immediately to the west of the Site and south of Cemetery Road to create residential lots of around 4,000m$^2$. This establishes an increased residential focus south of Cemetery Road. The location and configuration of the proposed SHA has been carefully considered to create a logical and seamless extension to the settlement. While it will result in a change in character from rural to urban to the south of Cemetery Road, it will knit seamlessly with the established settlement. In my opinion, this is a suitable location to accommodate growth of the settlement in a planned manner. It is an efficient use of suitable land and could not be described as 'sprawl'. Further comment about the way the proposed SHA integrates with the existing settlement is set out in the following section. In my opinion, Cemetery Road does not form a constraint or suitable boundary to the settlement.

3.8 Overall, it is concluded that there are no landscape impediments to the development of the land as an extension of the Hawea settlement.

# 4 Urban Design Considerations

4.1 In response to consideration of a range of factors, including feedback received from the local community, the proposal has been scaled back from an area providing for 1000 houses. As shown in the indicative masterplan, development is proposed immediately to the south of Cemetery Road, opposite Sentinel Park. The area will accommodate approximately 400 residential sites. A community hub is also proposed that will accommodate a range of ancillary activities to support the local settlement. The indicative masterplan also identifies suitable locations for neighbourhood reserves.

4.2 The area sought for identification as an SHA does not preclude further consideration of the wider area as part of a strategic consideration of the longer-term growth of the settlement.

## Integration with Existing Settlement

4.3 Taking into account the characteristics of the land south of Cemetery Road, and particularly the similarity of the landform north and south of the road, the opportunity exists for further development to reinforce Cemetery Road as a key east-west axis for the settlement. As noted above, while the existing settlement stops at Cemetery Road, there is no rationale for this to be a boundary to the settlement. It is not a strong landscape feature that is suitable as a boundary to limit growth.

4.4 Immediately to the north of Cemetery Road, Capell Ave is a paper road. It currently forms part of the pedestrian/cycle route to Hawea Flat School. Once formed as a street, this will provide a primary north-south axis through the settlement. The proposed masterplan is aligned to reinforce this axis, continuing the street alignment to the south through a 'community hub'. The indicative masterplan also demonstrates a block structure and street network that can connect directly with the local streets of Sentinel Drive and Grand View Drive.

4.5 In my opinion, the proposed SHA is well located to provided good integration with the existing settlement.

## Connectivity

4.6 As noted above, the indicative masterplan has been configured to integrate directly with the existing network of streets and to create a seamless extension of the settlement. The layout proposed will extend and reinforce Capell Avenue as a key north-south axis through the settlement. The alignment of the 'community hub' to front this street will further reinforce its role as a primary axis.

4.7 The flat topography of the Site creates no constraints to the alignment of streets. The proposed grid block layout will have good legibility and provide a selection of routes to navigate through the neighbourhood. The east-west street alignments will provide viewshafts to the enclosing mountain ranges.

4.8 The pattern of streets proposed is also suitable to provide good connectivity for pedestrians and cyclists.

## Housing Choice and Affordability

4.9 The primary purpose of the HASHAA legislation is to enhance housing affordability by facilitating an increase in land and housing supply in locations where housing has become unaffordable for the local community. The Expression of Interest report outlines the mechanisms proposed to deliver affordable housing in the SHA. In my opinion, the Site is well located to accommodate housing that is affordable and provides a good amenity for the local community.

4.10 The regular grid network of streets proposed creates a block structure that is flexible to accommodate a range of site sizes with good amenity. The blocks are aligned to create east-west facing lots, which is a good orientation to maximise solar access and achieve a positive street interface. The regular block configuration and depth of blocks also facilitates a subdivision pattern that is dominated by front lots, contributing to the creation of a positive street interface and good interaction with the street.

4.11 The creation of lots with a regular proportion will also facilitate efficient site layouts, contributing to the affordability of development.

4.12 The indicative masterplan identifies two neighbourhood reserves. These are located to provide easy access for local residents and contribute to the amenity of the neighbourhood. Both are located to have good visibility from adjacent streets. The westernmost reserve is shown adjacent to mixed use/commercial land to enable a good synergy between a commercial activity, the open space, and the surrounding residential neighbourhood.

## Community Hub

4.13 The indicative masterplan identifies a community hub that could accommodate a mix of commercial and service activities. In addition to contributing to the amenity of the new neighbourhood, the creation of such a hub would benefit the wider settlement. There are currently few commercial or service activities in Hawea and little land available to create a consolidated hub within the established settlement. The creation of such a hub within the SHA would create a focus for the settlement and would contribute to the resilience and sustainability of Hawea by enabling greater self-sufficiency and reducing the requirement to travel to Albert Town and Wanaka for a range of services and amenities. The establishment of a mixed commercial hub would also contribute to employment opportunities within the settlement.

4.14 The proposed community hub is located and configured to enable development to front and reinforce the extension of Capell Avenue as the primary north-south axis. Its location is suitable to be accessed from the established area of Hawea to the north and from possible future residential expansion immediately to the west.

## Hawea Character

4.15 As noted above, a clear terrace and change in level creates a distinction between the older, northern area of Hawea and the more recently developed area on the flats to the south between the terrace and Cemetery Road. The proposed SHA area will be compatible with the character of the settlement immediately to the north. The established character of the older part of the settlement will be maintained.

4.16 The Site does not contain any landscape features that could contribute to the character of the new neighbourhood. At the stage of detailed subdivision design, particular

consideration should be given to the introduction of features that respond to and contribute to the local character of the area. In particular, the design of the public realm, including parks and streets, should include planting and hard landscape features to contribute to the settlement's sense of place.

4.17 Recently developed properties on the northern side of Cemetery Road have provided a street interface with variable amenity. At the detailed design phase, it will be important to provide mechanisms to ensure a good street amenity outcome is achieved, both for residential and commercial properties that interface with the street.

# 5 Conclusions

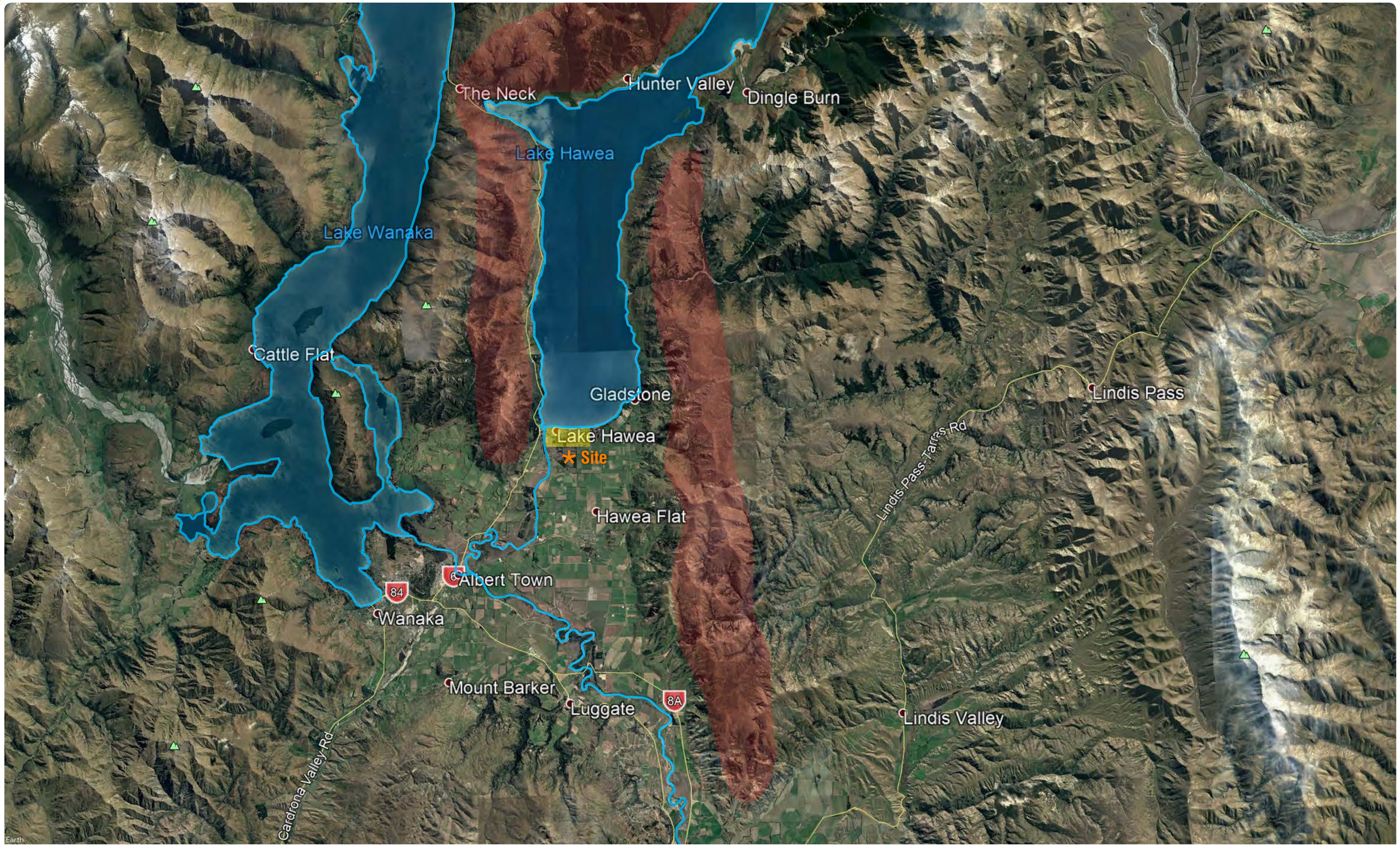
5.1 Hawea is an established township that is contained by a dramatic landscape setting. In particular, Lake Hawea to the north and mountain ranges to the east and west provide a containment to the settlement that also contributes to its character and sense of place. Less visibly prominent is the containment created by Hawea River.

5.2 The township has evolved over time with the older part of town located in the elevated northern area oriented towards the Lake. A more recent extension of the township is located to the south on a lower terrace.

5.3 The flat land of the lower terrace extends expansively to the Hawea Flats; rural land kept in various productive uses. The Site is located immediately to the south of the existing settlement and its development is not constrained by any significant landscape features.

5.4 The review set out above considers the suitability of this land to accommodate expansion of the settlement in terms of: integration with the existing settlement; connectivity; housing choice and affordability; creation of a community hub; and the effect on the character of Hawea. It is concluded that the area proposed, and the layout shown in the indicative masterplan, has been well considered and will create a suitable extension to the Hawea settlement.

Rebecca Skidmore
Urban Designer/Landscape Architect
May 2018




Source: Google Earth
Imagery date: 15 March 2017

R . A . Skidmore urban design ltd

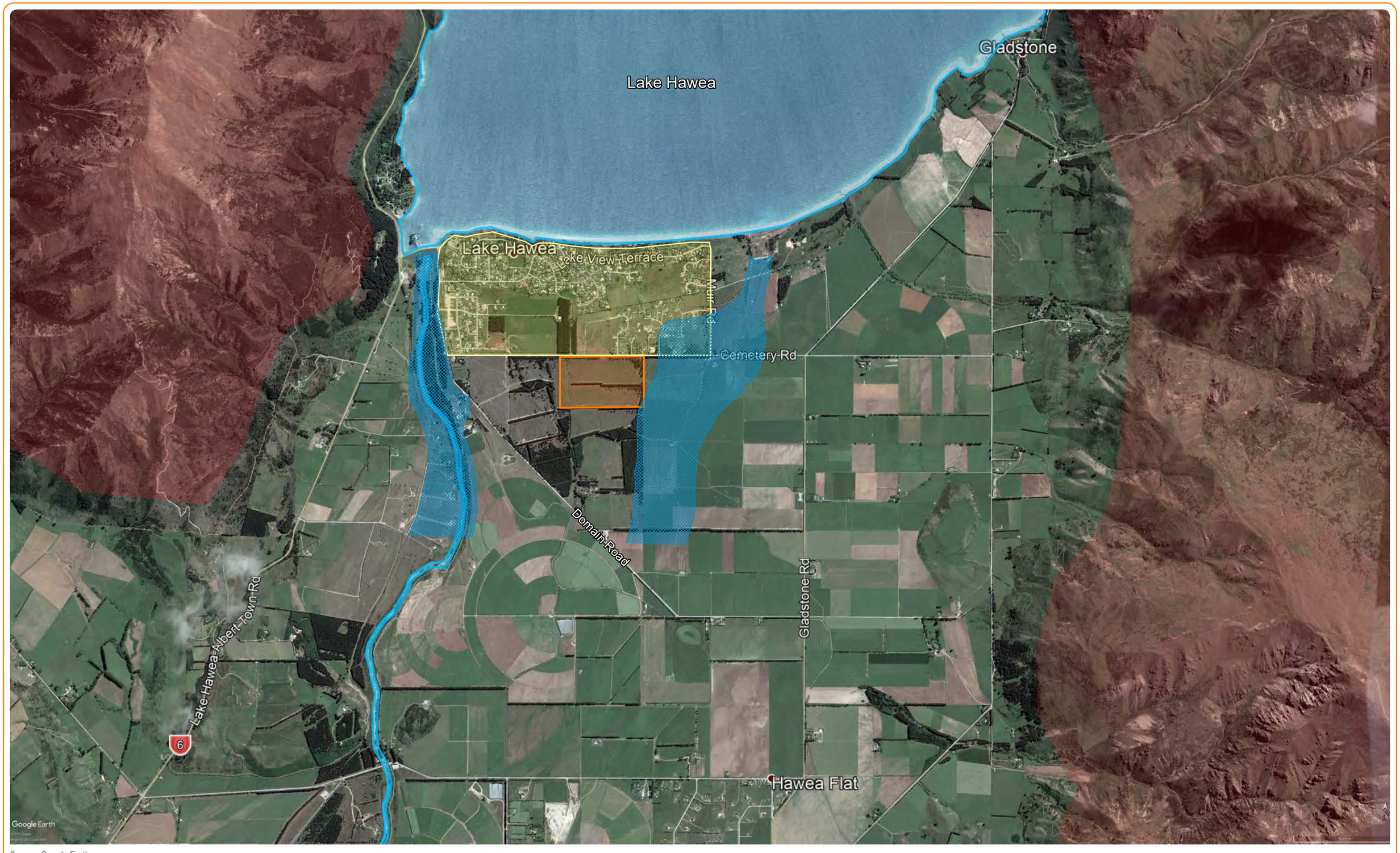
**KEY**

- Water landscape features
- Enclosing mountain ranges
- Hawea

The Site in its Wider Context
Proposed SHA at Hawea
**LANDSCAPE AND URBAN DESIGN REVIEW**

**ATTACHMENT 1**

MAY 2018




Source: Google Earth
Imagery date: 18 November 2016

**KEY**

- Water landscape features
- Hazard (flooding due to damburst)
- Enclosing mountain ranges
- Existing settlement boundary
- Site boundary

R . A . Skidmore urban design ltd

The Site in its Context
Proposed SHA at Hawea
**LANDSCAPE AND URBAN DESIGN REVIEW**

**ATTACHMENT 2**

MAY 2018

**PHOTOGRAPH 1:** Expanding area of Hawea looking south from top of terrace

**PHOTOGRAPH 2:** Terrace viewed from Cemetery Road


**PHOTOGRAPH 3:** Enclosing mountains to east

**PHOTOGRAPH 4:** Enclosing mountains to west

UNIVERSAL GROUP

# YOU'RE INVITED

**Wanaka company Universal Developments is proposing a master-planned development on Cemetery Rd, Lake Hawea.**

**WHAT**

Visit us onsite to see the location and have a chat. Entrance is opposite Sentinel Park on Cemetery Rd.

**WHEN**

11am - 3pm Saturday **March the 3rd** & 11am - 3pm Saturday **March the 10th**

**WHO**

Everyone! This is a chance to express your opinions direct to the company owner Lane Hocking. Please come along if you're interested in hearing about the project; want to ask questions; or want to submit a comment to our suggestion box.

**We look forward to seeing you at one of the open days.**

NZ TRANSPORT AGENCY
WAKA KOTAHI

Level 2, AA Centre
450 Moray Place
PO Box 5245
Moray Place
Dunedin 9058
New Zealand
T 64 3 951 3009
F 64 3 951 3013
www.nzta.govt.nz

30 May 2018

Blair Devlin
Queenstown Lakes District Council
Private Bag 50072
**QUEENSTOWN 9348**

**Via Email**

Dear Blair

**Universal Developments, Hawea - Proposed Special Housing Area - Comments**

Thank you for providing details of the above proposal to the NZ Transport Agency for comment. We understand that the proposal relates to a residential development that includes the following:

- Approximately 400 residential sections;
- A community hub to provide community services and/or commercial uses ancillary to residential activity;
- Internal roading, parking and footpaths; and
- Reserves.

The proposed SHA comprises 32 hectares of vacant rural land in Hawea. The subject site is adjacent to the existing township. The proposed development will be accessed from Cemetery Road and the master plan appears to provide logical extensions to existing cycle and walking trails.

On the basis of the information currently available to us, we are satisfied that the proposal is unlikely to have any immediate adverse effects on the safety, efficiency and functionality of the transport network.

Please do not hesitate to contact me if you have any further queries or require further information.

Yours sincerely

**Tony MacColl**
Principal Planning Advisor

**From:** Warren Hanley <warren.hanley@orc.govt.nz>
**Date:** 15 March 2018 at 1:06:27 PM NZDT
**To:** Lane Hocking <lane.hocking@yahoo.com>, "'blair.devlin@qldc.govt.nz'" <blair.devlin@qldc.govt.nz>
**Cc:** Dale Meredith <Dale.Meredith@orc.govt.nz>
**Subject:** SHA proposal for Hawea (Cemetery Road) - ORC response

Hi Lane, Blair

Thank you both for approaching ORC early in the planning process for this proposed SHA development. ORC appreciates being able to contribute with input at an early stage and we hope you likewise find our response useful for any further planning, and a robust process.

Rainfall in the wider Hawea area contributes to the recharge of its local aquifers, particularly the Hawea Flat aquifer which is located south of the Hawea township (see attachment map image for general indication of area). An increase in hard surfaces (roofs, paved areas, roading) can reduce natural recharge of groundwater aquifers. ORC provides information on this issue in its report titled 'Rainfall recharge assessment for Otago groundwater basins' – this can downloaded at https://www.orc.govt.nz/plans-policies-reports/reports-and-publications/groundwater

**ORC expectations**
For this proposal, ORC will be interested in the approach to the 3 waters services, Potable water, wastewater and storm water.

ORC's expectation is that drinking water supply and wastewater will be serviced by reticulated communal services (not 'on-site' services such as septic tanks). For wastewater, a high quality of treatment will be necessary to protect the groundwater resource, particularly as the development grows.

The management of stormwater will also be an issue of high interest to ORC, particularly the treatment method before disposal to ensure it avoids contamination of groundwater.

Also please note that the disposal of stormwater and wastewater from the development, if not to reticulated network systems (i.e. council managed), will need to comply with the rules of the ORC water plan - and possibly require ORC consent. Lane, when you have a bit more detail, I'd suggest you contact us to arrange a meeting with some ORC staff, including our consents team. If possible Blair, it would be good to have someone from QLDC attend as well. We may be able to arrange to hold this on site.

**Recommendations**

ORC would recommend the following:

1. QLDC confirm to ORC/developers as soon as possible any updates on its future development plans (incl. infrastructure upgrades etc) for Hawea - including this proposal. This will help with work ORC will be undertaking later this year to update its groundwater flow modelling for water allocation purposes;

2. When the proposal is progressed with further information available, additional input (including consenting advice) is sought from ORC; and

3. That an assessment of environmental effects for the proposed development includes:
   - assessing the effects of the development on the wider recharge for Hawea's aquifers and groundwater levels
   - confirmation, including details of treatment, as to how drinking water and wastewater will be managed
   - confirmation, including details of treatment, as to how stormwater will be managed

If you have any questions or points in this email you'd like to discuss further, please feel welcome to contact me.

Warren.

Otago Regional Council

**Warren Hanley**
Senior Resource Planner Liaison

Otago Regional Council
70 Stafford St, Private Bag 1954,
Dunedin 9054
Phone (03) 470 7443 or 0800 474 082
[www.orc.govt.nz]www.orc.govt.nz

COMMUNITY HOUSING TRUST
QUEENSTOWN LAKES

Queenstown Lakes Community Housing Trust, PO Box 1748, Queenstown 9348 www.qlcht.org.nz

21 May 2018

Universal Developments Ltd, Hawea
Lane.hocking@yahoo.com

Attention: Lane Hocking

Dear Lane

**HAWEA SPECIAL HOUSING AREA**

The Queenstown Lakes Community Housing Trust (QLCHT) acknowledges support in principle for your proposed Special Housing Area (SHA) development at Cemetery Rd, Hawea. We appreciate your willingness to work with us from an early stage.

QLCHT now has a waiting list of 500 households seeking some form of housing assistance. Around 20% of these are Wanaka based, and we believe would benefit greatly from a large-scale development of this kind in the Wanaka area.

A 10% Community Housing contribution to QLCHT would enable us to assist a large number of households on our database, as well as others who may not be on our waiting list yet, but would meet our eligibility criteria. The population projections certainly indicate Wanaka is going to grow significantly over the next few years.

In addition, you have advised Universal Developments will double the contribution provided in Stage 1 to 20%, by bringing forward its contribution from later stages. We consider this to represent a significant and unprecedented initiative by Universal Developments, and is illustrative of your commitment to addressing the housing challenges facing the District.

We applaud your emphasis on the affordable end of the housing spectrum, and are always glad to see developers focusing on entry-level housing.

We see your proposed SHA aligning with QLCHT's mission of helping committed residents of the Queenstown Lakes District into decent affordable housing with secure tenure, and would like to continue to cooperate with this exciting development.

Our support is subject to an acceptable SHA Agreement being put in place in the future.

Good luck with your proposal.

Kind regards,

Julie Scott
Executive Officer

**From:** *Stuart Pile <Stuart.Pile@qldc.govt.nz>*
**Sent:** *Wednesday, 18 April 2018 5:28 PM*
**To:** *Andrew Tipene*
**Subject:** *RE: RE: Hawea - Potential New Subdivision*

*Hi Andrew*

*Our CAPEX programme for Hawea has significant monies attributed to the management of wastewater from this scheme which continues to be a challenge for QLDC.*

*At present we have a non compliant wastewater treatment plant which is simply not fit for purpose. We have undertaken a business case which, at present, has the preferred option looking like a new pump system and pipeline that would convey sewage to our Project Pure WWTP. This project would involve construction of a 12km pipeline which would follow legal roads and easements for the vast majority of its length. A new bridge is hoped to be built over the River Clutha that would support our pipeline. This option aligns with our strategy for centralised wastewater management rather than the continued operation of smaller plants. It should be noted that Luggate will also be connected into the P Pure treatment plan.*

*LTP funding to support this project is as follows;*

| PROJECT PURE UPGRADES & DEVELOPMENT | | | 2017/18 | 2018/19 | 2019/20 | 2020/21 | 2021/22 | 2022 |
|---|---|---|---|---|---|---|---|---|
| SCREEN UPGRADES | New duty / standby screening system to increase screen capacity | CP 0560 | $ 599,843 | | | | | |
| CENTRIFUGE UPGRADE | New duty / standby centrifuge system | CP 6284 | | $ 416,000 | | | | |
| PPURE CAPACITY UPGRADE DESIGN | Design for new third SBR tank installation | CP 6284 | | | $ 530,000 | | | |
| PPURE CAPACITY UPGRADE | Construction and commissioning | CP 6284 | | | | $ 2,385,000 | $ 2,385,000 | |
| INSTALL FOG TREATMENT FACILITY AT P PURE | Design and construction | CP 6667 | | | $ 500,000 | $ 600,000 | | |

| HAWEA WASTEWATER SERVICING | | | 2017/18 | 2018/19 | 2019/20 | 2020/21 | 2021/22 | 2022 |
|---|---|---|---|---|---|---|---|---|
| ENABLING WORKS: PLANNING & CONSENTS | River Clutha pipe bridge | CP 0554 / NEW8 | | | | | | |
| DESIGN | Full pumping system design (WWPS & pipeline) | CP 4036 | | $ 704,875 | | | | |
| CONSTRUCTION | 12km pipeline from Hawea to P Pure (inc over River Clutha) | CP 4036 | | | $ 1,799,375 | $ 1,799,375 | | |

*In terms of capacity, it is well timed that we are made aware of future developments now so that we can size our trunk infrastructure accordingly. It should also be noted that in order for the P Pure plant to receive this additional load, capacity upgrades shall be required here also. Hence I also have included the upgrades planned for our Project Pure wastewater treatment plant.*

## *Water supply*

*The Hawea Bore Pump Station and Treatment Plant was constructed in 2014/15 and includes four bores and a treatment facility that includes chlorination and UV. The bores were sized to allow for larger pumps and any new housing development of significant size would likely result in us looking at pump upgrade. We have also recognised the network improvements that could be made in Hawea so funding also sits in the CAPEX programme for this also. The Hawea water supply improvements are as follows;*

| | HAWEA WATER SUPPLY | | 2017/18 | 2018/19 | 2019/20 | 2020/21 | 2021/22 |
|---|---|---|---|---|---|---|---|
| 1.0 | SUPPLY UPGRADES | | | | | | |
| 1.1 | WTP UPGRADE | Possible filtration barrier at WTP | CP 5200 | $ 210,000 | | | |
| 1.2 | NETWORK UPGRADES | Upsize Caples Ave section of watermain | CP 6027 | $ 241,500 | $ 65,138 | | |
| 1.3 | NETWORK OPTIMISATION | Placeholder funding for supply upgrades | CP 6983 | $ 250,000 | $ 250,000 | | |

*We intend to commence master planning for Hawea in the next 3 – 6 months. This will aim to determine what reservoir capacity and other trunk improvements need to be made to support future growth. Our intention here being that we would then revise and allocate more CAPEX funding in the 2021 LTP – allowing us to leverage DC's off relevant parties.*

*I hope this helps*

*Stuart*

----- Forwarded Message -----

**From:** Andrew Tipene <Andrew.Tipene@qldc.govt.nz>

**To:** Lane Hocking <lane.hocking@yahoo.com>; Ulrich Glasner <Ulrich.Glasner@qldc.govt.nz>

**Sent:** Friday, March 23, 2018, 3:40:16 PM GMT+13**Subject:** RE: Hawea - Potential New Subdivision

Hi Lane,I can't advise you on the suitability for HIF funding and believe it has now been fully allocated.

I suggest submitting your SHA EOI to get things started. We are 2+ years away with water and wastewater upgrades and there would be good synergies for Council Infrastructure funding and this new development.

At this stage your EOI can assume the future water and wastewater upgrades are sufficient to support your development. Regards,Andrew

**Andrew Tipene** | Infrastructure Development Engineer Queenstown Lakes District CouncilP: +64 3 441 0499 | M: 027 591 0137 | DD: +64 3 441 1775 E: andrew.tipene@qldc.govt.nz

QUEENSTOWN LAKES DISTRICT COUNCIL
www.qldc.govt.nz

WATERSHED

10 May 2018

Queenstown Lakes District Council
10 Gorge Road
Queenstown

Dear Andrew Tipene,

# HAWEA SHA DEVELOPMENT

As per your request, we have undertaken hydraulic modelling to consider the infrastructure required to supply the proposed 400 Lot Special Housing Area (SHA) development and the interim infrastructure to supply initial stages from 50-200Lots.

## DEMAND ASSESSMENT

The demand has been assessed based on information provided from the various developers as tabulated and referenced below.

**Table 1: Development Details**

| Development | No. of Residential Lots / Commercial / Industrial Area | Reference |
|---|---|---|
| Full Development | 400 | Development Infrastructure Assessment (DIA) request form |
| Initial Stage | 50 to 200 Lots | |

The key design parameters outlined in Queenstown Lakes District Council Land Development and Subdivision Code of Practice (2015) are as follows:

- Daily consumption of 700 L/p/day
- Number of people per dwelling = 3
- Peak Day Demand (over a 12-month period) = Average Day Demand x PF:
  - (a) PF = 1.5 for populations over 10,000;
  - (b) PF = 2 for populations below 2,000.
- Peak Hourly Demand = Average Hourly Demand (on peak day) x PF (over a 24-hour period):
  - (a) PF = 2 for populations over 10,000;
  - (b) PF = 5 for populations below 2,000.
- Firefighting demands as specified in SNZ PAS 4509
- Commercial / Industrial demands are assessed on a consumption figure of 12$m^3$/Ha/Day

The firefighting classification for the proposed SHA is unknown and therefore assumed to be a standard residential development with a fire class of FW2 25L/s.

Table 2 shows the demand calculation for each of the developments.

**Table 2: Average and Peak Day Demand Calculations**

| Development Stage | No. of Residential Lots / Area | Population | Average Demand (L/s) | Peak Daily Demand (L/s) |
|---|---|---|---|---|
| Initial Stage of 50 Lots | 50 | 150 | 1.22 | 2.43 |
| Initial Stage of 100 Lots | 100 | 300 | 2.43 | 4.86 |
| Initial Stage of 200 Lots | 200 | 600 | 4.86 | 9.72 |
| Full Development | 400 | 1200 | 9.72 | 19.44 |

**Peak Hour Demand**

The peak hour factor can be considered in several different ways.

- The peak hour factor for the Hawea network derived during the calibration of the hydraulic model is 2.18.
- The standard domestic equivalent profile has a peak hour factor of 2.3.
- The suggested design peak hour factor is 5 for population less than 2000, or 2 for populations greater than 10,000.

The per capita demand assessed during the model calibration matches well with the design criteria, therefore it is reasonable to assume that a similar peak hour factor would also apply and not the design value of 5 for a population less than 2000.

Therefore for the purposes of assessing these subdivisions, the domestic equivalent profile has been used applying a peak hour factor of 2.3. This should still be conservative with the derived factor for Hawea at 2.18.

## LEVELS OF SERVICE

The levels of service agreed upon with QLDC for the current system performance assessment as part of the model development and calibration project are outlined below:

- The minimum service pressure is 200-300kpa
- The maximum service pressures is 700-800kpa

These levels of service along with the requirements of the Fire Fighting Water Supplies Code of Practice form the basis for the system performance analysis.

Queenstown Lakes District Council does not prescribe any level of service criteria relating to pipe head loss, generally speaking pipe head loss per unit length for new pipes should ideally be < 2 m/km, or 2- 5 m/km for normal operation.

## HAWEA NETWORK ASSUMPTIONS

This analysis assumes that the operation of the current network will remain the same with direct injection from the Scotts Beach Bore Field while the reservoir is filling, or gravity supply from the reservoir. It is assumed any upgrades required to the bore pumps or the capacity of pipework to and from the reservoir and the reservoir itself would be addressed by QLDC as part of the Network Strategy and LTP process.

## PROPOSED INFRASTRUTURE REQUIREMENTS

The infrastructure requirements for supplying the SHA have been considered in two stages. Firstly, the requirements for supplying the network under future demands with the ultimate development of the SHA at 400Lots. Secondly, what can be supplied in terms of an initial stage (50 to 200 Lots) and the pipe work required to satisfy this.

### Future Demands Scenario

For the future demand scenario (2058 growth figures in ModelGrowth_v2) a new 350mm diameter watermain is required from the Scotts Beach Bore field, down Capell Avenue to Cemetery Road, with a 250mm diameter watermain on Cemetery Road from the existing 300mm watermain connecting to the new watermain on Capell Avenue.

### Initial Staging based on Current Demands Scenario

For the initial staging based on the current peak day demand, 50 to 200 Lots could be the SHA could be serviced from a 150mm watermain on Capell Avenue connecting to the existing network. QLDC prefer to ensure their networks are robust and resilient and a long length of single supply to the proposed SHA development is undesirable. Therefore, a second 150mm watermain on Cemetery Road should also be constructed. These watermains also form part of the supply network for the future demand scenario considered.

Figure 1 shows the proposed network layout for servicing the SHA.

## SUMMARY

The hydraulic model is a representation of the physical water supply system and as noted in the model development and calibration report it has limitation to its accuracy. The demands and peaking factors used to assess the development are based on assumptions and the actual final water demands may vary.

The recommended infrastructure for both the initial and future development should be confirmed by QLDC when a full network strategy is undertaken for Hawea. The network strategy should confirm additional source water from Scott Beach or otherwise, additional

reservoir storage, and network upgrades to meet ultimate future demands. Consideration should also be given to pressure reduction within Hawea.

We trust this report meet your requirements. Please contact Charlotte Broadbent on 021766475 charlotte.broadbent@wse.co.nz if you wish to discuss any aspects of this report further.

Regards,

Charlotte Broadbent

Director / Senior Civil Engineer

SOUTHERN LAND

SURVEYING | PLANNING | LAND DEVELOPMENT

*Brownston House*
*21 Brownston Street*
*PO Box 713*
*Wanaka 9343*
*Ph: (03) 443 5577*
*Fax: (03) 443 5533*
*Email: contact@southernland.co.nz*

Universal Developments Hawea Ltd
PO Box 798
WANAKA

14 May 2018 Job Ref: U4266

Attention: Lane Hocking

Dear Lane,

**Lake Hawea Special Housing Area**

**Infrastructure Report**

## 1. Introduction

### 1.1. General

Southern Land Ltd has been engaged by Universal Developments Ltd to undertake an assessment of the existing infrastructure in the vicinity of land bounded by Cemetery Road and Domain Road at Lake Hawea Township.

This report will assess the potential future demands of proposed residential and commercial development in this area. It will do so in relation to requirements the Queenstown Lakes District Council's Code of Practice for Subdivision Engineering.

This report will provide a high level assessment of the likely future demands on infrastructure from the proposed development and will relate this to the Queenstown Lakes District Council's (QLDC) Capital Expenditure Programme for Lake Hawea (see Appendix A).

*Directors*
*VERGNE WILSON*
*R.P.Surv, B.Surv,*
*NZCE (Civil), MNZIS, CSNZ,*
*Licensed Cadastral Surveyor*

*LUC WAITE*
*B.Surv, MNZIS, CSNZ,*
*Licensed Cadastral Surveyor*

*TIM DENNIS*
*B.Eng, GIPENZ*

## 1.2. The Site

The proposed development site is located on the southern fringe of the existing Lake Hawea Township. It is bounded on its northern side by Cemetery Road and legally described as Lot 2 DP 343855. It is comprised in CFR 180128.


Figure 1: Proposed development site

The site is but slopes very gently from north to south (approximately between 0.5% and 1% of fall to the south).

## 1.3. The Proposed Development

The proposed development will provide residential and commercial land in an area that is otherwise of low productive and landscape value. The development will take a comprehensive approach in order to provide a number of benefits.

Infrastructure upgrades that will accommodate the proposed development are planned for Lake Hawea with funding allocated in the Long Term Plan (LTP). Please see excerpts in attached email (Appendix B).

In addition we have investigated and confirmed that short term solutions are also available and acceptable for both water supply and wastewater management for the proposed development to provide ultimate certainty over timing. Although these may not be required they are available to ensure that the development is not dependant on timing of the upgrades. These short term or temporary measures are outlined in sections 2 and 3 below.

## 2. Water Supply

### 2.1. General

The Hawea Bore Pump Station and Treatment Plant were constructed in 2014 & 2015. The pump station draws from 4 bores and the treatment facility provides UV treatment and chlorination. The bores have been sized to allow for larger pumps such that capacity from these bores can be increased as required to meet growth demands. Upgrades to the Hawea Water Supply System are programmed in the CAPEX programme as shown in the table below. (See also correspondence from Stuart Pile at QLDC – Appendix B)

| | HAWEA WATER SUPPLY | | 2017/18 | 2018/19 | 2019/20 |
|---|---|---|---|---|---|
| 1.0 | SUPPLY UPGRADES | | | | |
| 1.1 | WTP UPGRADE | Possible filtration barrier at WTP | CP 5200 | $ 210,000 | |
| 1.2 | NETWORK UPGRADES | Upsize Caples Ave section of watermain | CP 6027 | $ 241,500 | $ 65,138 |
| 1.3 | NETWORK OPTIMISATION | Placeholder funding for supply upgrades | CP 6983 | $ 250,000 | $ 250,000 |

Table 1: QLDC LTP finding/upgrade programme for the Hawea Water Supply System.

The QLDC has commissioned Watershed to prepare a preliminary modelling report and assessment of the Hawea reticulated water system (see appendix F). This assessment also provides commentary on required future upgrades to cater for continued growth in Hawea Township. This includes two large diameter trunk mains (350mm dia from Scott's beach Bore Field and 250mm dia from the existing 300mm dia main adjacent to Tim's Field). These upgrades would be timed in line with growth of the wider Hawea Township.

## 2.2. The Development

The Watershed assessment provides an indication of the likely demands for water and the required infrastructure to supply the development.

A logical development approach would see initial stages situated in close proximity to existing infrastructure to minimise the cost of making a water supply available to the development site. In this case it is proposed that initial stages are located adjacent to Cemetery Road nearby the unformed southern end of Capel Ave.

New lots will require connection to the reticulated water supply in terms of Council's standards.

The key design parameters outlined in Queenstown Lakes District Council Land Development and Subdivision Code of Practice (2015) are as follows:

- Daily consumption of 700 L/p/day
- Number of people per dwelling = 3
- Peak Day Demand (over a 12-month period) = Average Day Demand x PF:
    (a) PF = 1.5 for populations over 10,000;
    (b) PF = 2 for populations below 2,000.
- Peak Hourly Demand = Average Hourly Demand (on peak day) x PF (over a 24-hour period):
    (a) PF = 2 for populations over 10,000;
    (b) PF = 5 for populations below 2,000.
- Firefighting demands as specified in SNZ PAS 4509
- Commercial / Industrial demands are assessed on a consumption figure of $12m^3$/Ha/Day

The firefighting classification for the proposed SHA is unknown and therefore assumed to be a standard residential development with a fire class of FW2 25L/s.

To provide the proposed development with a water supply that fulfils the above requirements connections will need to be made to existing infrastructure. Watershed has advised that a 150mm diameter main line would need to be installed from the northern end of the unformed Capel Ave to the boundary of the development site. A second 150mm dia main line would need to connect through to existing infrastructure at the western end of Cemetery Road to form a closed loop. This equates to approximately 1.8km of 150mm water main. Please refer to the Watershed plan contained in Appendix E.

Watershed has advised that the installation of this 150mm dia main will provide a complying water supply. This will effectively act as a short term solution to the provision of water supply to the development. Although depending on timing this could be coordinated with councils planned other pipe upgrades (identified in the LTP) to improve efficiencies.

The QLDC CAPEX programme identifies an upsize to the Capel Ave water main in the 2018/19/20 (see table 1 above) which will provide additional supply for more than 200 lots.

Accordingly water supply can be provided to the development.

## 3. Wastewater Disposal

### 3.1. General

Wastewater in the Lake Hawea Township is currently reticulated to the Hawea Wastewater Treatment Plant located on Domain Road. QLDC accepts that this plant runs near or above its capacity and is not fit for purpose.

The QLDC has funding allocated in its CAPEX programme for connecting the Lake Hawea Township to the Project Pure Wastewater Treatment Plant. This will be by way of a 12km long pipeline. The construction of this pipeline is scheduled for commencement in approximately 2 years' time. It is in the QLDC's Long Term Plan funding programme as outlined in the table below.

| HAWEA WASTEWATER SERVICING | | | 2017/18 | 2018/19 | 2019/20 |
|---|---|---|---|---|---|
| ENABLING WORKS: PLANNING & CONSENTS | River Clutha pipe bridge | CP 0554 / NEW8 | | | |
| DESIGN | Full pumping system design (WWPS & pipeline) | CP 4036 | | $ 704,875 | |
| CONSTRUCTION | 12km pipeline from Hawea to P Pure (inc over River Clutha) | CP 4036 | | | $ 1,799,375 |

Table 2: QLDC LTP finding programme for the Lake Hawea Township wastewater pipeline to Project Pure. (See also appendix B)

### 3.2. The Development

All new residential allotments will require connection to the QLDC's wastewater network, in terms of Council's standards.

As noted in section 1.2 above the topography of the site slopes gently from the north to the south. The site lends itself to effective gravity wastewater reticulation. Preliminary concept designs indicate that the proposed development can be serviced by a gravity main that will connect into the existing gravity system on Domain Road just south of the existing oxidation pond.

New drainage infrastructure will be appropriately sized to ensure immediate and future development is adequately provided for.

We have considered short term wastewater management solutions for the development so it is not dependant on the timing of upgrades. Should the initial

stages need to start discharging wastewater to the reticulated system before the Hawea Wastewater Treatment Plant was connected to Project Pure the following options are available:

1. Temporary storage chambers: Chambers situated at the downstream end of a new gravity system would act to attenuate peak flows. The chambers would collect day-time flows and then pump wastewater to the oxidation ponds over low flow periods (likely at night time).

2. Truck Transfer: Chambers situated at the downstream end of a new gravity system would collect wastewater. The wastewater would then be transferred by truck to Project Pure.

3. On site treatment: A temporary onsite treatment plant could be established. The plant would be decommissioned once the pipeline to Project Pure was operational.

Discussions with Andrew Tipene of the QLDC infrastructure team have indicated council would be supportive of these temporary measures should they be required.

## 4. Stormwater Disposal

### 4.1. General

Due to an absence of any downstream stormwater infrastructure and the QLDC's movement to recent engineering standards the development will be required to attenuate peak flows of stormwater to pre development levels. This will need to be achieved through the implementation of a Low Impact Design (LID) system. LID utilises a network of overland flow paths (usually grass swales) and soakage features to treat and dispose of stormwater to adjacent waterways or to ground.

The Otago Regional Council (ORC) has been consulted and has identified two significant issues in relation to stormwater management (See appendix C).

1. The need to recharge local aquifers with stormwater.
2. Treatment of stormwater to avoid contamination of groundwater.

The LID approach lends itself to management of both of these issues.

## 4.2. QLDC Design Requirements

Subdivision engineering design is required to be in accordance with QLDC Land Development & Subdivision Code of Practice. This document generally references requirements of New Zealand Standard NZS 4404:2010 Land Development and Subdivision Infrastructure, with a number of amendments.

Provided below is a summary of requirements in the Code of Practice that are relevant to stormwater engineering design for the proposed development.

The QLDC Code of Practice specifies the following design storm standard for subdivision development:

> *Clause 4.3.5 Design criteria*
>
> *Discharge to an existing network from a primary system shall be at a rate (litres per second) no greater than would have occurred for the undeveloped catchment during a 60 minute 5-year storm.*
>
> *Clause 4.3.5.1 Design Storms*
>
> *All Primary Systems shall, as a minimum, cater for the worst case 1 in 20-year return period (5% AEP) storm with no surface flooding.*
>
> *Where no secondary flow path is available the worst case 1 in 100-year return period (1% AEP) storm shall be catered for with no surface flooding.*
>
> *Clause 4.3.7.1 Low Impact Design Stormwater System*
>
> *This clause states QLDC's preference for low impact design (LID) stormwater control solutions but qualifies the preference by requiring the approval of maintenance requirements before submitting LID proposals for acceptance.*
>
> *Clause 4.3.7.4 Detention Ponds*
>
> *This clause identifies detention basins as being an acceptable element in LID stormwater management but states that "Detention ponds shall only be used with prior approval from Council."*

The QLDC CoP notes that the primary objective of a stormwater system is to:

1. Manage surface water run-off to minimise flood damage to property both within the development and downstream of the development.

2. Manage adverse effects on the environment.

The following developer driven element must also be managed:

3. Practicability in terms of construction and maintenance practice and cost.

There are a range of LID stormwater options available to manage stormwater with the above objectives in mind. Some of these are listed in the CoP as follows:

*4.3.7.3 Low impact design devices*

*The types of low impact design devices that could be considered for use include:*

*(a) Detention ponds;*

*(b) Wetlands;*

*(c) Vegetated swales;*

*(d) Rain gardens;*

*(e) Rainwater tanks;*

*(f) Soakage pits and soak holes;*

*(g) Filter strips;*

*(h) Infiltration trenches/basins;*

*(i) Permeable paving;*

*(j) Green roofs;*

*(k) Tree pits.*

### 4.3. Proposed Development

It is anticipated that the site topography and geology will lend itself to the implementation of a range of the above LID elements.

Based on test pits and soakage tests at adjacent development Sentinel Park onsite soakage is anticipated to be a viable option at the proposed development. Free draining glacial outwash gravels were uniformly distributed across the site. This type of geology is well suited to disposal of stormwater to ground via soakage pits, detention basins, rain gardens, vegetated swales and infiltration trenches/basins.

Again as the site slopes gently from north to south overland flows can be comfortably directed through the site. The gentle slope across the site also supports a LID stormwater management approach. A gentle slope results in an increased time of concentration of stormwater flows. This delays and reduces peak flows in storm events as stormwater takes longer to reach any given point in the system. Stormwater also has a greater opportunity to soak to ground through vegetated swales along the way.

The adjacent Hawea River provides a suitable discharge point in the event of extreme rainfall occurrences.

In conjunction with site specific investigations the detailed design phase will focus on defining a network of LID elements designed to manage stormwater in accordance with The QLDC's objectives. This will ensure soakage and conveyance structures are located in appropriate locations to take full advantage of high soakage rates.

## 5. Power and Telecommunications

The development Lot can be readily serviced with both power supply and telecommunications infrastructure. (See accompanying availability of services letter from Aurora and email from Chrous – Appendix D).

## 6. Summary

All major infrastructural elements can either be made available to the site in the immediate term or future upgrades are programmed in the LTP. These are summarised as follows:

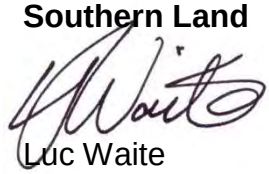
- Water supply for domestic and firefighting requirements can be made available to the site with the installation of 150mm dia water lines from Capel Ave and Cemetery Road. Future upgrades will be required to serve later stages of development. There are provisions in the LTP for future upgrades.

- New infrastructure can be readily installed to provide gravity reticulation to the Domain Road oxidation pond. The LTP provides for a new pipeline connection to Project Pure. Short term options are available to serve the proposed development should there be any delays in the pipeline becoming operational.
- New developments are required to achieve stormwater neutrality. This is as anticipated and solutions are available.
- Power and telecommunications are readily available to the site
- There are short term solutions to infrastructure requirements while upgrades programmed in the LTP are implemented. Therefore ensuring the development is not dependant on timing of upgrades.

Should you have any questions please do not hesitate to contact the writer.

Yours faithfully

**Southern Land**

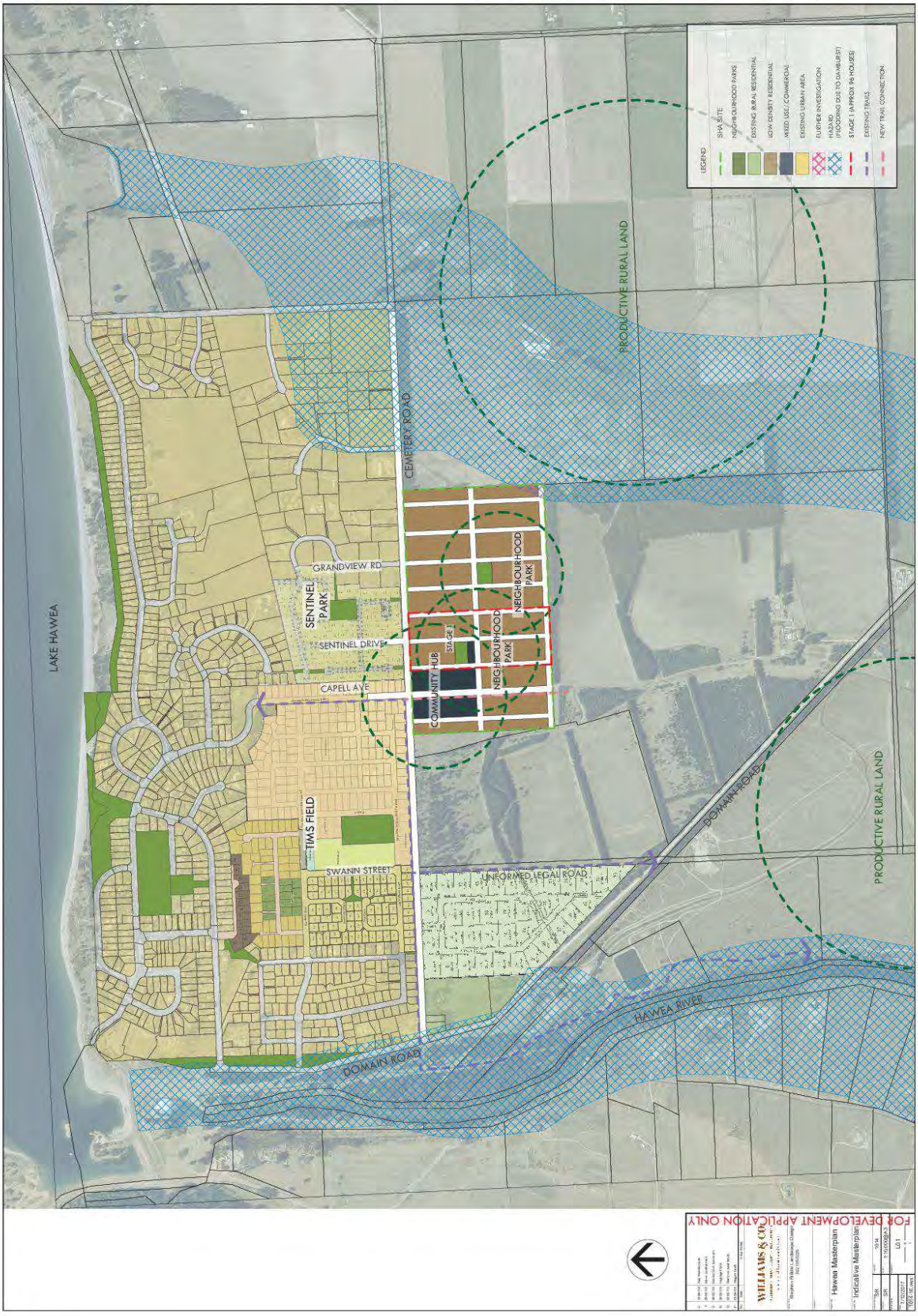


Luc Waite

Director

Appendix A

Master plan



Appendix B

Email correspondence (QLDC)

***From:*** *Stuart Pile <Stuart.Pile@qldc.govt.nz>*
***Sent:*** *Wednesday, 18 April 2018 5:28 PM*
***To:*** *Andrew Tipene*
***Subject:*** *RE: RE: Hawea - Potential New Subdivision*

*Hi Andrew*

*Our CAPEX programme for Hawea has significant monies attributed to the management of wastewater from this scheme which continues to be a challenge for QLDC.*

*At present we have a non compliant wastewater treatment plant which is simply not fit for purpose. We have undertaken a business case which, at present, has the preferred option looking like a new pump system and pipeline that would convey sewage to our Project Pure WWTP. This project would involve construction of a 12km pipeline which would follow legal roads and easements for the vast majority of its length. A new bridge is hoped to be built over the River Clutha that would support our pipeline. This option aligns with our strategy for centralised wastewater management rather than the continued operation of smaller plants. It should be noted that Luggate will also be connected into the P Pure treatment plan.*

*LTP funding to support this project is as follows;*

| PROJECT PURE UPGRADES & DEVELOPMENT | | | 2017/18 | 2018/19 | 2019/20 | 2020/21 | 2021/22 | 2022 |
|---|---|---|---|---|---|---|---|---|
| SCREEN UPGRADES | New duty / standby screening system to increase screen capacity | CP 0560 | $ 599,843 | | | | | |
| CENTRIFUGE UPGRADE | New duty / standby centrifuge system | CP 6284 | | $ 416,000 | | | | |
| PPURE CAPACITY UPGRADE DESIGN | Design for new third SBR tank installation | CP 6284 | | | $ 530,000 | | | |
| PPURE CAPACITY UPGRADE | Construction and commissioning | CP 6284 | | | | $ 2,385,000 | $ 2,385,000 | |
| INSTALL FOG TREATMENT FACILITY AT P PURE | Design and construction | CP 6667 | | | $ 500,000 | $ 500,000 | | |

| HAWEA WASTEWATER SERVICING | | | 2017/18 | 2018/19 | 2019/20 | 2020/21 | 2021/22 | 2022 |
|---|---|---|---|---|---|---|---|---|
| ENABLING WORKS, PLANNING & CONSENTS | River Clutha pipe bridge | CP 0554 / NEW3 | | | | | | |
| DESIGN | Full pumping system design (WWPS & pipeline) | CP 4036 | | $ 704,875 | | | | |
| CONSTRUCTION | 12km pipeline from Hawea to P Pure (inc over River Clutha) | CP 4036 | | | $ 1,799,375 | $ 1,799,375 | | |

*In terms of capacity, it is well timed that we are made aware of future developments now so that we can size our trunk infrastructure accordingly. It should also be noted that in order for the P Pure plant to receive this additional load, capacity upgrades shall be required here also. Hence I also have included the upgrades planned for our Project Pure wastewater treatment plant.*

### *Water supply*

*The Hawea Bore Pump Station and Treatment Plant was constructed in 2014/15 and includes four bores and a treatment facility that includes chlorination and UV. The bores were sized to allow for larger pumps and any new housing development of significant size would likely result in us looking at pump upgrade. We have also recognised the network improvements that could be made in Hawea so funding also sits in the CAPEX programme for this also. The Hawea water supply improvements are as follows;*

| | HAWEA WATER SUPPLY | | 2017/18 | 2018/19 | 2019/20 | 2020/21 | 2021/22 |
|---|---|---|---|---|---|---|---|
| 1.0 | SUPPLY UPGRADES | | | | | | |
| 1.1 | WTP UPGRADE | Possible filtration barrier at WTP | CP 5200 | $ 210,000 | | | |
| 1.2 | NETWORK UPGRADES | Upsize Caples Ave section of watermain | CP 6027 | $ 241,500 | $ 65,138 | | |
| 1.3 | NETWORK OPTIMISATION | Placeholder funding for supply upgrades | CP 6983 | $ 250,000 | $ 250,000 | | |

*We intend to commence master planning for Hawea in the next 3 – 6 months. This will aim to determine what reservoir capacity and other trunk improvements need to be made to support future growth. Our intention here being that we would then revise and allocate more CAPEX funding in the 2021 LTP – allowing us to leverage DC's off relevant parties.*

*I hope this helps*

*Stuart*

Appendix C

Email correspondence (ORC)

From: Warren Hanley <warren.hanley@orc.govt.nz>
Date: 15 March 2018 at 1:06:27 PM NZDT
To: Lane Hocking <lane.hocking@yahoo.com>, "'blair.devlin@qldc.govt.nz'" <blair.devlin@qldc.govt.nz>
Cc: Dale Meredith <Dale.Meredith@orc.govt.nz>
Subject: SHA proposal for Hawea (Cemetery Road) - ORC response

Hi Lane, Blair

Thank you both for approaching ORC early in the planning process for this proposed SHA development. ORC appreciates being able to contribute with input at an early stage and we hope you likewise find our response useful for any further planning, and a robust process.

Rainfall in the wider Hawea area contributes to the recharge of its local aquifers, particularly the Hawea Flat aquifer which is located south of the Hawea township (see attachment map image for general indication of area). An increase in hard surfaces (roofs, paved areas, roading) can reduce natural recharge of groundwater aquifers. ORC provides information on this issue in its report titled 'Rainfall recharge assessment for Otago groundwater basins' – this can downloaded at https://www.orc.govt.nz/plans-policies-reports/reports-and-publications/groundwater

**ORC expectations**
For this proposal, ORC will be interested in the approach to the 3 waters services, Potable water, wastewater and storm water.

ORC's expectation is that drinking water supply and wastewater will be serviced by reticulated communal services (not 'on-site' services such as septic tanks). For wastewater, a high quality of treatment will be necessary to protect the groundwater resource, particularly as the development grows.

The management of stormwater will also be an issue of high interest to ORC, particularly the treatment method before disposal to ensure it avoids contamination of groundwater.

Also please note that the disposal of stormwater and wastewater from the development, if not to reticulated network systems (i.e. council managed), will need to comply with the rules of the ORC water plan - and possibly require ORC consent. Lane, when you have a bit more detail, I'd suggest you contact us to arrange a meeting with some ORC staff, including our consents team. If possible Blair, it would be good to have someone from QLDC attend as well. We may be able to arrange to hold this on site.

**Recommendations**

ORC would recommend the following:

1. QLDC confirm to ORC/developers as soon as possible any updates on its future development plans (incl. infrastructure upgrades etc) for Hawea - including this proposal. This will help with work ORC will be undertaking later this year to update its groundwater flow modelling for water allocation purposes;

2. When the proposal is progressed with further information available, additional input (including consenting advice) is sought from ORC; and

3. That an assessment of environmental effects for the proposed development includes:
   - assessing the effects of the development on the wider recharge for Hawea's aquifers and groundwater levels
   - confirmation, including details of treatment, as to how drinking water and wastewater will be managed
   - confirmation, including details of treatment, as to how stormwater will be managed

If you have any questions or points in this email you'd like to discuss further, please feel welcome to contact me.

Warren.

Otago Regional Council

**Warren Hanley**
Senior Resource Planner Liaison

Otago Regional Council
70 Stafford St, Private Bag 1954,
Dunedin 9054
Phone (03) 470 7443 or 0800 474 082
[www.orc.govt.nz]www.orc.govt.nz

Appendix D

Power & Chorus confirmation

**AURORA ENERGY LIMITED**
PO Box 5140, Dunedin 9058
PH 0800 22 00 05
WEB www.auroraenergy.co.nz

14 May 2018

Your ref:
Our ref:

Universal Developments Hawea Limited
C/- Luc Waite
Southern Land Limited
PO Box 713
WANAKA

By email only: luc@southernland.co.nz

Dear Luc

**ELECTRICITY SUPPLY FOR PROPOSED SPECIAL HOUSING AREA, CEMETERY ROAD, LAKE HAWEA**
**400 LOT SUBDIVISION OF LOTS 1-3 DP 343855**

Thank you for your letter and accompanying plans dated 14 May 2018, outlining the above proposed development.

Aurora Energy can make an electricity supply available for this development, subject to the following conditions:

- Supply confirmation is limited to a single phase 15kVA supply per lot;
- Easements in gross, in favour of Aurora Energy, must be granted over the placement of all new and existing Aurora Energy plant associated with this development, unless installed in road reserve;
- Where the development involves further subdivision of a land parcel containing an existing serviced installation, the mains cables (overhead or underground) intended to supply each lot must be completely contained within the lot that it serves. In some cases this will require relocation of the cable serving the existing installation;
- All electrical installations must comply with Aurora Energy's Network Connection Standard and related standards & policies;
- The developer must comply with the Electricity Act, subordinate Regulations and associated Codes of Practice. Particular attention must be paid to the minimum distances between power lines and other structures defined in NZECP34:2001 "NZ Electrical Code of Practice for Electrical Safe Distances";
- No building shall be erected over any electricity easement without specific written authority from Aurora's General Manager – Network Commercial;
- The developer is responsible for all resource consents and local authority approvals;
- The developer will be required to make capital contributions toward the costs of providing the power supply, in accordance with Aurora Energy's Capital Contributions policy prevailing at the time the development, or each stage of development, proceeds;
- This approval will lapse within 12 months of the date of this letter, unless the developer enters into a formal supply agreement with Aurora Energy for this development;

Please note that this letter is to confirm that a power supply can be made available and does not imply that a power supply is available now, or that Aurora Energy will make power available at its cost.

Aurora Energy's Network Connection Standard and Capital Contributions policy provide more specific information on matters identified in this letter. These documents are available on Aurora Energy's website.

Should you require further information or clarification please contact the undersigned.

Yours sincerely

**Richard Starkey**

Commercial Development Manager

## Luc Waite

**From:** TSG <TSG@chorus.co.nz>
**Sent:** Wednesday, 16 May 2018 10:55 a.m.
**To:** Luc Waite
**Subject:** Chorus Acknowledgement | WNK46417 - WNK: Cemetery Road, Lake Hawea. (Lot 2 DP 343855) 400 Lots - Estimate

Good morning Luc,

Thank you for providing an indication of your development plans in this area. I can confirm that we have infrastructure in the general land area that you are proposing to develop. Chorus will be able to extend our network to provide connection availability. However, please note that this undertaking would of course be subject to Chorus understanding the final total property connections that we would be providing, roll-out of property releases/dates and what investment may or may not be required from yourselves and Chorus to deliver the infrastructure to and throughout the site in as seamless and practical way as possible.

The cost involved would be a minimum of our current standard fee of $1600 per lot excluding GST. The 1st stage would also incur the cost of establishing the feeder fibre to the subdivision. This cost can only be finalised at the time that you are ready to proceed with the 1st stage.

Chorus is happy to work with you on this project as the network infrastructure provider of choice. What this ultimately means is that the end customers (business and home owners) will have their choice of any retail service providers to take their end use services from once we work with you to provide the physical infrastructure.

Please reapply with a detailed site plan when you are ready to proceed with stage 1.

Thanks,

Matt Lock
Network Services Coordinator

T 0800 SUB DVN (0800 782 386)
E TSG@chorus.co.nz

PO Box 9405
Waikato Mail Centre
Hamilton 3200

www.chorus.co.nz

Chorus

Appendix E

Watershed water supply network assessment – Figure 1

Appendix F

Watershed water supply network assessment report


Approximate site boundary
Landfill
N
Temporary dwelling
Storage shed
Storage shed
Pasture
Temporary dwelling
Water race
Pasture
Farm infrastructure
Dwelling
Approximate Scale
300 m


Approximate site boundary
N
HF1
HF2
HF3
HF4
HF5
HF6
HF7
HF8
HF9
HF10
HF11
HF12
HF13
HF14
HF15
HF16
HF17
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HF44
HF45
HF46
HF47
HF48
HF49
HF50
HF51
HF52
HF53
HF54
HF55
HF56
HF57
HF58
HF59
HF60
Approximate Scale
450 m

eurofins | mgt

30 years Testing For Life 1987–2017
Celebrating 30 years Testing and Protecting Human Health

# Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

**E3 Scientific Limited**
**11 Arrow Lane,**
**Arrowtown**
**NZ 9302**

**Attention:** **Carrie Pritchard**

**Report** **583134-S**
Project name HAWEA SUBDIVISION PSI
Project ID 18012
Received Date Feb 05, 2018

| **Client Sample ID** | | | **COMP 1 (HF1 HF2 HF3)** | **COMP 2 (HF4 HF5 HF6)** | **COMP 3 (HF7 HF8 HF9)** | **COMP 4 (HF10 HF11 HF12)** |
|---|---|---|---|---|---|---|
| **Sample Matrix** | | | **Soil** | **Soil** | **Soil** | **Soil** |
| **Eurofins \| mgt Sample No.** | | | **Z18-Fe03747** | **Z18-Fe03748** | **Z18-Fe03749** | **Z18-Fe03750** |
| **Date Sampled** | | | **Feb 02, 2018** | **Feb 02, 2018** | **Feb 02, 2018** | **Feb 02, 2018** |
| Test/Reference | LOR | Unit | | | | |
| **Organochlorine Pesticides (NZ MfE)** | | | | | | |
| 2.4'-DDD | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 2.4'-DDE | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 2.4'-DDT | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 4.4'-DDD | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 4.4'-DDE | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 4.4'-DDT | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| a-BHC | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Aldrin | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| b-BHC | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Chlordanes - Total | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| cis-Chlordane | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| d-BHC | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Dieldrin | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endosulfan I | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endosulfan II | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endosulfan sulphate | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endrin | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endrin aldehyde | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endrin ketone | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| g-BHC (Lindane) | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Heptachlor | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Heptachlor epoxide | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Hexachlorobenzene | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Methoxychlor | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Toxaphene | 0.1 | mg/kg | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| trans-Chlordane | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Dibutylchlorendate (surr.) | 1 | % | 131 | 104 | 110 | 126 |
| Tetrachloro-m-xylene (surr.) | 1 | % | 104 | 87 | 96 | 112 |
| | | | | | | |
| % Moisture | 1 | % | 28 | 21 | 16 | 24 |

| Client Sample ID | | | COMP 5 (HF13 HF14 HF15) | COMP 6 (HF16 HF17 HF18) | COMP 7 (HF19 HF20 HF21) | COMP 8 (HF22 HF23) |
|---|---|---|---|---|---|---|
| **Sample Matrix** | | | **Soil** | **Soil** | **Soil** | **Soil** |
| **Eurofins \| mgt Sample No.** | | | **Z18-Fe03751** | **Z18-Fe03752** | **Z18-Fe03753** | **Z18-Fe03754** |
| **Date Sampled** | | | **Feb 02, 2018** | **Feb 02, 2018** | **Feb 02, 2018** | **Feb 02, 2018** |
| Test/Reference | LOR | Unit | | | | |
| **Organochlorine Pesticides (NZ MfE)** | | | | | | |
| 2.4'-DDD | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 2.4'-DDE | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 2.4'-DDT | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 4.4'-DDD | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 4.4'-DDE | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 4.4'-DDT | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| a-BHC | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Aldrin | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| b-BHC | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Chlordanes - Total | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| cis-Chlordane | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| d-BHC | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Dieldrin | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endosulfan I | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endosulfan II | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endosulfan sulphate | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endrin | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endrin aldehyde | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endrin ketone | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| g-BHC (Lindane) | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Heptachlor | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Heptachlor epoxide | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Hexachlorobenzene | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Methoxychlor | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Toxaphene | 0.1 | mg/kg | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| trans-Chlordane | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Dibutylchlorendate (surr.) | 1 | % | 112 | 110 | 112 | 116 |
| Tetrachloro-m-xylene (surr.) | 1 | % | 87 | 89 | 107 | 93 |
| | | | | | | |
| % Moisture | 1 | % | 20 | 21 | 22 | 20 |

| Client Sample ID | | | COMP 9 (HF25 HF26 HF27) | COMP 10 (HF28 HF29 HF30) | HF24 | DUP1 |
|---|---|---|---|---|---|---|
| **Sample Matrix** | | | **Soil** | **Soil** | **Soil** | **Soil** |
| **Eurofins \| mgt Sample No.** | | | **Z18-Fe03755** | **Z18-Fe03756** | **Z18-Fe03757** | **Z18-Fe03758** |
| **Date Sampled** | | | **Feb 02, 2018** | **Feb 02, 2018** | **Feb 02, 2018** | **Feb 02, 2018** |
| Test/Reference | LOR | Unit | | | | |
| **Organochlorine Pesticides (NZ MfE)** | | | | | | |
| 2.4'-DDD | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 2.4'-DDE | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 2.4'-DDT | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 4.4'-DDD | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 4.4'-DDE | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 4.4'-DDT | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| a-BHC | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Aldrin | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| b-BHC | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |

| Client Sample ID | | | COMP 9 (HF25 HF26 HF27) | COMP 10 (HF28 HF29 HF30) | HF24 | DUP1 |
|---|---|---|---|---|---|---|
| **Sample Matrix** | | | **Soil** | **Soil** | **Soil** | **Soil** |
| **Eurofins \| mgt Sample No.** | | | **Z18-Fe03755** | **Z18-Fe03756** | **Z18-Fe03757** | **Z18-Fe03758** |
| **Date Sampled** | | | **Feb 02, 2018** | **Feb 02, 2018** | **Feb 02, 2018** | **Feb 02, 2018** |
| Test/Reference | LOR | Unit | | | | |
| **Organochlorine Pesticides (NZ MfE)** | | | | | | |
| Chlordanes - Total | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| cis-Chlordane | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| d-BHC | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Dieldrin | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endosulfan I | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endosulfan II | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endosulfan sulphate | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endrin | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endrin aldehyde | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endrin ketone | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| g-BHC (Lindane) | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Heptachlor | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Heptachlor epoxide | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Hexachlorobenzene | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Methoxychlor | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Toxaphene | 0.1 | mg/kg | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| trans-Chlordane | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Dibutylchlorendate (surr.) | 1 | % | 114 | 117 | 120 | 113 |
| Tetrachloro-m-xylene (surr.) | 1 | % | 96 | 88 | 92 | 90 |
| **Metals M8 (NZ MfE)** | | | | | | |
| Arsenic | 2 | mg/kg | - | - | 4.3 | 4.1 |
| Cadmium | 0.4 | mg/kg | - | - | < 0.4 | < 0.4 |
| Chromium | 5 | mg/kg | - | - | 10 | 9.1 |
| Copper | 5 | mg/kg | - | - | 5.4 | 5.2 |
| Lead | 5 | mg/kg | - | - | 18 | 17 |
| Mercury | 0.1 | mg/kg | - | - | < 0.1 | < 0.1 |
| Nickel | 5 | mg/kg | - | - | 7.3 | 6.6 |
| Zinc | 5 | mg/kg | - | - | 41 | 38 |
| | | | | | | |
| % Moisture | 1 | % | 21 | 23 | 22 | 21 |

| Client Sample ID | | | HF1 | HF4 | HF7 | HF10 |
|---|---|---|---|---|---|---|
| **Sample Matrix** | | | **Soil** | **Soil** | **Soil** | **Soil** |
| **Eurofins \| mgt Sample No.** | | | **Z18-Fe03759** | **Z18-Fe03760** | **Z18-Fe03761** | **Z18-Fe03762** |
| **Date Sampled** | | | **Feb 02, 2018** | **Feb 02, 2018** | **Feb 02, 2018** | **Feb 02, 2018** |
| Test/Reference | LOR | Unit | | | | |
| **Metals M8 (NZ MfE)** | | | | | | |
| Arsenic | 2 | mg/kg | 5.9 | 4.7 | 4.3 | 7.3 |
| Cadmium | 0.4 | mg/kg | < 0.4 | < 0.4 | < 0.4 | < 0.4 |
| Chromium | 5 | mg/kg | 12 | 11 | 8.2 | 14 |
| Copper | 5 | mg/kg | 8.4 | < 5 | < 5 | 7.7 |
| Lead | 5 | mg/kg | 21 | 20 | 16 | 27 |
| Mercury | 0.1 | mg/kg | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Nickel | 5 | mg/kg | 8.8 | 7.6 | 6.2 | 8.6 |
| Zinc | 5 | mg/kg | 55 | 49 | 37 | 57 |
| | | | | | | |
| % Moisture | 1 | % | 25 | 21 | 19 | 23 |

| Client Sample ID | | | HF13 | HF16 | HF19 | HF22 |
|---|---|---|---|---|---|---|
| Sample Matrix | | | Soil | Soil | Soil | Soil |
| Eurofins \| mgt Sample No. | | | Z18-Fe03763 | Z18-Fe03764 | Z18-Fe03765 | Z18-Fe03766 |
| Date Sampled | | | Feb 02, 2018 | Feb 02, 2018 | Feb 02, 2018 | Feb 02, 2018 |
| Test/Reference | LOR | Unit | | | | |
| **Metals M8 (NZ MfE)** | | | | | | |
| Arsenic | 2 | mg/kg | 5.3 | 4.9 | 7.1 | 4.4 |
| Cadmium | 0.4 | mg/kg | < 0.4 | < 0.4 | < 0.4 | < 0.4 |
| Chromium | 5 | mg/kg | 12 | 10 | 13 | 10.0 |
| Copper | 5 | mg/kg | 6.4 | 6.0 | 7.7 | < 5 |
| Lead | 5 | mg/kg | 21 | 20 | 26 | 19 |
| Mercury | 0.1 | mg/kg | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Nickel | 5 | mg/kg | 7.7 | 7.9 | 8.5 | 6.8 |
| Zinc | 5 | mg/kg | 47 | 44 | 56 | 42 |
| | | | | | | |
| % Moisture | 1 | % | 22 | 16 | 22 | 16 |

| Client Sample ID | | | HF25 | HF28 |
|---|---|---|---|---|
| Sample Matrix | | | Soil | Soil |
| Eurofins \| mgt Sample No. | | | Z18-Fe03767 | Z18-Fe03768 |
| Date Sampled | | | Feb 02, 2018 | Feb 02, 2018 |
| Test/Reference | LOR | Unit | | |
| **Metals M8 (NZ MfE)** | | | | |
| Arsenic | 2 | mg/kg | 4.4 | 5.9 |
| Cadmium | 0.4 | mg/kg | < 0.4 | < 0.4 |
| Chromium | 5 | mg/kg | 9.9 | 11 |
| Copper | 5 | mg/kg | 6.2 | 5.4 |
| Lead | 5 | mg/kg | 18 | 21 |
| Mercury | 0.1 | mg/kg | < 0.1 | < 0.1 |
| Nickel | 5 | mg/kg | 7.8 | 7.5 |
| Zinc | 5 | mg/kg | 42 | 47 |
| | | | | |
| % Moisture | 1 | % | 20 | 24 |

## Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

| Description | Testing Site | Extracted | Holding Time |
|---|---|---|---|
| Organochlorine Pesticides (NZ MfE) | Melbourne | Feb 09, 2018 | 14 Day |
| - Method: LTM-ORG-2220 OCP & PCB in Soil and Water | | | |
| Metals M8 (NZ MfE) | Melbourne | Feb 09, 2018 | 6 Months |
| - Method: USEPA 6010/6020 Heavy Metals | | | |
| % Moisture | Melbourne | Feb 05, 2018 | 14 Day |
| - Method: LTM-GEN-7080 Moisture | | | |

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NATA # 1261
Site # 23736

**Company Name:** E3 Scientific Limited
**Address:** 11 Arrow Lane,
Arrowtown
NZ 9302

**Project Name:** HAWEA SUBDIVISION PSI
**Project ID:** 18012

**Order No.:**
**Report #:** 583134
**Phone:** 03 4098664
**Fax:**

**Received:** Feb 5, 2018 8:00 AM
**Due:** Feb 12, 2018
**Priority:** 5 Day
**Contact Name:** Carrie Pritchard

**Eurofins | mgt Analytical Services Manager : Onur Mehmet**

| Sample Detail | | | | | | HOLD | Moisture Set | Organochlorine Pesticides (NZ MfE) | Metals M8 (NZ MfE) |
|---|---|---|---|---|---|---|---|---|---|
| **Melbourne Laboratory - NATA Site # 1254 & 14271** | | | | | | X | X | X | X |
| **Sydney Laboratory - NATA Site # 18217** | | | | | | | | | |
| **Brisbane Laboratory - NATA Site # 20794** | | | | | | | | | |
| **Perth Laboratory - NATA Site # 23736** | | | | | | | | | |
| **External Laboratory** | | | | | | | | | |
| **No** | **Sample ID** | **Sample Date** | **Sampling Time** | **Matrix** | **LAB ID** | | | | |
| 1 | COMP 1 (HF1 HF2 HF3) | Feb 02, 2018 | | Soil | Z18-Fe03747 | | X | X | |
| 2 | COMP 2 (HF4 HF5 HF6) | Feb 02, 2018 | | Soil | Z18-Fe03748 | | X | X | |
| 3 | COMP 3 (HF7 HF8 HF9) | Feb 02, 2018 | | Soil | Z18-Fe03749 | | X | X | |
| 4 | COMP 4 (HF10 HF11 HF12) | Feb 02, 2018 | | Soil | Z18-Fe03750 | | X | X | |
| 5 | COMP 5 (HF13 HF14 HF15) | Feb 02, 2018 | | Soil | Z18-Fe03751 | | X | X | |

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| Sample Detail | | | | | | HOLD | Moisture Set | Organochlorine Pesticides (NZ MfE) | Metals M8 (NZ MfE) |
|---|---|---|---|---|---|---|---|---|---|
| **Melbourne Laboratory - NATA Site # 1254 & 14271** | | | | | | X | X | X | X |
| **Sydney Laboratory - NATA Site # 18217** | | | | | | | | | |
| **Brisbane Laboratory - NATA Site # 20794** | | | | | | | | | |
| **Perth Laboratory - NATA Site # 23736** | | | | | | | | | |
| 6 | COMP 6 (HF16 HF17 HF18) | Feb 02, 2018 | | Soil | Z18-Fe03752 | | X | X | |
| 7 | COMP 7 (HF19 HF20 HF21) | Feb 02, 2018 | | Soil | Z18-Fe03753 | | X | X | |
| 8 | COMP 8 (HF22 HF23) | Feb 02, 2018 | | Soil | Z18-Fe03754 | | X | X | |
| 9 | COMP 9 (HF25 HF26 HF27) | Feb 02, 2018 | | Soil | Z18-Fe03755 | | X | X | |
| 10 | COMP 10 (HF28 HF29 HF30) | Feb 02, 2018 | | Soil | Z18-Fe03756 | | X | X | |
| 11 | HF24 | Feb 02, 2018 | | Soil | Z18-Fe03757 | | X | X | X |

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| Sample Detail | | | | | | HOLD | Moisture Set | Organochlorine Pesticides (NZ MfE) | Metals M8 (NZ MfE) |
|---|---|---|---|---|---|---|---|---|---|
| **Melbourne Laboratory - NATA Site # 1254 & 14271** | | | | | | X | X | X | X |
| **Sydney Laboratory - NATA Site # 18217** | | | | | | | | | |
| **Brisbane Laboratory - NATA Site # 20794** | | | | | | | | | |
| **Perth Laboratory - NATA Site # 23736** | | | | | | | | | |
| 12 | DUP1 | Feb 02, 2018 | | Soil | Z18-Fe03758 | | X | X | X |
| 13 | HF1 | Feb 02, 2018 | | Soil | Z18-Fe03759 | | X | | X |
| 14 | HF4 | Feb 02, 2018 | | Soil | Z18-Fe03760 | | X | | X |
| 15 | HF7 | Feb 02, 2018 | | Soil | Z18-Fe03761 | | X | | X |
| 16 | HF10 | Feb 02, 2018 | | Soil | Z18-Fe03762 | | X | | X |
| 17 | HF13 | Feb 02, 2018 | | Soil | Z18-Fe03763 | | X | | X |
| 18 | HF16 | Feb 02, 2018 | | Soil | Z18-Fe03764 | | X | | X |
| 19 | HF19 | Feb 02, 2018 | | Soil | Z18-Fe03765 | | X | | X |
| 20 | HF22 | Feb 02, 2018 | | Soil | Z18-Fe03766 | | X | | X |
| 21 | HF25 | Feb 02, 2018 | | Soil | Z18-Fe03767 | | X | | X |
| 22 | HF28 | Feb 02, 2018 | | Soil | Z18-Fe03768 | | X | | X |
| 23 | HF2 | Feb 02, 2018 | | Soil | Z18-Fe03769 | X | | | |

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| Sample Detail | | | | | | HOLD | Moisture Set | Organochlorine Pesticides (NZ MfE) | Metals M8 (NZ MfE) |
|---|---|---|---|---|---|---|---|---|---|
| **Melbourne Laboratory - NATA Site # 1254 & 14271** | | | | | | X | X | X | X |
| **Sydney Laboratory - NATA Site # 18217** | | | | | | | | | |
| **Brisbane Laboratory - NATA Site # 20794** | | | | | | | | | |
| **Perth Laboratory - NATA Site # 23736** | | | | | | | | | |
| 24 | HF3 | Feb 02, 2018 | | Soil | Z18-Fe03770 | X | | | |
| 25 | HF5 | Feb 02, 2018 | | Soil | Z18-Fe03771 | X | | | |
| 26 | HF6 | Feb 02, 2018 | | Soil | Z18-Fe03772 | X | | | |
| 27 | HF8 | Feb 02, 2018 | | Soil | Z18-Fe03773 | X | | | |
| 28 | HF9 | Feb 02, 2018 | | Soil | Z18-Fe03774 | X | | | |
| 29 | HF11 | Feb 02, 2018 | | Soil | Z18-Fe03775 | X | | | |
| 30 | HF12 | Feb 02, 2018 | | Soil | Z18-Fe03776 | X | | | |
| 31 | HF14 | Feb 02, 2018 | | Soil | Z18-Fe03777 | X | | | |
| 32 | HF15 | Feb 02, 2018 | | Soil | Z18-Fe03778 | X | | | |
| 33 | HF17 | Feb 02, 2018 | | Soil | Z18-Fe03779 | X | | | |
| 34 | HF18 | Feb 02, 2018 | | Soil | Z18-Fe03780 | X | | | |
| 35 | HF20 | Feb 02, 2018 | | Soil | Z18-Fe03781 | X | | | |

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| Sample Detail | | | | | | HOLD | Moisture Set | Organochlorine Pesticides (NZ MfE) | Metals M8 (NZ MfE) |
|---|---|---|---|---|---|---|---|---|---|
| **Melbourne Laboratory - NATA Site # 1254 & 14271** | | | | | | X | X | X | X |
| **Sydney Laboratory - NATA Site # 18217** | | | | | | | | | |
| **Brisbane Laboratory - NATA Site # 20794** | | | | | | | | | |
| **Perth Laboratory - NATA Site # 23736** | | | | | | | | | |
| 36 | HF21 | Feb 02, 2018 | | Soil | Z18-Fe03782 | X | | | |
| 37 | HF23 | Feb 02, 2018 | | Soil | Z18-Fe03783 | X | | | |
| 38 | HF26 | Feb 02, 2018 | | Soil | Z18-Fe03784 | X | | | |
| 39 | HF27 | Feb 02, 2018 | | Soil | Z18-Fe03785 | X | | | |
| 40 | HF29 | Feb 02, 2018 | | Soil | Z18-Fe03786 | X | | | |
| 41 | HF30 | Feb 02, 2018 | | Soil | Z18-Fe03787 | X | | | |
| **Test Counts** | | | | | | 19 | 22 | 12 | 12 |

## Internal Quality Control Review and Glossary

### General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

### Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

### Units

**mg/kg:** milligrams per kilogram

**ug/L:** micrograms per litre

**ppb:** Parts per billion

**org/100mL:** Organisms per 100 millilitres

**MPN/100mL:** Most Probable Number of organisms per 100 millilitres

**mg/L:** milligrams per litre

**ppm:** Parts per million

**%:** Percentage

**NTU:** Nephelometric Turbidity Units

### Terms

| | |
|---|---|
| **Dry** | Where a moisture has been determined on a solid sample the result is expressed on a dry basis. |
| **LOR** | Limit of Reporting. |
| **SPIKE** | Addition of the analyte to the sample and reported as percentage recovery. |
| **RPD** | Relative Percent Difference between two Duplicate pieces of analysis. |
| **LCS** | Laboratory Control Sample - reported as percent recovery. |
| **CRM** | Certified Reference Material - reported as percent recovery. |
| **Method Blank** | In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water. |
| **Surr - Surrogate** | The addition of a like compound to the analyte target and reported as percentage recovery. |
| **Duplicate** | A second piece of analysis from the same sample and reported in the same units as the result to show comparison. |
| **USEPA** | United States Environmental Protection Agency |
| **APHA** | American Public Health Association |
| **TCLP** | Toxicity Characteristic Leaching Procedure |
| **COC** | Chain of Custody |
| **SRA** | Sample Receipt Advice |
| **QSM** | Quality Systems Manual ver 5.1 US Department of Defense |
| **CP** | Client Parent - QC was performed on samples pertaining to this report |
| **NCP** | Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within. |
| **TEQ** | Toxic Equivalency Quotient |

### QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

### QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

**Quality Control Results**

| Test | Units | Result 1 | | | Acceptance Limits | Pass Limits | Qualifying Code |
|---|---|---|---|---|---|---|---|
| **Method Blank** | | | | | | | |
| **Organochlorine Pesticides (NZ MfE)** | | | | | | | |
| 2.4'-DDD | mg/kg | < 0.01 | | | 0.01 | Pass | |
| 2.4'-DDE | mg/kg | < 0.01 | | | 0.01 | Pass | |
| 2.4'-DDT | mg/kg | < 0.01 | | | 0.01 | Pass | |
| 4.4'-DDD | mg/kg | < 0.01 | | | 0.01 | Pass | |
| 4.4'-DDE | mg/kg | < 0.01 | | | 0.01 | Pass | |
| 4.4'-DDT | mg/kg | < 0.01 | | | 0.01 | Pass | |
| a-BHC | mg/kg | < 0.01 | | | 0.01 | Pass | |
| Aldrin | mg/kg | < 0.01 | | | 0.01 | Pass | |
| b-BHC | mg/kg | < 0.01 | | | 0.01 | Pass | |
| Chlordanes - Total | mg/kg | < 0.01 | | | 0.01 | Pass | |
| cis-Chlordane | mg/kg | < 0.01 | | | 0.01 | Pass | |
| d-BHC | mg/kg | < 0.01 | | | 0.01 | Pass | |
| Dieldrin | mg/kg | < 0.01 | | | 0.01 | Pass | |
| Endosulfan I | mg/kg | < 0.01 | | | 0.01 | Pass | |
| Endosulfan II | mg/kg | < 0.01 | | | 0.01 | Pass | |
| Endosulfan sulphate | mg/kg | < 0.01 | | | 0.01 | Pass | |
| Endrin | mg/kg | < 0.01 | | | 0.01 | Pass | |
| Endrin aldehyde | mg/kg | < 0.01 | | | 0.01 | Pass | |
| Endrin ketone | mg/kg | < 0.01 | | | 0.01 | Pass | |
| g-BHC (Lindane) | mg/kg | < 0.01 | | | 0.01 | Pass | |
| Heptachlor | mg/kg | < 0.01 | | | 0.01 | Pass | |
| Heptachlor epoxide | mg/kg | < 0.01 | | | 0.01 | Pass | |
| Hexachlorobenzene | mg/kg | < 0.01 | | | 0.01 | Pass | |
| Methoxychlor | mg/kg | < 0.01 | | | 0.01 | Pass | |
| Toxaphene | mg/kg | < 0.1 | | | 0.1 | Pass | |
| trans-Chlordane | mg/kg | < 0.01 | | | 0.01 | Pass | |
| **Method Blank** | | | | | | | |
| **Metals M8 (NZ MfE)** | | | | | | | |
| Arsenic | mg/kg | < 2 | | | 2 | Pass | |
| Cadmium | mg/kg | < 0.4 | | | 0.4 | Pass | |
| Chromium | mg/kg | < 5 | | | 5 | Pass | |
| Copper | mg/kg | < 5 | | | 5 | Pass | |
| Lead | mg/kg | < 5 | | | 5 | Pass | |
| Mercury | mg/kg | < 0.1 | | | 0.1 | Pass | |
| Nickel | mg/kg | < 5 | | | 5 | Pass | |
| Zinc | mg/kg | < 5 | | | 5 | Pass | |
| **LCS - % Recovery** | | | | | | | |
| **Organochlorine Pesticides (NZ MfE)** | | | | | | | |
| 2.4'-DDD | % | 114 | | | 70-130 | Pass | |
| 2.4'-DDE | % | 110 | | | 70-130 | Pass | |
| 2.4'-DDT | % | 117 | | | 70-130 | Pass | |
| 4.4'-DDD | % | 104 | | | 70-130 | Pass | |
| 4.4'-DDE | % | 118 | | | 70-130 | Pass | |
| 4.4'-DDT | % | 130 | | | 70-130 | Pass | |
| a-BHC | % | 95 | | | 70-130 | Pass | |
| Aldrin | % | 113 | | | 70-130 | Pass | |
| b-BHC | % | 89 | | | 70-130 | Pass | |
| cis-Chlordane | % | 104 | | | 70-130 | Pass | |
| d-BHC | % | 93 | | | 70-130 | Pass | |
| Dieldrin | % | 113 | | | 70-130 | Pass | |

| Test | Units | Result 1 | | | Acceptance Limits | Pass Limits | Qualifying Code |
|---|---|---|---|---|---|---|---|
| Endosulfan I | % | 111 | | | 70-130 | Pass | |
| Endosulfan II | % | 103 | | | 70-130 | Pass | |
| Endosulfan sulphate | % | 115 | | | 70-130 | Pass | |
| Endrin | % | 117 | | | 70-130 | Pass | |
| Endrin aldehyde | % | 111 | | | 70-130 | Pass | |
| Endrin ketone | % | 114 | | | 70-130 | Pass | |
| g-BHC (Lindane) | % | 95 | | | 70-130 | Pass | |
| Heptachlor | % | 108 | | | 70-130 | Pass | |
| Heptachlor epoxide | % | 110 | | | 70-130 | Pass | |
| Hexachlorobenzene | % | 92 | | | 70-130 | Pass | |
| Methoxychlor | % | 123 | | | 70-130 | Pass | |
| trans-Chlordane | % | 111 | | | 70-130 | Pass | |
| **LCS - % Recovery** | | | | | | | |
| **Metals M8 (NZ MfE)** | | | | | | | |
| Arsenic | % | 107 | | | 80-120 | Pass | |
| Cadmium | % | 106 | | | 80-120 | Pass | |
| Chromium | % | 119 | | | 80-120 | Pass | |
| Copper | % | 108 | | | 80-120 | Pass | |
| Lead | % | 106 | | | 80-120 | Pass | |
| Mercury | % | 104 | | | 75-125 | Pass | |
| Nickel | % | 106 | | | 80-120 | Pass | |
| Zinc | % | 105 | | | 80-120 | Pass | |

| Test | Lab Sample ID | QA Source | Units | Result 1 | | | Acceptance Limits | Pass Limits | Qualifying Code |
|---|---|---|---|---|---|---|---|---|---|
| **Spike - % Recovery** | | | | | | | | | |
| **Organochlorine Pesticides (NZ MfE)** | | | | Result 1 | | | | | |
| 2.4'-DDD | Z18-Fe03748 | CP | % | 106 | | | 70-130 | Pass | |
| 2.4'-DDE | Z18-Fe03748 | CP | % | 104 | | | 70-130 | Pass | |
| 2.4'-DDT | Z18-Fe03748 | CP | % | 114 | | | 70-130 | Pass | |
| 4.4'-DDD | Z18-Fe03748 | CP | % | 114 | | | 70-130 | Pass | |
| 4.4'-DDE | Z18-Fe03748 | CP | % | 114 | | | 70-130 | Pass | |
| 4.4'-DDT | Z18-Fe03748 | CP | % | 106 | | | 70-130 | Pass | |
| a-BHC | Z18-Fe03748 | CP | % | 90 | | | 70-130 | Pass | |
| Aldrin | Z18-Fe03748 | CP | % | 110 | | | 70-130 | Pass | |
| b-BHC | Z18-Fe03748 | CP | % | 82 | | | 70-130 | Pass | |
| cis-Chlordane | Z18-Fe03748 | CP | % | 103 | | | 70-130 | Pass | |
| d-BHC | Z18-Fe03748 | CP | % | 87 | | | 70-130 | Pass | |
| Dieldrin | Z18-Fe03748 | CP | % | 105 | | | 70-130 | Pass | |
| Endosulfan I | Z18-Fe03748 | CP | % | 107 | | | 70-130 | Pass | |
| Endosulfan II | Z18-Fe03748 | CP | % | 101 | | | 70-130 | Pass | |
| Endosulfan sulphate | Z18-Fe03748 | CP | % | 100 | | | 70-130 | Pass | |
| Endrin | Z18-Fe03748 | CP | % | 113 | | | 70-130 | Pass | |
| Endrin aldehyde | Z18-Fe03748 | CP | % | 94 | | | 70-130 | Pass | |
| Endrin ketone | Z18-Fe03748 | CP | % | 99 | | | 70-130 | Pass | |
| g-BHC (Lindane) | Z18-Fe03748 | CP | % | 89 | | | 70-130 | Pass | |
| Heptachlor | Z18-Fe03748 | CP | % | 108 | | | 70-130 | Pass | |
| Heptachlor epoxide | Z18-Fe03748 | CP | % | 103 | | | 70-130 | Pass | |
| Hexachlorobenzene | Z18-Fe03748 | CP | % | 93 | | | 70-130 | Pass | |
| Methoxychlor | Z18-Fe03748 | CP | % | 97 | | | 70-130 | Pass | |
| trans-Chlordane | Z18-Fe03748 | CP | % | 105 | | | 70-130 | Pass | |
| **Spike - % Recovery** | | | | | | | | | |
| **Metals M8 (NZ MfE)** | | | | Result 1 | | | | | |
| Arsenic | Z18-Fe03758 | CP | % | 118 | | | 75-125 | Pass | |
| Cadmium | Z18-Fe03758 | CP | % | 109 | | | 75-125 | Pass | |
| Chromium | Z18-Fe03758 | CP | % | 123 | | | 75-125 | Pass | |

| Test | Lab Sample ID | QA Source | Units | Result 1 | | | Acceptance Limits | Pass Limits | Qualifying Code |
|---|---|---|---|---|---|---|---|---|---|
| Copper | Z18-Fe03758 | CP | % | 111 | | | 75-125 | Pass | |
| Lead | Z18-Fe03758 | CP | % | 112 | | | 75-125 | Pass | |
| Mercury | Z18-Fe03758 | CP | % | 101 | | | 70-130 | Pass | |
| Nickel | Z18-Fe03758 | CP | % | 108 | | | 75-125 | Pass | |
| Zinc | Z18-Fe03758 | CP | % | 116 | | | 75-125 | Pass | |
| **Spike - % Recovery** | | | | | | | | | |
| **Metals M8 (NZ MfE)** | | | | Result 1 | | | | | |
| Arsenic | Z18-Fe03768 | CP | % | 107 | | | 75-125 | Pass | |
| Cadmium | Z18-Fe03768 | CP | % | 117 | | | 75-125 | Pass | |
| Chromium | Z18-Fe03768 | CP | % | 125 | | | 75-125 | Pass | |
| Copper | Z18-Fe03768 | CP | % | 116 | | | 75-125 | Pass | |
| Lead | Z18-Fe03768 | CP | % | 115 | | | 75-125 | Pass | |
| Mercury | Z18-Fe03768 | CP | % | 111 | | | 70-130 | Pass | |
| Nickel | Z18-Fe03768 | CP | % | 114 | | | 75-125 | Pass | |
| Zinc | Z18-Fe03768 | CP | % | 113 | | | 75-125 | Pass | |
| **Test** | **Lab Sample ID** | **QA Source** | **Units** | **Result 1** | | | **Acceptance Limits** | **Pass Limits** | **Qualifying Code** |
| **Duplicate** | | | | | | | | | |
| **Organochlorine Pesticides (NZ MfE)** | | | | Result 1 | Result 2 | RPD | | | |
| 2.4'-DDD | Z18-Fe03747 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| 2.4'-DDE | Z18-Fe03747 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| 2.4'-DDT | Z18-Fe03747 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| 4.4'-DDD | Z18-Fe03747 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| 4.4'-DDE | Z18-Fe03747 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| 4.4'-DDT | Z18-Fe03747 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| a-BHC | Z18-Fe03747 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| Aldrin | Z18-Fe03747 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| b-BHC | Z18-Fe03747 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| Chlordanes - Total | Z18-Fe03747 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| cis-Chlordane | Z18-Fe03747 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| d-BHC | Z18-Fe03747 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| Dieldrin | Z18-Fe03747 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| Endosulfan I | Z18-Fe03747 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| Endosulfan II | Z18-Fe03747 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| Endosulfan sulphate | Z18-Fe03747 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| Endrin | Z18-Fe03747 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| Endrin aldehyde | Z18-Fe03747 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| Endrin ketone | Z18-Fe03747 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| g-BHC (Lindane) | Z18-Fe03747 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| Heptachlor | Z18-Fe03747 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| Heptachlor epoxide | Z18-Fe03747 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| Hexachlorobenzene | Z18-Fe03747 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| Methoxychlor | Z18-Fe03747 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| Toxaphene | Z18-Fe03747 | CP | mg/kg | < 0.1 | < 0.1 | <1 | 30% | Pass | |
| trans-Chlordane | Z18-Fe03747 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| **Duplicate** | | | | | | | | | |
| | | | | Result 1 | Result 2 | RPD | | | |
| % Moisture | Z18-Fe03755 | CP | % | 21 | 21 | 1.0 | 30% | Pass | |
| **Duplicate** | | | | | | | | | |
| **Metals M8 (NZ MfE)** | | | | Result 1 | Result 2 | RPD | | | |
| Arsenic | Z18-Fe03757 | CP | mg/kg | 4.3 | 3.9 | 10 | 30% | Pass | |
| Cadmium | Z18-Fe03757 | CP | mg/kg | < 0.4 | < 0.4 | <1 | 30% | Pass | |
| Chromium | Z18-Fe03757 | CP | mg/kg | 10 | 9.3 | 11 | 30% | Pass | |
| Copper | Z18-Fe03757 | CP | mg/kg | 5.4 | < 5 | 11 | 30% | Pass | |
| Lead | Z18-Fe03757 | CP | mg/kg | 18 | 16 | 11 | 30% | Pass | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Duplicate** | | | | | | | | | |
| **Metals M8 (NZ MfE)** | | | | Result 1 | Result 2 | RPD | | | |
| Nickel | Z18-Fe03757 | CP | mg/kg | 7.3 | 6.5 | 11 | 30% | Pass | |
| Zinc | Z18-Fe03757 | CP | mg/kg | 41 | 37 | 11 | 30% | Pass | |
| **Duplicate** | | | | | | | | | |
| **Metals M8 (NZ MfE)** | | | | Result 1 | Result 2 | RPD | | | |
| Arsenic | Z18-Fe03758 | CP | mg/kg | 4.1 | 4.2 | 1.0 | 30% | Pass | |
| Cadmium | Z18-Fe03758 | CP | mg/kg | < 0.4 | < 0.4 | <1 | 30% | Pass | |
| Chromium | Z18-Fe03758 | CP | mg/kg | 9.1 | 9.2 | 1.0 | 30% | Pass | |
| Copper | Z18-Fe03758 | CP | mg/kg | 5.2 | 5.3 | 1.0 | 30% | Pass | |
| Lead | Z18-Fe03758 | CP | mg/kg | 17 | 17 | 1.0 | 30% | Pass | |
| Mercury | Z18-Fe03758 | CP | mg/kg | < 0.1 | < 0.1 | <1 | 30% | Pass | |
| Nickel | Z18-Fe03758 | CP | mg/kg | 6.6 | 6.7 | 1.0 | 30% | Pass | |
| Zinc | Z18-Fe03758 | CP | mg/kg | 38 | 39 | 1.0 | 30% | Pass | |
| **Duplicate** | | | | | | | | | |
| | | | | Result 1 | Result 2 | RPD | | | |
| % Moisture | Z18-Fe03765 | CP | % | 22 | 22 | 1.0 | 30% | Pass | |
| **Duplicate** | | | | | | | | | |
| **Metals M8 (NZ MfE)** | | | | Result 1 | Result 2 | RPD | | | |
| Arsenic | Z18-Fe03767 | CP | mg/kg | 4.4 | 4.4 | 2.0 | 30% | Pass | |
| Cadmium | Z18-Fe03767 | CP | mg/kg | < 0.4 | < 0.4 | <1 | 30% | Pass | |
| Chromium | Z18-Fe03767 | CP | mg/kg | 9.9 | 10 | 4.0 | 30% | Pass | |
| Copper | Z18-Fe03767 | CP | mg/kg | 6.2 | 5.2 | 17 | 30% | Pass | |
| Lead | Z18-Fe03767 | CP | mg/kg | 18 | 18 | 1.0 | 30% | Pass | |
| Nickel | Z18-Fe03767 | CP | mg/kg | 7.8 | 8.0 | 3.0 | 30% | Pass | |
| Zinc | Z18-Fe03767 | CP | mg/kg | 42 | 44 | 5.0 | 30% | Pass | |
| **Duplicate** | | | | | | | | | |
| **Metals M8 (NZ MfE)** | | | | Result 1 | Result 2 | RPD | | | |
| Arsenic | Z18-Fe03768 | CP | mg/kg | 5.9 | 5.8 | 2.0 | 30% | Pass | |
| Cadmium | Z18-Fe03768 | CP | mg/kg | < 0.4 | < 0.4 | <1 | 30% | Pass | |
| Chromium | Z18-Fe03768 | CP | mg/kg | 11 | 11 | 1.0 | 30% | Pass | |
| Copper | Z18-Fe03768 | CP | mg/kg | 5.4 | 5.5 | 2.0 | 30% | Pass | |
| Lead | Z18-Fe03768 | CP | mg/kg | 21 | 21 | 1.0 | 30% | Pass | |
| Mercury | Z18-Fe03768 | CP | mg/kg | < 0.1 | < 0.1 | <1 | 30% | Pass | |
| Nickel | Z18-Fe03768 | CP | mg/kg | 7.5 | 7.6 | 1.0 | 30% | Pass | |
| Zinc | Z18-Fe03768 | CP | mg/kg | 47 | 48 | 1.0 | 30% | Pass | |

## Comments

## Sample Integrity

| | |
|---|---|
| Custody Seals Intact (if used) | N/A |
| Attempt to Chill was evident | No |
| Sample correctly preserved | Yes |
| Appropriate sample containers have been used | Yes |
| Sample containers for volatile analysis received with minimal headspace | Yes |
| Samples received within HoldingTime | Yes |
| Some samples have been subcontracted | No |

## Comments

## Authorised By

| | |
|---|---|
| Onur Mehmet | Analytical Services Manager |
| Alex Petridis | Senior Analyst-Metal (VIC) |
| Huong Le | Senior Analyst-Inorganic (VIC) |
| Joseph Edouard | Senior Analyst-Organic (VIC) |

**Glenn Jackson**
**National Operations Manager**

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

# RE: Hawea - Client Details

Glenn Davis <glenn.davis@e3scientific.co.nz>

Thu 15/02/2018 10:36 p.m.

To: Tim <tim_mastytown@hotmail.com>;

Cc: Carrie Pritchard <carrie.pritchard@e3scientific.co.nz>;

4 attachments (1 MB)

Site Layout Plan.jpg; Soil Sampling Location Plan.jpg; 583134-S_report.pdf; 583570-S_report.pdf;

Hi Tim,

We have received the laboratory analysis for the soil samples we collected from the Hawea site. The sampling locations and lab reports are attached. A plan showing the layout of the site is also attached for your reference. As discussed with you, we halved the number of sampling locations and collected a total of 60 soil samples across the site. At each location we analysed heavy metals in the soils with the X-Ray Fluorescence analyser and recorded the soil types.

In summary the laboratory results show that persistent pesticides are all below the laboratory detection limit indicating any dieldrin or DDT used on the farm was at the most very infrequent and at low application rates. The results also confirm the findings of the X-Ray Fluorescence survey of the soils that the heavy metal concentrations are all very consistent and represent background levels.

The only area of potential concern for residential activity is the farm dump (landfill) located in the northeast corner of the property. This is the only area on the site that may need some additional characterisation. It is a pretty small area though that could be either designed around or removed to a landfill.

I can confirm that my report would recommend no further investigation is required and residential development across the majority of the site should be considered a Permitted Activity under the NESCS. The landfill would be an exception that would require some management.

Happy to discuss.

Regards,

**Glenn Davis**
*Managing Director*

# Certificate of Analysis



**E3 Scientific Limited**
**11 Arrow Lane,**
**Arrowtown**
**NZ 9302**

**Attention:** **Carrie Pritchard**

**Report** **583570-S**
Project name HAWEA SUBDIVISION PSI
Project ID 18012
Received Date Feb 07, 2018

| **Client Sample ID** | | | **COMP 1 (HF31 HF32 HF33)** | **COMP 2 (HF34 HF35 HF36)** | **COMP 3 (HF37 HF38 HF39)** | **COMP 4 (HF40 HF41 HF42)** |
|---|---|---|---|---|---|---|
| **Sample Matrix** | | | **Soil** | **Soil** | **Soil** | **Soil** |
| **Eurofins \| mgt Sample No.** | | | **Z18-Fe06913** | **Z18-Fe06914** | **Z18-Fe06915** | **Z18-Fe06916** |
| **Date Sampled** | | | **Feb 05, 2018** | **Feb 05, 2018** | **Feb 05, 2018** | **Feb 05, 2018** |
| Test/Reference | LOR | Unit | | | | |
| **Organochlorine Pesticides (NZ MfE)** | | | | | | |
| 2.4'-DDD | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 2.4'-DDE | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 2.4'-DDT | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 4.4'-DDD | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 4.4'-DDE | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 4.4'-DDT | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| a-BHC | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Aldrin | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| b-BHC | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Chlordanes - Total | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| cis-Chlordane | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| d-BHC | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Dieldrin | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endosulfan I | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endosulfan II | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endosulfan sulphate | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endrin | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endrin aldehyde | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endrin ketone | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| g-BHC (Lindane) | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Heptachlor | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Heptachlor epoxide | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Hexachlorobenzene | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Methoxychlor | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Toxaphene | 0.1 | mg/kg | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| trans-Chlordane | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Dibutylchlorendate (surr.) | 1 | % | 130 | 133 | 124 | 130 |
| Tetrachloro-m-xylene (surr.) | 1 | % | 146 | 111 | 99 | 98 |
| | | | | | | |
| % Moisture | 1 | % | 19 | 18 | 21 | 18 |

| Client Sample ID | | | COMP 5 (HF43 HF44 HF45) | COMP 6 (HF46 HF47 HF48) | COMP 7 (HF49 HF50 HF51) | COMP 8 (HF52 HF53) |
|---|---|---|---|---|---|---|
| **Sample Matrix** | | | **Soil** | **Soil** | **Soil** | **Soil** |
| **Eurofins \| mgt Sample No.** | | | **Z18-Fe06917** | **Z18-Fe06918** | **Z18-Fe06919** | **Z18-Fe06920** |
| **Date Sampled** | | | **Feb 05, 2018** | **Feb 05, 2018** | **Feb 05, 2018** | **Feb 05, 2018** |
| Test/Reference | LOR | Unit | | | | |
| **Organochlorine Pesticides (NZ MfE)** | | | | | | |
| 2.4'-DDD | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 2.4'-DDE | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 2.4'-DDT | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 4.4'-DDD | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 4.4'-DDE | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 4.4'-DDT | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| a-BHC | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Aldrin | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| b-BHC | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Chlordanes - Total | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| cis-Chlordane | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| d-BHC | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Dieldrin | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endosulfan I | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endosulfan II | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endosulfan sulphate | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endrin | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endrin aldehyde | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endrin ketone | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| g-BHC (Lindane) | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Heptachlor | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Heptachlor epoxide | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Hexachlorobenzene | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Methoxychlor | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Toxaphene | 0.1 | mg/kg | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| trans-Chlordane | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Dibutylchlorendate (surr.) | 1 | % | 128 | 130 | 116 | 131 |
| Tetrachloro-m-xylene (surr.) | 1 | % | 100 | 146 | 89 | 107 |
| | | | | | | |
| % Moisture | 1 | % | 16 | 16 | 13 | 16 |

| Client Sample ID | | | COMP 9 (HF54 HF55 HF56) | COMP 10 (HF57 HF58 HF59) | HF60 | DUP2 |
|---|---|---|---|---|---|---|
| **Sample Matrix** | | | **Soil** | **Soil** | **Soil** | **Soil** |
| **Eurofins \| mgt Sample No.** | | | **Z18-Fe06921** | **Z18-Fe06922** | **Z18-Fe06923** | **Z18-Fe06924** |
| **Date Sampled** | | | **Feb 05, 2018** | **Feb 05, 2018** | **Feb 05, 2018** | **Feb 05, 2018** |
| Test/Reference | LOR | Unit | | | | |
| **Organochlorine Pesticides (NZ MfE)** | | | | | | |
| 2.4'-DDD | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 2.4'-DDE | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 2.4'-DDT | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 4.4'-DDD | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 4.4'-DDE | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| 4.4'-DDT | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| a-BHC | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Aldrin | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| b-BHC | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |

| Client Sample ID | | | COMP 9 (HF54 HF55 HF56) | COMP 10 (HF57 HF58 HF59) | HF60 | DUP2 |
|---|---|---|---|---|---|---|
| **Sample Matrix** | | | **Soil** | **Soil** | **Soil** | **Soil** |
| **Eurofins \| mgt Sample No.** | | | **Z18-Fe06921** | **Z18-Fe06922** | **Z18-Fe06923** | **Z18-Fe06924** |
| **Date Sampled** | | | **Feb 05, 2018** | **Feb 05, 2018** | **Feb 05, 2018** | **Feb 05, 2018** |
| Test/Reference | LOR | Unit | | | | |
| **Organochlorine Pesticides (NZ MfE)** | | | | | | |
| Chlordanes - Total | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| cis-Chlordane | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| d-BHC | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Dieldrin | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endosulfan I | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endosulfan II | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endosulfan sulphate | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endrin | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endrin aldehyde | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Endrin ketone | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| g-BHC (Lindane) | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Heptachlor | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Heptachlor epoxide | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Hexachlorobenzene | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Methoxychlor | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Toxaphene | 0.1 | mg/kg | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| trans-Chlordane | 0.01 | mg/kg | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Dibutylchlorendate (surr.) | 1 | % | 147 | 121 | 124 | 88 |
| Tetrachloro-m-xylene (surr.) | 1 | % | 126 | 98 | 123 | 108 |
| **Metals M8 (NZ MfE)** | | | | | | |
| Arsenic | 2 | mg/kg | - | - | < 2 | 4.5 |
| Cadmium | 0.4 | mg/kg | - | - | < 0.4 | < 0.4 |
| Chromium | 5 | mg/kg | - | - | < 5 | 11 |
| Copper | 5 | mg/kg | - | - | < 5 | 6.0 |
| Lead | 5 | mg/kg | - | - | 8.5 | 20 |
| Mercury | 0.1 | mg/kg | - | - | < 0.1 | < 0.1 |
| Nickel | 5 | mg/kg | - | - | < 5 | 6.4 |
| Zinc | 5 | mg/kg | - | - | 20 | 45 |
| | | | | | | |
| % Moisture | 1 | % | 16 | 16 | 16 | 16 |

| Client Sample ID | | | HF34 | HF37 | HF40 | HF43 |
|---|---|---|---|---|---|---|
| **Sample Matrix** | | | **Soil** | **Soil** | **Soil** | **Soil** |
| **Eurofins \| mgt Sample No.** | | | **Z18-Fe06925** | **Z18-Fe06926** | **Z18-Fe06927** | **Z18-Fe06928** |
| **Date Sampled** | | | **Feb 05, 2018** | **Feb 05, 2018** | **Feb 05, 2018** | **Feb 05, 2018** |
| Test/Reference | LOR | Unit | | | | |
| **Metals M8 (NZ MfE)** | | | | | | |
| Arsenic | 2 | mg/kg | 4.7 | 5.3 | 5.4 | 4.1 |
| Cadmium | 0.4 | mg/kg | < 0.4 | < 0.4 | < 0.4 | < 0.4 |
| Chromium | 5 | mg/kg | 8.4 | 10 | 11 | 8.7 |
| Copper | 5 | mg/kg | 6.0 | 5.5 | 6.6 | 5.1 |
| Lead | 5 | mg/kg | 16 | 19 | 20 | 16 |
| Mercury | 0.1 | mg/kg | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Nickel | 5 | mg/kg | 6.2 | 6.3 | 7.1 | 6.7 |
| Zinc | 5 | mg/kg | 37 | 42 | 46 | 38 |
| | | | | | | |
| % Moisture | 1 | % | 19 | 21 | 20 | 17 |

| Client Sample ID | | | HF47 | HF51 | HF54 | HF56 |
|---|---|---|---|---|---|---|
| **Sample Matrix** | | | **Soil** | **Soil** | **Soil** | **Soil** |
| **Eurofins \| mgt Sample No.** | | | **Z18-Fe06929** | **Z18-Fe06930** | **Z18-Fe06931** | **Z18-Fe06932** |
| **Date Sampled** | | | **Feb 05, 2018** | **Feb 05, 2018** | **Feb 05, 2018** | **Feb 05, 2018** |
| Test/Reference | LOR | Unit | | | | |
| **Metals M8 (NZ MfE)** | | | | | | |
| Arsenic | 2 | mg/kg | 6.4 | 3.9 | 3.2 | 5.3 |
| Cadmium | 0.4 | mg/kg | < 0.4 | < 0.4 | < 0.4 | < 0.4 |
| Chromium | 5 | mg/kg | 12 | 7.8 | 6.3 | 11 |
| Copper | 5 | mg/kg | 7.4 | 5.6 | < 5 | 7.1 |
| Lead | 5 | mg/kg | 23 | 16 | 12 | 20 |
| Mercury | 0.1 | mg/kg | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Nickel | 5 | mg/kg | 7.8 | 5.9 | < 5 | 7.6 |
| Zinc | 5 | mg/kg | 52 | 36 | 29 | 51 |
| | | | | | | |
| % Moisture | 1 | % | 23 | 14 | 15 | 18 |

| Client Sample ID | | | HF58 |
|---|---|---|---|
| **Sample Matrix** | | | **Soil** |
| **Eurofins \| mgt Sample No.** | | | **Z18-Fe06933** |
| **Date Sampled** | | | **Feb 05, 2018** |
| Test/Reference | LOR | Unit | |
| **Metals M8 (NZ MfE)** | | | |
| Arsenic | 2 | mg/kg | 3.8 |
| Cadmium | 0.4 | mg/kg | < 0.4 |
| Chromium | 5 | mg/kg | 7.4 |
| Copper | 5 | mg/kg | < 5 |
| Lead | 5 | mg/kg | 14 |
| Mercury | 0.1 | mg/kg | < 0.1 |
| Nickel | 5 | mg/kg | 5.7 |
| Zinc | 5 | mg/kg | 34 |
| | | | |
| % Moisture | 1 | % | 14 |

## Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

| Description | Testing Site | Extracted | Holding Time |
|---|---|---|---|
| Organochlorine Pesticides (NZ MfE) | Melbourne | Feb 13, 2018 | 14 Day |
| - Method: LTM-ORG-2220 OCP & PCB in Soil and Water | | | |
| Metals M8 (NZ MfE) | Melbourne | Feb 14, 2018 | 6 Months |
| - Method: USEPA 6010/6020 Heavy Metals | | | |
| % Moisture | Melbourne | Feb 07, 2018 | 14 Day |
| - Method: LTM-GEN-7080 Moisture | | | |

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Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

**Perth**
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

**Company Name:** E3 Scientific Limited
**Address:** 11 Arrow Lane,
Arrowtown
NZ 9302

**Project Name:** HAWEA SUBDIVISION PSI
**Project ID:** 18012

**Order No.:**
**Report #:** 583570
**Phone:** 03 4098664
**Fax:**

**Received:** Feb 7, 2018 8:00 AM
**Due:** Feb 14, 2018
**Priority:** 5 Day
**Contact Name:** Carrie Pritchard

**Eurofins | mgt Analytical Services Manager : Onur Mehmet**

| Sample Detail | | | | | | HOLD | Moisture Set | Organochlorine Pesticides (NZ MfE) | Metals M8 (NZ MfE) |
|---|---|---|---|---|---|---|---|---|---|
| **Melbourne Laboratory - NATA Site # 1254 & 14271** | | | | | | X | X | X | X |
| **Sydney Laboratory - NATA Site # 18217** | | | | | | | | | |
| **Brisbane Laboratory - NATA Site # 20794** | | | | | | | | | |
| **Perth Laboratory - NATA Site # 23736** | | | | | | | | | |
| **External Laboratory** | | | | | | | | | |
| **No** | **Sample ID** | **Sample Date** | **Sampling Time** | **Matrix** | **LAB ID** | | | | |
| 1 | COMP 1 (HF31 HF32 HF33) | Feb 05, 2018 | | Soil | Z18-Fe06913 | | X | X | |
| 2 | COMP 2 (HF34 HF35 HF36) | Feb 05, 2018 | | Soil | Z18-Fe06914 | | X | X | |
| 3 | COMP 3 (HF37 HF38 HF39) | Feb 05, 2018 | | Soil | Z18-Fe06915 | | X | X | |
| 4 | COMP 4 (HF40 HF41 HF42) | Feb 05, 2018 | | Soil | Z18-Fe06916 | | X | X | |

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**Contact Name:** Carrie Pritchard

**Eurofins | mgt Analytical Services Manager : Onur Mehmet**

| Sample Detail | | | | | | HOLD | Moisture Set | Organochlorine Pesticides (NZ MfE) | Metals M8 (NZ MfE) |
|---|---|---|---|---|---|---|---|---|---|
| **Melbourne Laboratory - NATA Site # 1254 & 14271** | | | | | | X | X | X | X |
| **Sydney Laboratory - NATA Site # 18217** | | | | | | | | | |
| **Brisbane Laboratory - NATA Site # 20794** | | | | | | | | | |
| **Perth Laboratory - NATA Site # 23736** | | | | | | | | | |
| 5 | COMP 5 (HF43 HF44 HF45) | Feb 05, 2018 | | Soil | Z18-Fe06917 | | X | X | |
| 6 | COMP 6 (HF46 HF47 HF48) | Feb 05, 2018 | | Soil | Z18-Fe06918 | | X | X | |
| 7 | COMP 7 (HF49 HF50 HF51) | Feb 05, 2018 | | Soil | Z18-Fe06919 | | X | X | |
| 8 | COMP 8 (HF52 HF53) | Feb 05, 2018 | | Soil | Z18-Fe06920 | | X | X | |
| 9 | COMP 9 (HF54 HF55 HF56) | Feb 05, 2018 | | Soil | Z18-Fe06921 | | X | X | |
| 10 | COMP 10 | Feb 05, 2018 | | Soil | Z18-Fe06922 | | X | X | |

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**Contact Name:** Carrie Pritchard

**Eurofins | mgt Analytical Services Manager : Onur Mehmet**

| Sample Detail | | | | | | HOLD | Moisture Set | Organochlorine Pesticides (NZ MfE) | Metals M8 (NZ MfE) |
|---|---|---|---|---|---|---|---|---|---|
| **Melbourne Laboratory - NATA Site # 1254 & 14271** | | | | | | X | X | X | X |
| **Sydney Laboratory - NATA Site # 18217** | | | | | | | | | |
| **Brisbane Laboratory - NATA Site # 20794** | | | | | | | | | |
| **Perth Laboratory - NATA Site # 23736** | | | | | | | | | |
| | (HF57 HF58 HF59) | | | | | | | | |
| 11 | HF60 | Feb 05, 2018 | | Soil | Z18-Fe06923 | | X | X | X |
| 12 | DUP2 | Feb 05, 2018 | | Soil | Z18-Fe06924 | | X | X | X |
| 13 | HF34 | Feb 05, 2018 | | Soil | Z18-Fe06925 | | X | | X |
| 14 | HF37 | Feb 05, 2018 | | Soil | Z18-Fe06926 | | X | | X |
| 15 | HF40 | Feb 05, 2018 | | Soil | Z18-Fe06927 | | X | | X |
| 16 | HF43 | Feb 05, 2018 | | Soil | Z18-Fe06928 | | X | | X |
| 17 | HF47 | Feb 05, 2018 | | Soil | Z18-Fe06929 | | X | | X |
| 18 | HF51 | Feb 05, 2018 | | Soil | Z18-Fe06930 | | X | | X |
| 19 | HF54 | Feb 05, 2018 | | Soil | Z18-Fe06931 | | X | | X |
| 20 | HF56 | Feb 05, 2018 | | Soil | Z18-Fe06932 | | X | | X |

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**Eurofins | mgt Analytical Services Manager : Onur Mehmet**

| Sample Detail | | | | | | HOLD | Moisture Set | Organochlorine Pesticides (NZ MfE) | Metals M8 (NZ MfE) |
|---|---|---|---|---|---|---|---|---|---|
| **Melbourne Laboratory - NATA Site # 1254 & 14271** | | | | | | X | X | X | X |
| **Sydney Laboratory - NATA Site # 18217** | | | | | | | | | |
| **Brisbane Laboratory - NATA Site # 20794** | | | | | | | | | |
| **Perth Laboratory - NATA Site # 23736** | | | | | | | | | |
| 21 | HF58 | Feb 05, 2018 | | Soil | Z18-Fe06933 | | X | | X |
| 22 | HF31 | Feb 05, 2018 | | Soil | Z18-Fe06934 | X | | | |
| 23 | HF32 | Feb 05, 2018 | | Soil | Z18-Fe06935 | X | | | |
| 24 | HF33 | Feb 05, 2018 | | Soil | Z18-Fe06936 | X | | | |
| 25 | HF35 | Feb 05, 2018 | | Soil | Z18-Fe06937 | X | | | |
| 26 | HF36 | Feb 05, 2018 | | Soil | Z18-Fe06938 | X | | | |
| 27 | HF38 | Feb 05, 2018 | | Soil | Z18-Fe06939 | X | | | |
| 28 | HF39 | Feb 05, 2018 | | Soil | Z18-Fe06940 | X | | | |
| 29 | HF41 | Feb 05, 2018 | | Soil | Z18-Fe06941 | X | | | |
| 30 | HF42 | Feb 05, 2018 | | Soil | Z18-Fe06942 | X | | | |
| 31 | HF44 | Feb 05, 2018 | | Soil | Z18-Fe06943 | X | | | |
| 32 | HF45 | Feb 05, 2018 | | Soil | Z18-Fe06944 | X | | | |

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**Company Name:** E3 Scientific Limited
**Address:** 11 Arrow Lane,
Arrowtown
NZ 9302

**Project Name:** HAWEA SUBDIVISION PSI
**Project ID:** 18012

**Order No.:**
**Report #:** 583570
**Phone:** 03 4098664
**Fax:**

**Received:** Feb 7, 2018 8:00 AM
**Due:** Feb 14, 2018
**Priority:** 5 Day
**Contact Name:** Carrie Pritchard

**Eurofins | mgt Analytical Services Manager : Onur Mehmet**

| Sample Detail | | | | | | HOLD | Moisture Set | Organochlorine Pesticides (NZ MfE) | Metals M8 (NZ MfE) |
|---|---|---|---|---|---|---|---|---|---|
| **Melbourne Laboratory - NATA Site # 1254 & 14271** | | | | | | X | X | X | X |
| **Sydney Laboratory - NATA Site # 18217** | | | | | | | | | |
| **Brisbane Laboratory - NATA Site # 20794** | | | | | | | | | |
| **Perth Laboratory - NATA Site # 23736** | | | | | | | | | |
| 33 | HF46 | Feb 05, 2018 | | Soil | Z18-Fe06945 | X | | | |
| 34 | HF48 | Feb 05, 2018 | | Soil | Z18-Fe06946 | X | | | |
| 35 | HF49 | Feb 05, 2018 | | Soil | Z18-Fe06947 | X | | | |
| 36 | HF50 | Feb 05, 2018 | | Soil | Z18-Fe06948 | X | | | |
| 37 | HF52 | Feb 05, 2018 | | Soil | Z18-Fe06949 | X | | | |
| 38 | HF53 | Feb 05, 2018 | | Soil | Z18-Fe06950 | X | | | |
| 39 | HF55 | Feb 05, 2018 | | Soil | Z18-Fe06951 | X | | | |
| 40 | HF57 | Feb 05, 2018 | | Soil | Z18-Fe06952 | X | | | |
| 41 | HF59 | Feb 05, 2018 | | Soil | Z18-Fe06953 | X | | | |
| **Test Counts** | | | | | | 20 | 21 | 12 | 11 |

## Internal Quality Control Review and Glossary

### General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

### Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

### Units

**mg/kg:** milligrams per kilogram

**mg/L:** milligrams per litre

**ug/L:** micrograms per litre

**ppm:** Parts per million

**ppb:** Parts per billion

**%:** Percentage

**org/100mL:** Organisms per 100 millilitres

**NTU:** Nephelometric Turbidity Units

**MPN/100mL:** Most Probable Number of organisms per 100 millilitres

### Terms

| | |
|---|---|
| **Dry** | Where a moisture has been determined on a solid sample the result is expressed on a dry basis. |
| **LOR** | Limit of Reporting. |
| **SPIKE** | Addition of the analyte to the sample and reported as percentage recovery. |
| **RPD** | Relative Percent Difference between two Duplicate pieces of analysis. |
| **LCS** | Laboratory Control Sample - reported as percent recovery. |
| **CRM** | Certified Reference Material - reported as percent recovery. |
| **Method Blank** | In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water. |
| **Surr - Surrogate** | The addition of a like compound to the analyte target and reported as percentage recovery. |
| **Duplicate** | A second piece of analysis from the same sample and reported in the same units as the result to show comparison. |
| **USEPA** | United States Environmental Protection Agency |
| **APHA** | American Public Health Association |
| **TCLP** | Toxicity Characteristic Leaching Procedure |
| **COC** | Chain of Custody |
| **SRA** | Sample Receipt Advice |
| **QSM** | Quality Systems Manual ver 5.1 US Department of Defense |
| **CP** | Client Parent - QC was performed on samples pertaining to this report |
| **NCP** | Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within. |
| **TEQ** | Toxic Equivalency Quotient |

### QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

### QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

**Quality Control Results**

| Test | Units | Result 1 | | | Acceptance Limits | Pass Limits | Qualifying Code |
|---|---|---|---|---|---|---|---|
| **Method Blank** | | | | | | | |
| **Organochlorine Pesticides (NZ MfE)** | | | | | | | |
| 2.4'-DDD | mg/kg | < 0.01 | | | 0.01 | Pass | |
| 2.4'-DDE | mg/kg | < 0.01 | | | 0.01 | Pass | |
| 2.4'-DDT | mg/kg | < 0.01 | | | 0.01 | Pass | |
| 4.4'-DDD | mg/kg | < 0.01 | | | 0.01 | Pass | |
| 4.4'-DDE | mg/kg | < 0.01 | | | 0.01 | Pass | |
| 4.4'-DDT | mg/kg | < 0.01 | | | 0.01 | Pass | |
| a-BHC | mg/kg | < 0.01 | | | 0.01 | Pass | |
| Aldrin | mg/kg | < 0.01 | | | 0.01 | Pass | |
| b-BHC | mg/kg | < 0.01 | | | 0.01 | Pass | |
| Chlordanes - Total | mg/kg | < 0.01 | | | 0.01 | Pass | |
| cis-Chlordane | mg/kg | < 0.01 | | | 0.01 | Pass | |
| d-BHC | mg/kg | < 0.01 | | | 0.01 | Pass | |
| Dieldrin | mg/kg | < 0.01 | | | 0.01 | Pass | |
| Endosulfan I | mg/kg | < 0.01 | | | 0.01 | Pass | |
| Endosulfan II | mg/kg | < 0.01 | | | 0.01 | Pass | |
| Endosulfan sulphate | mg/kg | < 0.01 | | | 0.01 | Pass | |
| Endrin | mg/kg | < 0.01 | | | 0.01 | Pass | |
| Endrin aldehyde | mg/kg | < 0.01 | | | 0.01 | Pass | |
| Endrin ketone | mg/kg | < 0.01 | | | 0.01 | Pass | |
| g-BHC (Lindane) | mg/kg | < 0.01 | | | 0.01 | Pass | |
| Heptachlor | mg/kg | < 0.01 | | | 0.01 | Pass | |
| Heptachlor epoxide | mg/kg | < 0.01 | | | 0.01 | Pass | |
| Hexachlorobenzene | mg/kg | < 0.01 | | | 0.01 | Pass | |
| Methoxychlor | mg/kg | < 0.01 | | | 0.01 | Pass | |
| Toxaphene | mg/kg | < 0.1 | | | 0.1 | Pass | |
| trans-Chlordane | mg/kg | < 0.01 | | | 0.01 | Pass | |
| **Method Blank** | | | | | | | |
| **Metals M8 (NZ MfE)** | | | | | | | |
| Arsenic | mg/kg | < 2 | | | 2 | Pass | |
| Cadmium | mg/kg | < 0.4 | | | 0.4 | Pass | |
| Chromium | mg/kg | < 5 | | | 5 | Pass | |
| Copper | mg/kg | < 5 | | | 5 | Pass | |
| Lead | mg/kg | < 5 | | | 5 | Pass | |
| Mercury | mg/kg | < 0.1 | | | 0.1 | Pass | |
| Nickel | mg/kg | < 5 | | | 5 | Pass | |
| Zinc | mg/kg | < 5 | | | 5 | Pass | |
| **LCS - % Recovery** | | | | | | | |
| **Organochlorine Pesticides (NZ MfE)** | | | | | | | |
| 2.4'-DDD | % | 130 | | | 70-130 | Pass | |
| 2.4'-DDE | % | 110 | | | 70-130 | Pass | |
| 2.4'-DDT | % | 78 | | | 70-130 | Pass | |
| 4.4'-DDD | % | 88 | | | 70-130 | Pass | |
| 4.4'-DDE | % | 110 | | | 70-130 | Pass | |
| 4.4'-DDT | % | 85 | | | 70-130 | Pass | |
| a-BHC | % | 85 | | | 70-130 | Pass | |
| Aldrin | % | 102 | | | 70-130 | Pass | |
| b-BHC | % | 81 | | | 70-130 | Pass | |
| cis-Chlordane | % | 98 | | | 70-130 | Pass | |
| d-BHC | % | 84 | | | 70-130 | Pass | |
| Dieldrin | % | 106 | | | 70-130 | Pass | |

| Test | Units | Result 1 | | | Acceptance Limits | Pass Limits | Qualifying Code |
|---|---|---|---|---|---|---|---|
| Endosulfan I | % | 108 | | | 70-130 | Pass | |
| Endosulfan II | % | 99 | | | 70-130 | Pass | |
| Endosulfan sulphate | % | 96 | | | 70-130 | Pass | |
| Endrin | % | 100 | | | 70-130 | Pass | |
| Endrin aldehyde | % | 98 | | | 70-130 | Pass | |
| Endrin ketone | % | 100 | | | 70-130 | Pass | |
| g-BHC (Lindane) | % | 85 | | | 70-130 | Pass | |
| Heptachlor | % | 88 | | | 70-130 | Pass | |
| Heptachlor epoxide | % | 102 | | | 70-130 | Pass | |
| Hexachlorobenzene | % | 82 | | | 70-130 | Pass | |
| Methoxychlor | % | 88 | | | 70-130 | Pass | |
| trans-Chlordane | % | 103 | | | 70-130 | Pass | |
| **LCS - % Recovery** | | | | | | | |
| **Metals M8 (NZ MfE)** | | | | | | | |
| Arsenic | % | 111 | | | 80-120 | Pass | |
| Cadmium | % | 114 | | | 80-120 | Pass | |
| Chromium | % | 104 | | | 80-120 | Pass | |
| Copper | % | 118 | | | 80-120 | Pass | |
| Lead | % | 113 | | | 80-120 | Pass | |
| Mercury | % | 102 | | | 75-125 | Pass | |
| Nickel | % | 107 | | | 80-120 | Pass | |
| Zinc | % | 110 | | | 80-120 | Pass | |

| Test | Lab Sample ID | QA Source | Units | Result 1 | | | Acceptance Limits | Pass Limits | Qualifying Code |
|---|---|---|---|---|---|---|---|---|---|
| **Spike - % Recovery** | | | | | | | | | |
| **Organochlorine Pesticides (NZ MfE)** | | | | Result 1 | | | | | |
| 2.4'-DDD | Z18-Fe06913 | CP | % | 110 | | | 70-130 | Pass | |
| 2.4'-DDE | Z18-Fe06913 | CP | % | 126 | | | 70-130 | Pass | |
| 2.4'-DDT | Z18-Fe06913 | CP | % | 110 | | | 70-130 | Pass | |
| 4.4'-DDD | Z18-Fe06913 | CP | % | 111 | | | 70-130 | Pass | |
| 4.4'-DDE | Z18-Fe06913 | CP | % | 113 | | | 70-130 | Pass | |
| 4.4'-DDT | Z18-Fe06913 | CP | % | 109 | | | 70-130 | Pass | |
| a-BHC | Z18-Fe06913 | CP | % | 99 | | | 70-130 | Pass | |
| Aldrin | Z18-Fe06913 | CP | % | 123 | | | 70-130 | Pass | |
| b-BHC | Z18-Fe06913 | CP | % | 96 | | | 70-130 | Pass | |
| cis-Chlordane | Z18-Fe06913 | CP | % | 124 | | | 70-130 | Pass | |
| d-BHC | Z18-Fe06913 | CP | % | 103 | | | 70-130 | Pass | |
| Dieldrin | Z18-Fe06913 | CP | % | 129 | | | 70-130 | Pass | |
| Endosulfan I | Z18-Fe06913 | CP | % | 112 | | | 70-130 | Pass | |
| Endosulfan II | Z18-Fe06913 | CP | % | 126 | | | 70-130 | Pass | |
| Endosulfan sulphate | Z18-Fe06913 | CP | % | 112 | | | 70-130 | Pass | |
| Endrin | Z18-Fe06913 | CP | % | 130 | | | 70-130 | Pass | |
| Endrin aldehyde | Z18-Fe06913 | CP | % | 123 | | | 70-130 | Pass | |
| Endrin ketone | Z18-Fe06913 | CP | % | 120 | | | 70-130 | Pass | |
| g-BHC (Lindane) | Z18-Fe06913 | CP | % | 99 | | | 70-130 | Pass | |
| Heptachlor | Z18-Fe06913 | CP | % | 114 | | | 70-130 | Pass | |
| Heptachlor epoxide | Z18-Fe06913 | CP | % | 120 | | | 70-130 | Pass | |
| Hexachlorobenzene | Z18-Fe06913 | CP | % | 99 | | | 70-130 | Pass | |
| Methoxychlor | Z18-Fe06913 | CP | % | 107 | | | 70-130 | Pass | |
| trans-Chlordane | Z18-Fe06913 | CP | % | 123 | | | 70-130 | Pass | |
| **Spike - % Recovery** | | | | | | | | | |
| **Organochlorine Pesticides (NZ MfE)** | | | | Result 1 | | | | | |
| 2.4'-DDD | Z18-Fe06923 | CP | % | 104 | | | 70-130 | Pass | |
| 2.4'-DDE | Z18-Fe06923 | CP | % | 108 | | | 70-130 | Pass | |
| 2.4'-DDT | Z18-Fe06923 | CP | % | 99 | | | 70-130 | Pass | |

| Test | Lab Sample ID | QA Source | Units | Result 1 | | | Acceptance Limits | Pass Limits | Qualifying Code |
|---|---|---|---|---|---|---|---|---|---|
| 4.4'-DDD | Z18-Fe06923 | CP | % | 90 | | | 70-130 | Pass | |
| 4.4'-DDE | Z18-Fe06923 | CP | % | 115 | | | 70-130 | Pass | |
| 4.4'-DDT | Z18-Fe06923 | CP | % | 103 | | | 70-130 | Pass | |
| a-BHC | Z18-Fe06923 | CP | % | 84 | | | 70-130 | Pass | |
| Aldrin | Z18-Fe06923 | CP | % | 104 | | | 70-130 | Pass | |
| b-BHC | Z18-Fe06923 | CP | % | 82 | | | 70-130 | Pass | |
| cis-Chlordane | Z18-Fe06923 | CP | % | 104 | | | 70-130 | Pass | |
| d-BHC | Z18-Fe06923 | CP | % | 88 | | | 70-130 | Pass | |
| Dieldrin | Z18-Fe06923 | CP | % | 111 | | | 70-130 | Pass | |
| Endosulfan I | Z18-Fe06923 | CP | % | 121 | | | 70-130 | Pass | |
| Endosulfan II | Z18-Fe06923 | CP | % | 110 | | | 70-130 | Pass | |
| Endosulfan sulphate | Z18-Fe06923 | CP | % | 84 | | | 70-130 | Pass | |
| Endrin | Z18-Fe06923 | CP | % | 111 | | | 70-130 | Pass | |
| Endrin aldehyde | Z18-Fe06923 | CP | % | 99 | | | 70-130 | Pass | |
| Endrin ketone | Z18-Fe06923 | CP | % | 100 | | | 70-130 | Pass | |
| g-BHC (Lindane) | Z18-Fe06923 | CP | % | 81 | | | 70-130 | Pass | |
| Heptachlor | Z18-Fe06923 | CP | % | 100 | | | 70-130 | Pass | |
| Heptachlor epoxide | Z18-Fe06923 | CP | % | 102 | | | 70-130 | Pass | |
| Hexachlorobenzene | Z18-Fe06923 | CP | % | 84 | | | 70-130 | Pass | |
| Methoxychlor | Z18-Fe06923 | CP | % | 99 | | | 70-130 | Pass | |
| trans-Chlordane | Z18-Fe06923 | CP | % | 104 | | | 70-130 | Pass | |
| **Spike - % Recovery** | | | | | | | | | |
| **Metals M8 (NZ MfE)** | | | | Result 1 | | | | | |
| Mercury | Z18-Fe08585 | NCP | % | 89 | | | 70-130 | Pass | |
| **Spike - % Recovery** | | | | | | | | | |
| **Metals M8 (NZ MfE)** | | | | Result 1 | | | | | |
| Arsenic | Z18-Fe06924 | CP | % | 85 | | | 75-125 | Pass | |
| Cadmium | Z18-Fe06924 | CP | % | 91 | | | 75-125 | Pass | |
| Chromium | Z18-Fe06924 | CP | % | 92 | | | 75-125 | Pass | |
| Copper | Z18-Fe06924 | CP | % | 94 | | | 75-125 | Pass | |
| Lead | Z18-Fe06924 | CP | % | 98 | | | 75-125 | Pass | |
| Nickel | Z18-Fe06924 | CP | % | 86 | | | 75-125 | Pass | |
| Zinc | Z18-Fe06924 | CP | % | 72 | | | 75-125 | Fail | Q08 |
| **Test** | **Lab Sample ID** | **QA Source** | **Units** | **Result 1** | | | **Acceptance Limits** | **Pass Limits** | **Qualifying Code** |
| **Duplicate** | | | | | | | | | |
| | | | | Result 1 | Result 2 | RPD | | | |
| % Moisture | Z18-Fe06915 | CP | % | 21 | 21 | 1.0 | 30% | Pass | |
| **Duplicate** | | | | | | | | | |
| **Organochlorine Pesticides (NZ MfE)** | | | | Result 1 | Result 2 | RPD | | | |
| 2.4'-DDD | Z18-Fe06922 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| 2.4'-DDE | Z18-Fe06922 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| 2.4'-DDT | Z18-Fe06922 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| 4.4'-DDD | Z18-Fe06922 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| 4.4'-DDE | Z18-Fe06922 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| 4.4'-DDT | Z18-Fe06922 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| a-BHC | Z18-Fe06922 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| Aldrin | Z18-Fe06922 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| b-BHC | Z18-Fe06922 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| Chlordanes - Total | Z18-Fe06922 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| cis-Chlordane | Z18-Fe06922 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| d-BHC | Z18-Fe06922 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| Dieldrin | Z18-Fe06922 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| Endosulfan I | Z18-Fe06922 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| Endosulfan II | Z18-Fe06922 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Duplicate** | | | | | | | | | |
| **Organochlorine Pesticides (NZ MfE)** | | | | Result 1 | Result 2 | RPD | | | |
| Endosulfan sulphate | Z18-Fe06922 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| Endrin | Z18-Fe06922 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| Endrin aldehyde | Z18-Fe06922 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| Endrin ketone | Z18-Fe06922 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| g-BHC (Lindane) | Z18-Fe06922 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| Heptachlor | Z18-Fe06922 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| Heptachlor epoxide | Z18-Fe06922 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| Hexachlorobenzene | Z18-Fe06922 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| Methoxychlor | Z18-Fe06922 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| Toxaphene | Z18-Fe06922 | CP | mg/kg | < 0.1 | < 0.1 | <1 | 30% | Pass | |
| trans-Chlordane | Z18-Fe06922 | CP | mg/kg | < 0.01 | < 0.01 | <1 | 30% | Pass | |
| **Duplicate** | | | | | | | | | |
| **Metals M8 (NZ MfE)** | | | | Result 1 | Result 2 | RPD | | | |
| Mercury | Z18-Fe08584 | NCP | mg/kg | < 0.1 | < 0.1 | <1 | 30% | Pass | |
| **Duplicate** | | | | | | | | | |
| **Metals M8 (NZ MfE)** | | | | Result 1 | Result 2 | RPD | | | |
| Arsenic | Z18-Fe06924 | CP | mg/kg | 4.5 | 4.8 | 6.0 | 30% | Pass | |
| Cadmium | Z18-Fe06924 | CP | mg/kg | < 0.4 | < 0.4 | <1 | 30% | Pass | |
| Chromium | Z18-Fe06924 | CP | mg/kg | 11 | 11 | 1.0 | 30% | Pass | |
| Copper | Z18-Fe06924 | CP | mg/kg | 6.0 | 6.2 | 2.0 | 30% | Pass | |
| Lead | Z18-Fe06924 | CP | mg/kg | 20 | 20 | 1.0 | 30% | Pass | |
| Nickel | Z18-Fe06924 | CP | mg/kg | 6.4 | 6.6 | 2.0 | 30% | Pass | |
| Zinc | Z18-Fe06924 | CP | mg/kg | 45 | 46 | 3.0 | 30% | Pass | |
| **Duplicate** | | | | | | | | | |
| | | | | Result 1 | Result 2 | RPD | | | |
| % Moisture | Z18-Fe06925 | CP | % | 19 | 20 | 1.0 | 30% | Pass | |

## Comments

## Sample Integrity

| | |
|---|---|
| Custody Seals Intact (if used) | N/A |
| Attempt to Chill was evident | Yes |
| Sample correctly preserved | Yes |
| Appropriate sample containers have been used | Yes |
| Sample containers for volatile analysis received with minimal headspace | Yes |
| Samples received within HoldingTime | Yes |
| Some samples have been subcontracted | No |

## Comments

## Qualifier Codes/Comments

| Code | Description |
|---|---|
| Q08 | The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference |

## Authorised By

| | |
|---|---|
| Onur Mehmet | Analytical Services Manager |
| Alex Petridis | Senior Analyst-Metal (VIC) |
| Huong Le | Senior Analyst-Inorganic (VIC) |
| Joseph Edouard | Senior Analyst-Organic (VIC) |

**Glenn Jackson**

**National Operations Manager**

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

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## Universal Developments Limited

# Proposed Residential Subdivision
# Lake Hawea Township

## Overview Transportation Assessment

CARRIAGEWAY
CONSULTING
traffic engineering | transport planning

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# 1. Introduction

1.1. Universal Developments Limited proposes to develop a 400-lot residential subdivision on land to the immediate south of the existing urban areas of the township of Lake Hawea in Queenstown Lakes District.

1.2. This high-level Transportation Assessment sets out an overview of the transportation issues associated with the proposed development including changes in travel patterns that are likely to arise. Where potential adverse effects are identified, possible ways in which these can be addressed are set out. However this is not a detailed report, but rather, is intended to identify key issues and potential difficulties (and solutions).

1.3. This report is cognisant of the guidance specified in the New Zealand Transport Agency's '*Integrated Transport Assessment Guidelines'* and although travel by private motor vehicle is addressed within this report, in accordance with best practice the importance of other transport modes is also recognised. Consequently, travel by walking, cycling and public transport is also considered.

1.4. As instructed (by e-mail dated 13 March 2018), this report does not consider any matters relating to the state highway.

# 2. Site Overview

## *2.1. Location*

2.1.1. The development site is located on the southern side of Cemetery Road, and on the southern side of the existing urban area of Lake Hawea township. The site is zoned Rural General in the Queenstown Lakes District Plan ('*District Plan*').

2.1.2. The location of the site in the context of the local area is shown in Figure 1 and in more detail in Figure 2.


**Figure 1: General Location of Development Site**

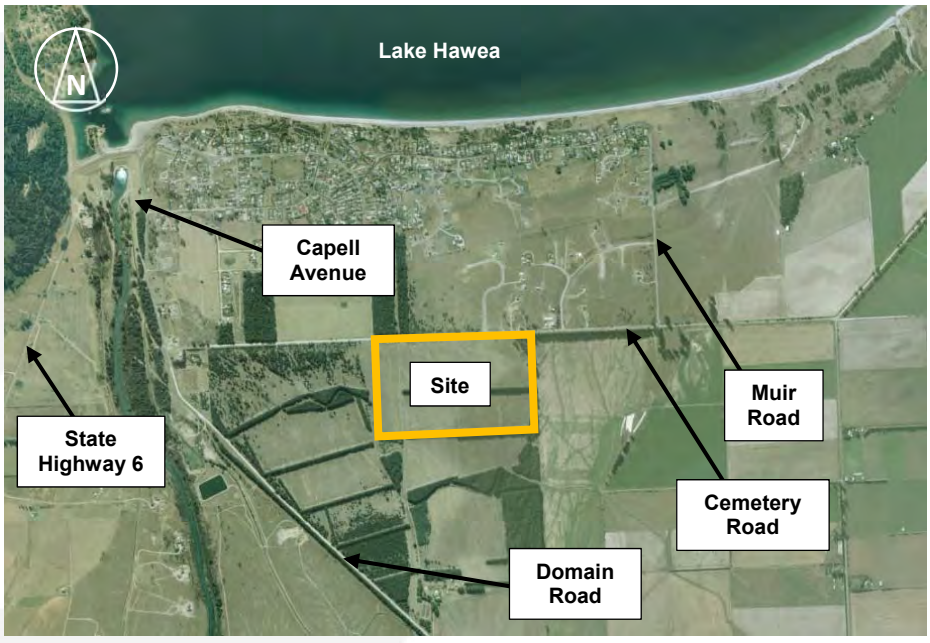


**Figure 2: Aerial Photograph of Development Site and Environs**

### *2.2. Road Hierarchy*

2.2.1. The District Plan classifies State Highway 6 and Capell Avenue as Arterial Roads with a primary role of accommodating through traffic.

2.2.2. Cemetery Road to the east of Muir Road, and Muir Road are both Collector Roads, indicating that they "*provide access to private properties fronting the road, however, the main function is to provide access to local roads*" (District Plan, Objective 14.1, Explanation and Principal Reasons for Adoption). As such, they accommodate a mix of local and through traffic.

2.2.3. All other roads in the immediate area, including Domain Road and Cemetery Road adjacent to the site are Local Roads, and these types of road are expected to function *"almost entirely as accessways to properties and are not intended to act as through routes for vehicles*" (District Plan, Objective 14.1, Explanation and Principal Reasons for Adoption).

# 3. Current Transportation Networks

## *3.1. Roading Network*

3.1.1. In the vicinity of the site, Cemetery Road has a flat and straight alignment and is subject to a 70km/h speed limit (this is presently signposted as a temporary limit). The carriageway is 7m wide with a centreline marking but no edgelines. There are swales of around 2.5m on each side, and metalled shoulders. The road has relatively recently been sealed over its full length.

**Photograph 1: Cemetery Road Looking West (Site on Left)**

3.1.2. At its western extremity, Cemetery Road meets Domain Road at a priority ('give-way') intersection. The intersection does not have any turning lanes nor sealed shoulders to enable one vehicle to pass another. The flat and straight alignment of Domain Road in this location means that sight distances for turning traffic are excellent.


**Photograph 2: Cemetery Road / Domain Road Intersection Looking West**

3.1.3. Domain Road itself runs with a broadly north-south alignment. It is sealed with a 6m carriageway with 0.5m metalled shoulders, and has a centreline but no edgeline markings. In the vicinity of Cemetery Road, it is subject to a 70km/h speed limit but this decreases to 50km/h just south of Timsfield Road.

**Photograph 3: Domain Road Looking North**

3.1.4. At its northern end, Domain Road meets Capell Avenue at a complex priority ('give-way') intersection. This has separate traffic lanes for each turning movement and is designed in a manner that was common several decades ago whereby the various potentially conflicting movements are separated from one another.


**Photograph 4: Capell Avenue / Domain Road Intersection**

3.1.5. Towards the south of Cemetery Road, Domain Road turns to run in a northwest-southeast direction and connects to the district roading network further afield.

3.1.6. There are presently limited opportunities for vehicles to travel north-south from Cemetery Road. Sentinel Drive and Grandview Road both lie to the immediate north of the site, but

these do not provide a connection into the centre of Lake Hawea township itself. Both roads have priority controlled ('stop') intersections with Cemetery Road but do not have auxiliary turning lanes.

**Photograph 5: Cemetery Road / Sentinel Drive Intersection**

3.1.7. It is also understood that Capell Avenue will be formed in the near future as part of the Timsfield development and will connect to Cemetery Road. This will have a broadly north-south alignment and will connect to the existing formation of the road, which turns towards the west and connects to Domain Road as discussed above.

### *3.2. Non-Car Modes of Travel*

3.2.1. There is a well-developed network of walking and cycling routes in the area. This includes a 3m wide shared walking/cycling route over the full length of the northern side of Cemetery Road, which is mostly metalled but is sealed over its eastern extremity and close to the Sentinel Park subdivision.

**Photograph 6: Cemetery Road Footpath/Cyclepath, Looking West**

3.2.2. This route turns northwards at the Cemetery Road / Domain Road intersection, and runs along the eastern side of Domain Road but then diverts further east to run just within the Timsfield subdivision. It then re-emerges on the eastern side of Domain Road and is elevated around the eastern side of the Capell Avenue / Domain Road intersection.

**Photograph 7: Elevated Footpath/Cyclepath on Eastern Side of Domain Road**

3.2.3. There are also north-south walking and cycling connections on Cemetery Road. This includes a 2m wide walking/cycling path which is located within the Capell Avenue road corridor and which connects to Cemetery Road opposite the site.


**Photograph 8: Capell Avenue Footpath/Cyclepath, At Cemetery Road**

3.2.4. There are also walking and cycling routes at the southern end of Isthmus Place (around 50m east of Capell Avenue) and opposite Swann Street, around 280m west of Capell Avenue. The latter is marked with 'cyclist crossing' signs on the Cemetery Road approaches, and is delineated by wooden fences on the approaches for pedestrians and cyclists.


**Photograph 9: Footpath/Cyclepath Crossing Cemetery Road Near Swann Street, Looking North**

3.2.5. No bus routes operate in the immediate area. However there is a school bus route which operates along Cemetery Road, and there is a school bus stop on the northern side of the road east of Domain Road.

### *3.3. Future Changes*

3.3.1. There are no confirmed and funded changes to the roading environment in the immediate area, other than the future formation of Capell Road as far as Cemetery Road.

3.3.2. The Timsfield and Sentinel Park subdivisions are presently underway on the northern side of Cemetery Road. These will result in an additional 500 (approximately) residential lots being formed in an area to the north and west of Capell Avenue and Cemetery Road.

# 4. Current Transportation Patterns

## *4.1. Traffic Flows*

4.1.1. Queenstown Lakes District Council carries out regular traffic counts on the key vehicle routes throughout the district. The surveys show the following traffic volumes, which were observed prior to the Timsfield and Sentinel Park subdivisions being consented:

- Cemetery Road adjacent to site: 310 vehicles per day;
- Domain Road south of Capell Avenue: 900 vehicles per day;
- Capell Avenue (east of Domain Road): 1,600 vehicles per day; and
- Capell Avenue (west of Domain Road): 1,700 vehicles per day.

4.1.2. Peak hour traffic flows are generally around 10% to 15% of the daily volumes. This then indicates the following peak hour volumes prior to the Timsfield and Sentinel Park subdivisions being consented:

- Cemetery Road adjacent to site: 30-46 vehicles per hour;
- Domain Road south of Capell Avenue: 90-135 vehicles per hour;
- Capell Avenue (east of Domain Road): 160-240 vehicles per hour; and
- Capell Avenue (west of Domain Road): 170-255 vehicles per hour.

4.1.3. As part of this commission, a traffic survey was undertaken at the Capell Avenue / Domain Road intersection. The results of this are summarised below.

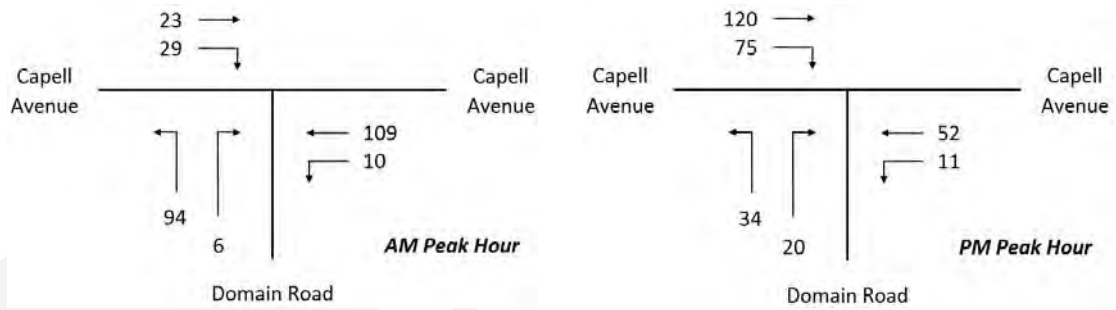


**Figure 3: Morning and Evening Peak Hour Volumes (2018 Observed)**

4.1.4. It can be seen that the observed peak hour volumes correspond well to those which were forecast:

- Domain Road south of Capell Avenue: 90-135 vehicles per hour forecast, 139-140 vehicles per hour observed (140 on average across both peak hours);
- Capell Avenue (east of Domain Road): 160-240 vehicles per hour forecast, 148-203 vehicles per hour observed (176 on average across both peak hours); and
- Capell Avenue (west of Domain Road): 170-255 vehicles per hour forecast, 255-281 vehicles per hour observed (268 on average across both peak hours).

4.1.5. On this basis, it is considered that the peak hour traffic flows appear to be closer to 15% of the daily flow, and that the peak hour volume on Cemetery Road should be adjusted to be 50 vehicles per hour.

4.1.6. The constructed and consented-but-not-constructed residences within the Timsfield and Sentinel Park subdivisions will result in increases in traffic volumes in the immediate area.

Traffic generated by residential developments is known to vary for a variety of reasons, with one such reason being the proximity (or otherwise) to employment and community facilities. Where a dwelling is some distance from these types of facilities, the traffic generation rates tend to be lower than for residences that are closer due to 'trip chaining', that is, the tendency of a resident to carry out multiple visits to different destinations during the same trip away from the dwelling.

4.1.7. In this case, it is understood that employment opportunities within Lake Hawea township are relatively limited, although it is reasonable to anticipate that the proximity to a workforce will attract at least some new businesses into the area. As a result, under current conditions it is likely that there is a high degree of commuting to/from the township.

4.1.8. Typical residential dwellings each generate 8-10 vehicle movements per day, dwellings and the lower rate has been used within this assessment to account for trip-chaining. An allowance has been made for each dwelling to generate 1 vehicle movement in the peak hours.

4.1.9. In the morning peak hour, it is considered that 90% of the traffic generated by the two subdivisions is likely to be exiting the subdivision, with 65% of the generated vehicle movements entering the plan change area in the evening peak hour.

| Period | In | Out | Total |
|---|---|---|---|
| Morning Peak Hour | 50 | 450 | 500 |
| Evening Peak Hour | 325 | 175 | 500 |
| Daily | 2,000 | 2,000 | 4,000 |

**Table 1: Traffic Generation of the Timsfield and Sentinel Park Subdivisions**

4.1.10. Because of their locations, it is considered that the bulk of vehicle movements will be associated with the northern part of Domain Road and Capell Avenue (east of Domain Road). It is also considered that 20% of the trips will be made internally within Lake Hawea township and the remaining 80% will be external.

4.1.11. This then suggests that the traffic flows in the area, adjusted for development that is either constructed or could be constructed as of right, would be:

- Cemetery Road adjacent to site: 50 vehicles per hour (no change);
- Domain Road just south of Capell Avenue: 340 vehicles per hour;
- Capell Avenue (east of Domain Road): 350-405 vehicles per hour; and
- Capell Avenue (west of Domain Road): 455-480 vehicles per hour.

4.1.12. The Austroads Guide to Traffic Management Part 3 ('*Traffic Studies and Analysis*') sets out a process by which the level of service of a road can be calculated. This shows that under these traffic flows, the roads will provide:

- Cemetery Road: Level of Service A;
- Domain Road (south of Capell Avenue): Level of Service B;
- Capell Avenue (east of Domain Road): Level of Service B; and
- Capell Avenue (west of Domain Road): Level of Service C.

4.1.13. All of these levels of service remain within the zone of stable flows. Further assessment shows that Cemetery Road and Capell Avenue (east of Domain Road) are both at the upper threshold for these levels of service, and that even a very small increase in traffic would result in Levels of Service B and C arising respectively.

4.1.14. The intersection that is most critical for the traffic flows expected to arise from these two subdivisions is where Domain Road meets Capell Avenue. This has been modelled using the computer software program Sidra Intersection using the observed turning volumes plus the expected traffic generation for the yet-unconstructed development, and the results are summarised below.

| Road and Movement | | Morning Peak Hour | | | Evening Peak Hour | | |
|---|---|---|---|---|---|---|---|
| | | Avg Delay (secs) | 95 %ile Queue (veh) | Level of Service | Avg Delay (secs) | 95 %ile Queue (veh) | Level of Service |
| Domain Road (south) | L | 6.9 | 2 | A | 5.3 | 0 | A |
| | R | 7.0 | 0 | A | 9.2 | 0 | A |
| Capell Avenue (east) | L | 4.6 | 0 | A | 4.6 | 0 | A |
| Capell Avenue (west) | R | 5.8 | 0 | A | 5.3 | 1 | A |

**Table 2: Peak Hour Levels of Service at the Capell Avenue / Domain Road Intersection with Consented Subdivisions**

4.1.15. It can be seen that the intersection provides an excellent level of service with low queues and delays. This corresponds to the informal observations of queue lengths taken during the surveys.

### *4.2. Non-Car Modes of Travel*

4.2.1. Given that the area around the site is only partially urbanised, it can reasonably be expected that it will be relatively infrequently used by pedestrians and cyclists. However volumes will be greater towards the north and within the township itself. Although no formal surveys have been undertaken, it is understood that the walking/cycling trail which uses Capell Avenue, the unformed legal road and Domain Road is used by caregivers and children travelling to/from Hawea Flat School, and is well-used by these groups.

4.2.2. The provision of off-road routes for walking and cycling means that the level of infrastructure already in place is excellent.

4.2.3. Although there are no scheduled bus services in the area, the population of Lake Hawea township is low and is not sufficient to justify a service.

### *4.3. Road Safety*

4.3.1. The NZTA Crash Analysis System has been used to establish the location and nature of the recorded traffic crashes in the vicinity of the development site. All reported crashes between 2013 and 2017 were identified, plus the partial record for 2018, for the following sections of road:

- Cemetery Road adjacent to site;
- Domain Road from Cemetery Road to Capell Avenue; and
- Capell Avenue from Cemetery Road to the state highway.

4.3.2. This showed that there were no reported crashes in the area for this time period. The search was extended to cover the period 2007 to 2011 and again no crashes were recorded. The records therefore do not indicate any existing road safety deficiencies in the area.

# 5. Proposal

5.1. The proposed development is for a residential subdivision with around 400 sections. The preliminary plans show that there will also be a community hub located on Cemetery Road with residences arranged in rectangular blocks with a north-south alignment. A series of Local Roads is shown which provide connectivity to Cemetery Road to the north.

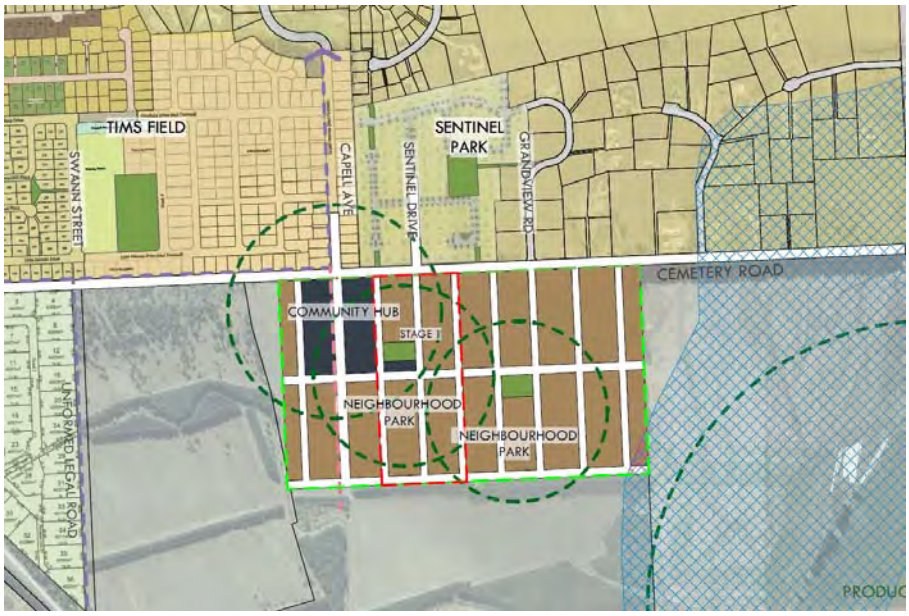


**Figure 4: Indicative Subdivision Layout (Extract from Williams and Company Drawing)**

5.2. At present it is understood that there are no confirmed plans available for the internal layout nor for the roading connections.

# 6. Traffic Generation and Distribution

## *6.1. Traffic Generation*

6.1.1. The same allowances have been made for the traffic generation of the proposed development as for the Timsfield and Sentinel Park subdivisions. This leads to the following expected traffic generation:

| Period | In | Out | Total |
|---|---|---|---|
| Morning Peak Hour | 40 | 360 | 400 |
| Evening Peak Hour | 260 | 140 | 400 |
| Daily | 1,600 | 1,600 | 3,200 |

**Table 3: Traffic Generation of the Proposed Development**

## *6.2. Trip Distribution*

6.2.1. It is considered that the bulk of vehicle movements will be associated with destinations towards the north, that is, in the direction of the facilities offered by the township and also journeys made towards the state highway. By way of comparison, towards the south the land is dominated by rural residential lots and agricultural uses, meaning that few trips will be made in this direction. There are also very limited opportunities to cross the Hawea River meaning trips towards the west are considerably constrained.

6.2.2. It is also considered that 20% of the trips will be made internally within Lake Hawea township and the remaining 80% will be external.

6.2.3. Drivers typically tend to choose the route which is the fastest, but in this case there is no clear preferred route. On this basis it is considered that:

- 50% of vehicles will travel to/from the north using the internal local roads and Capell Avenue (once formed); and
- 50% of vehicles will travel to/from the north using the internal local roads and Cemetery Road / Domain Road.

# 7. Effects on the Transportation Networks

## *7.1. Roading Network Capacity*

7.1.1. Allowing for the traffic generation figures and distribution noted previously, the proposed development would result in the following increases on the adjacent roading network when fully developed:

| Location | Traffic Volumes | | | | | |
|---|---|---|---|---|---|---|
| | Peak Hour | | | Daily | | |
| | Current | Additional | Total | Current | Additional | Total |
| Cemetery Road | 50 | 160 | 210 | 310 | 1,280 | 1,590 |
| Domain Road south of Capell Avenue | 340 | 160 | 500 | 2,500 | 1,280 | 3,780 |
| Capell Avenue east of Domain Road | 350-405 | 160 | 510-565 | 3,200 | 1,280 | 4,480 |
| Capell Avenue west of Domain Road | 455-480 | 320 | 775-800 | 3,300 | 2,560 | 5,860 |

**Table 4: Anticipated Changes in Traffic Volumes**

7.1.2. The Austroads Guide to Traffic Management Part 3 ('*Traffic Studies and Analysis*') has again been used to assess the level of service allowing for the traffic generated by the subdivision. This shows that the roads will provide:

- Cemetery Road: Level of Service B;
- Domain Road (south of Capell Avenue): Level of Service C;
- Capell Avenue (east of Domain Road): Level of Service C; and
- Capell Avenue (west of Domain Road): Level of Service D.

7.1.3. The levels of service change as a result of the proposed development, and are one level lower than under the prevailing volumes. However they all remain within the zone of stable flow. Further, as noted previously, any development which led to even very small increases in traffic volumes on Cemetery Road and Capell Avenue (east of Domain Road) would result in Levels of Service B and C arising respectively, as is the case under the proposal.

7.1.4. The Capell Avenue / Domain Road intersection has been remodelled using the computer software program Sidra Intersection, using the development-related traffic flows, and the results are summarised below.

| Road and Movement | | Morning Peak Hour | | | Evening Peak Hour | | |
|---|---|---|---|---|---|---|---|
| | | Avg Delay (secs) | 95 %ile Queue (veh) | Level of Service | Avg Delay (secs) | 95 %ile Queue (veh) | Level of Service |
| Domain Road (south) | L | 11.7 | 5 | B | 5.7 | 1 | A |
| | R | 8.8 | 0 | A | 14.0 | 0 | B |
| Capell Avenue (east) | L | 4.6 | 0 | A | 4.6 | 0 | A |
| Capell Avenue (west) | R | 6.7 | 1 | A | 5.7 | 3 | A |

**Table 5: Peak Hour Levels of Service at the Capell Avenue / Domain Road Intersection with Development**

7.1.5. It can be seen that queues and delays at the intersection remain low.

7.1.6. It is possible that the existing formation of a number of intersections within the township will need to be upgraded to accommodate the increased traffic flows arising from the various subdivisions. The timing of any such schemes will depend on the staging/timing of development within each subdivision, which can be expected to vary in response to market demands and other factors. Moreover each subdivision will contribute only in part to the need for any intersection improvements. However, the legal road widths available mean that there are no reasons why layouts which will meet current design guides could not be achieved. As such, the potential for future intersection upgrades is not considered to represent a constraint to development.

### *7.2. Non-Car Modes of Travel*

7.2.1. It is likely that the development will lead to increased volumes of walking and cycling in the area, particularly to and from the township centre. However as noted above, the levels of infrastructure in the area for walking and cycling are already excellent.

7.2.2. There is likely to be a desire line between the site and the Capell Avenue extension, and this could be accommodated through providing a formal crossing point on Cemetery Road. For consistency, this could be constructed in the same manner as the crossing point near Swann Street, and there is sufficient space within the road reserve for this to occur.

### *7.3. Road Safety*

7.3.1. The crash history in the vicinity of the site indicates that there are no particular features or factors that would be affected by the proposed development. The flat and straight nature of the roads means that sightlines are excellent, and any upgrades to intersections can be expected to be carried out to meet current standards/guides due to the wide legal road reserves.

# 8. District Plan Matters

8.1. The District Plan sets out a number of transportation-related Site Standards with which any development is expected to comply. An assessment of the proposed development against these has been undertaken, but as the site is presently undeveloped, there are no reasons why (at this stage) full compliance will not be achieved.

8.2. The potential exception to this relates to the separation distance between vehicle crossings and intersections (Site Standard 14.2.4.2vi). As the speed limit of Cemetery Road is 70km/h, a separation of 25m is required between a crossing and an intersection, which is typically difficult to achieve in many cases. However this depends on the pattern of the lots.

8.3. The site cannot be subdivided as of right under the District Plan, and thus if there are any non-compliances which arise through the detailed design process, the effects of these can be assessed when subdivision consent is applied for.

8.4. Similarly, full compliance with the Council's Subdivision Code with regard to the internal roading layout (Site Standard 14.2.4.1vi) is also likely to be achieved. However any deviations from this can be assessed when future consents are sought.

8.5. In the event that any existing roads need to be upgraded to meet the Council's Subdivision Code, there is sufficient width within the legal road reserve to achieve this.

8.6. The presence of an increased number of intersections on Cemetery Road may also mean that a reduction in the speed limit is justified. This is outside the scope of a subdivision (and in fact falls under different legislation to the Resource Management Act), but could be explored with the Council in due course.

# 9. Conclusions

9.1. This high-level report has identified, evaluated and assessed the various transport and access elements of a proposed 400-lot subdivision to the immediate south of Lake Hawea township. Overall it is considered that the traffic generated by the development is likely to be accommodated on the adjacent roading network without capacity or efficiency issues arising that are more than minor, even when allowing for traffic associated with the Timsfield and Sentinel Park subdivisions. Forecast queues and delays at the intersection which is the most likely be experience the greatest increase in traffic flows (Capell Avenue / Domain Road) remain low.

9.2. The crash history in the vicinity of the site does not indicate that there would be any adverse safety effects from the proposal and the sight distances available for vehicles turning to or from the site are appropriate for the prevailing speeds.

9.3. The site layout may potentially have a non-compliance with the District Plan in respect of the separation of vehicle crossings and intersections, but this can be addressed once the layout is finalised and when subdivision consent is sought. There may also be a case for reducing the speed limits, but this outside the scope of a subdivision (and in fact falls under different legislation to the Resource Management Act).

9.4. There may be a requirement to improve existing roads in the area to meet the Council's Subdivision Code as a result of increased traffic flows arising from the proposed development and also the traffic associated with the Timsfield and Sentinel Park subdivisions. However the legal widths are sufficient to enable this to occur. The need for any upgrades depends on a number of factors, notably the timing of the development of the various subdivisions.

9.5. Overall, and subject to the preceding comments, the proposed development can be supported from a traffic and transportation perspective.

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May 2018


traffic engineering | transport planning

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CCL Ref: 14447-150618-williams.docx

15 June 2018

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Tim Williams
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***By e-mail only: tim@williamsandco.nz***

Dear Tim

**Proposed Special Housing Area, Lake Hawea Township: Additional Information**

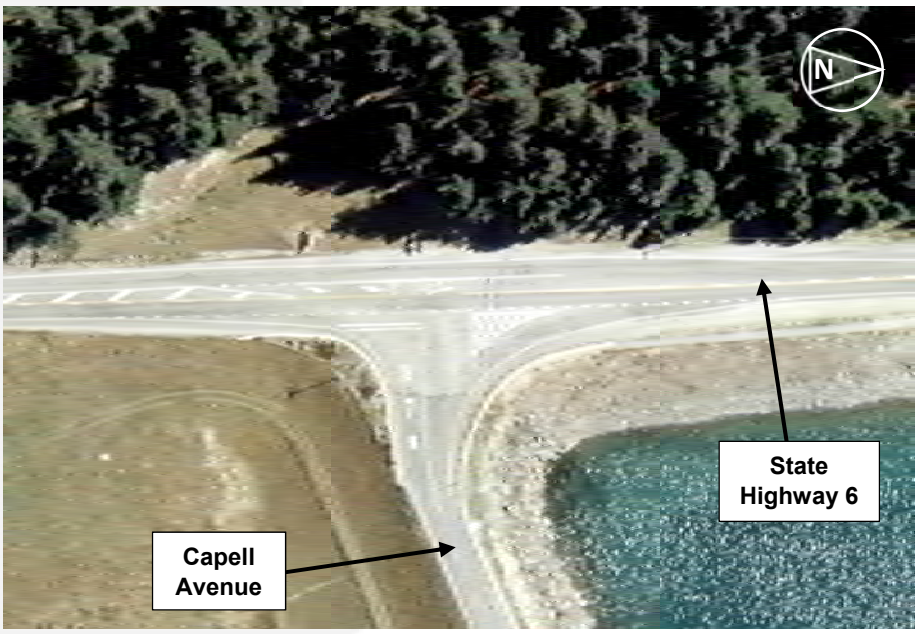
Further to our various emails and conversations, we understand that Queenstown Lakes District Council has requested additional information regarding the operation of the State Highway 6 / Capell Avenue intersection.

This letter sets out the expected change in performance of the intersection if the proposed Special Housing Area (**SHA**) was to proceed. It draws on the earlier Transportation Assessment (dated 23 May 2018).

***Existing Intersection Layout***

The State Highway 6 / Capell Avenue intersection is formed as a high-capacity priority ('give-way') intersection with auxiliary turning lanes for the movements from State Highway 6 both left and right into Capell Avenue. There is a raised island at the end of Capell Avenue to separate eastbound and westbound traffic. The Capell Avenue approach is widened at the intersection to enable two vehicles to queue side-by-side.

Unusually, there is an arrow located within the centre of the intersection to guide drivers turning northwards into the correct traffic lane.




**Photograph 1: State Highway 6 / Capell Avenue Intersection**

**Photograph 2: State Highway 6 / Capell Avenue Intersection Looking North**

The speed limit on State Highway 6 in this location is 100km/h and thus sight distances of 285m are required for turning traffic. Towards the south, the sight distance is limited by the horizontal curve of the highway but a distance in excess of 300m is available. Towards the north, the sight distance is limited by the topography (as can be seen on Photograph 2) but 285m is achieved.

### *Transportation Patterns*

*Existing Volumes*

The New Zealand Transport Agency (**NZTA**) carries out a programme of surveys on the state highway network. There are two traffic count stations close to the intersection noted as being "north of dam" (reference 00600880) and "south of dam" (reference 00600884). In 2017, the Average Annual Daily Traffic north of the dam was 1,113 vehicles, with a volume of 2,956 vehicles observed to the south of the dam. Further assessment of the traffic flows from the NZTA database enables the traffic flows on the highway to be derived (based on the 85$^{th}$ percentile weekday).

We have also recently carried out surveys further to the east of Capell Avenue which enables the volumes on this road to be identified also.

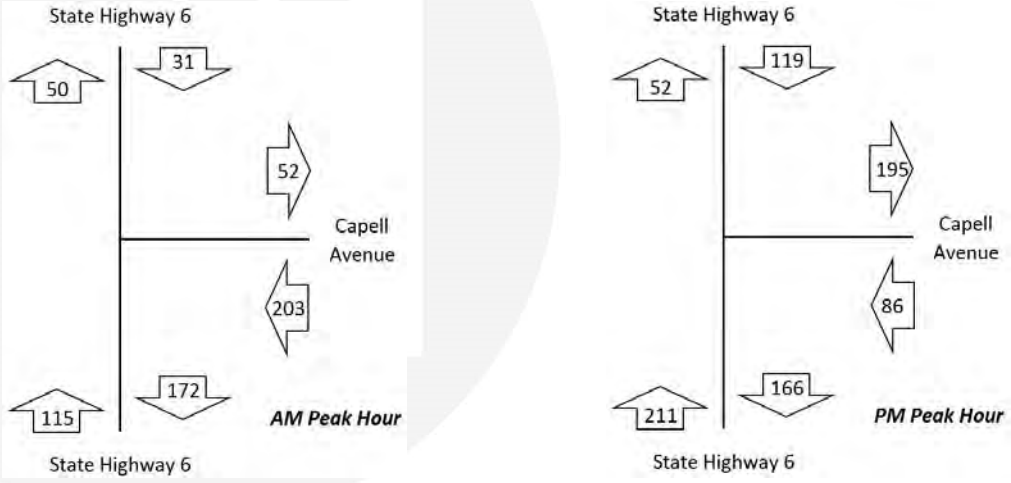



**Figure 1: 2017/18 Observed Weekday Peak Hour Traffic Flows**

Based on these traffic flows, we have synthesized the expected turning volumes. The critical element of this is the proportion of vehicles that turn to the north and south at Capell Avenue. Based on the prevailing volumes, we consider that 80% of the traffic exiting Capell Avenue will turn to the south and the direction of Wanaka with 20% turning north.

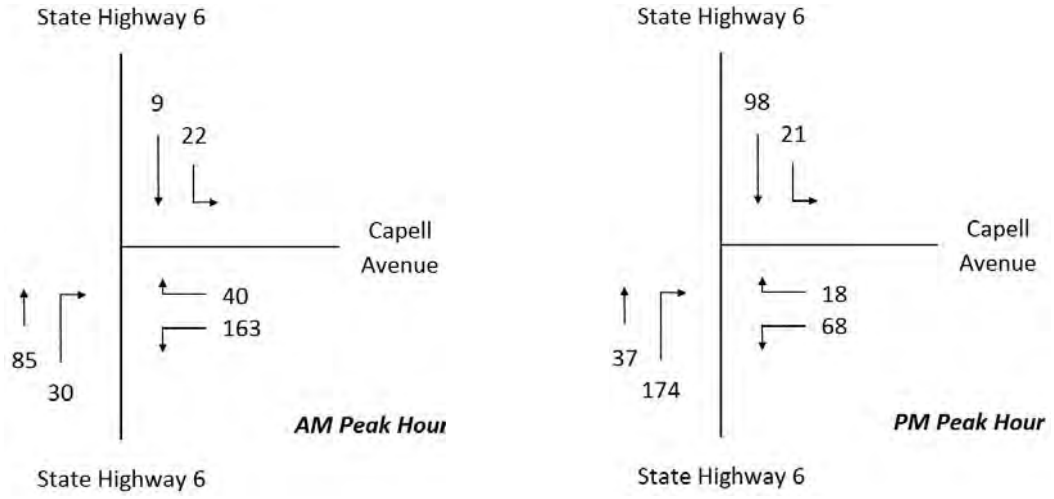



**Figure 2: Synthesized Turning Volumes**

*Future Volumes*

As set out in our previous Transportation Assessment, there are new subdivisions at Timsfield and Sentinel Park which will increase traffic flows in the area further. Allowing for the same traffic generation volumes set out in Section 4 of the Transportation Assessment, peak hour volumes on Capell Avenue could increase as follows:

- In the morning peak hour, 360 vehicles exit Capell Avenue and 40 vehicles enter; and
- In the evening peak hour, 140 vehicles exit Capell Avenue and 260 vehicles enter;

This gives rise to the following expected volumes:

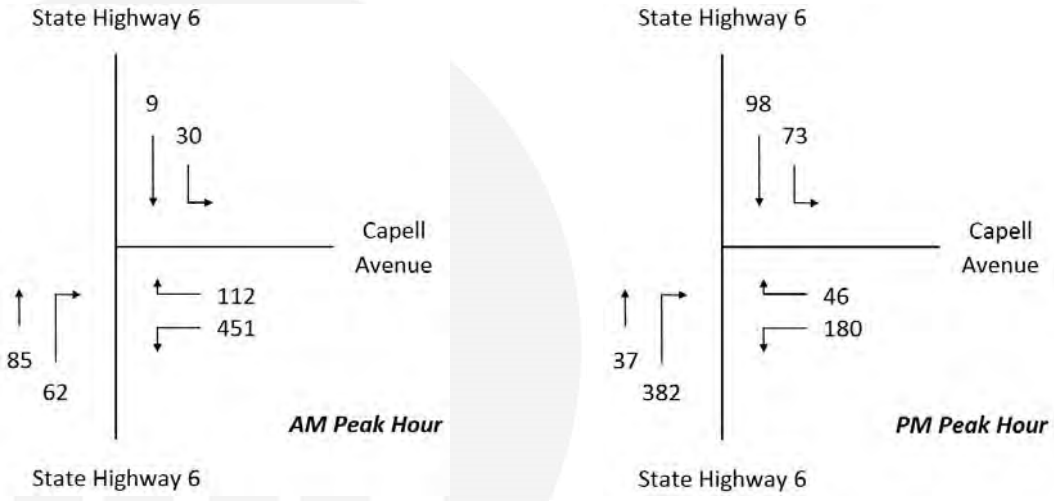



**Figure 3: Synthesized Turning Volumes Plus Consented/Permitted Development**

*Intersection Queues and Delays*

We have used the computer software program Sidra Intersection to model the performance of the intersection under these traffic loadings and the results are summarised below.

| Road and Movement | | Morning Peak Hour | | | Evening Peak Hour | | |
|---|---|---|---|---|---|---|---|
| | | Avg Delay (secs) | 95 %ile Queue (veh) | Level of Service | Avg Delay (secs) | 95 %ile Queue (veh) | Level of Service |
| State Highway 6 (south) | R | 7.7 | 0 | A | 8.1 | 1 | A |
| Capell Avenue | L | 4.7 | 2 | A | 5.2 | 1 | A |
| | R | 5.6 | 1 | A | 8.7 | 0 | A |
| State Highway 6 (north) | L | 8.7 | 0 | A | 11.0 | 0 | B |

**Table 1: Peak Hour Levels of Service at the State Highway 6 / Capell Avenue Intersection with Consented/Permitted Development (No SHA)**

It can be seen that under these traffic volumes, the intersection operates with low queues and delays and an excellent level of service in both the peak hours.

*Road Safety*

We have used the NZTA Crash Analysis System to identify the reported crashes within 50m of the intersection, for the most recent full five years (2013 to 2017) plus the partial record for 2018. This shows that over this time period, no crashes have been recorded. We therefore examined the previous five years (2008 to 2012) and again found that no crashes had been recorded.

***Proposed Development***

As set out in the Transportation Assessment, the proposed SHA will result in an additional 400 residential sections being constructed. Based on the traffic generation rates used in the Transportation Assessment (which in turn are the same as those assumed for the Timsfield and Sentinel Park subdivisions) this will result in the following traffic volumes at the State Highway 6 / Capell Avenue intersection:

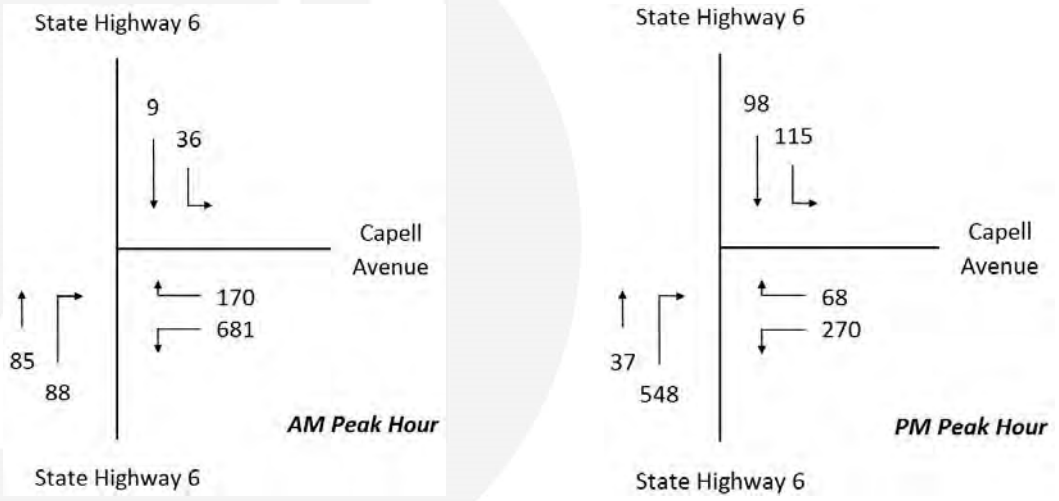



**Figure 4: Synthesized Turning Volumes Plus Consented/Permitted Development Plus SHA**

We have again used the computer software program Sidra Intersection to model the performance of the intersection under these traffic loadings and the results are summarised below.

| Road and Movement | | Morning Peak Hour | | | Evening Peak Hour | | |
|---|---|---|---|---|---|---|---|
| | | Avg Delay (secs) | 95 %ile Queue (veh) | Level of Service | Avg Delay (secs) | 95 %ile Queue (veh) | Level of Service |
| State Highway 6 (south) | R | 7.7 | 0 | A | 8.1 | 2 | A |
| Capell Avenue | L | 4.7 | 4 | A | 5.2 | 1 | A |
| | R | 5.9 | 1 | A | 11.6 | 1 | B |
| State Highway 6 (north) | L | 8.8 | 0 | A | 13.2 | 1 | B |

**Table 2: Peak Hour Levels of Service at the State Highway 6 / Capell Avenue Intersection with Consented/Permitted Development plus SHA**

It can be seen that the traffic arising from the SHA has only a small effect on queues and delays at the intersection. Levels of service remain very good, and the greatest increase in delay per vehicle is only around two seconds.

With regard to road safety, the intersection has an excellent record and we therefore do not anticipate that any adverse effects will arise from the additional traffic volumes generated by the SHA.

***Conclusions***

On the basis of our assessment, we consider that the proposed SHA will have a negligible effect on the safety and efficiency of the State Highway 6 / Capell Avenue intersection.

Please do not hesitate to contact me if you require anything further or would like clarification of any matters.

Kind regards
**Carriageway Consulting Limited**

Andy Carr
**Traffic Engineer | Director**

Mobile 027 561 1967
Email andy.carr@carriageway.co.nz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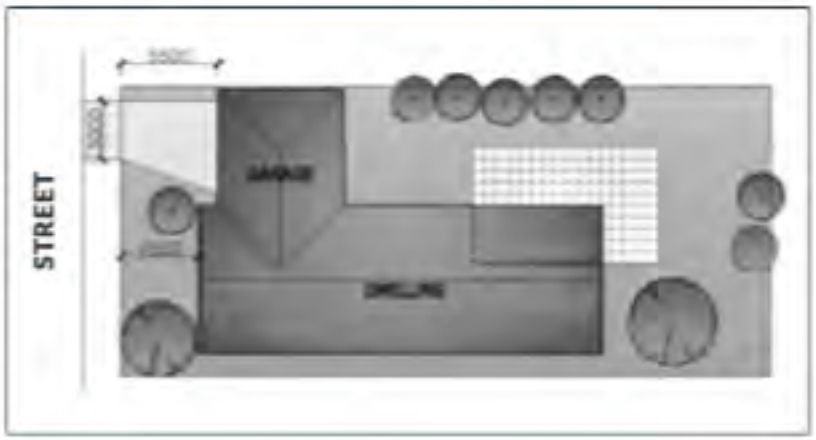
## HAWEA – DESIGN GUIDELINES

**Garage Setback**: Minimum 5.5m from the Road and 0.5m back from the frontline of the house.

**House Setback**: Houses are to be setback a minimum 4.5m and maximum of 5.5m from the road boundary.




**Source:**Hanley Farms design guidelines

**Internal Boundary Setbacks**: Minimum setback of 2m, garages may be constructed up to the boundary.

**Recession Planes**:

- Northern boundary: 2.5m and 55 degrees.
- Western and eastern boundaries: 2.5m and 45 degrees.
- Southern boundary: 2.5m and 35 degrees.

Gable end roofs may penetrate the building recession plane by no more than one third of the gable height

**Site Coverage**:

- Lots greater than 550m2 = 40% site coverage
- Lots less than 550m2 = 60% site coverage

**Street Articulation**:

- All buildings must have a veranda, portico, porch or other similar entrance feature surrounding the front entrance.
- The main entry door (front door) or access to the house must be visible from the street.
- Street boundary/front yard fencing shall be no higher than 1.5m. Hedging as an alternative to solid fences is encouraged.

**Driveways**:

- Must be constructed within 3 months of the occupation of the dwelling or issue of Code of Compliance, which ever is sooner.

- Constructed of either concrete (exposed aggregate is encouraged), Asphalt or pavers.

**Height Limit**: 8m

**Roof Form**: Simple roof forms are preferable, Gables or Mon-pitch forms.

**Planting**:

A recommended planting list has been created (**Appendix [1]**) to assist lot owners and in general a predominance of natives is desirable. Lot owners should focus planting within the front yard to contribute to a cohesive and attract streetscape.

**Lighting**:

All external lighting shall be down lit to preserve the night sky.

# Recommended Species

The following species are a recommended guide. Care should be taken when selecting plants for the development. The skills of a professional horticulturalist, landscaper or landscape architect can prove invaluable when designing a landscape. The successful growth of plants depends on many factors including the quality of the stock, planting preparation and technique at installation and importantly ongoing maintenance.

Preference is given to planting indigenous species of local provenance. Native and indigenous plants not only enhance visual consistency across the landscape, they also express local landscape character, provide better habitat for local fauna and are often more suited to an areas climate and geology. The focus on native and local species does not preclude exotic species but the use of such plants must take into account the relationship to existing stands of remnant vegetation, some exotic species are listed for greater horticultural variety and amenity. Local nurseries are a source of advice on species selection and plant availability in this area.

## INDIGENOUS SHRUBS HEDGES AND CLIMBERS

| Botanical Name | Common Name | Maintained Height (m) | H-Hedging S-Shrub C-Climber |
|---|---|---|---|
| **Aristotelia fruticosa** | *Mountain Wineberry* | 1 | H |
| **Aristotelia x fruserrata** | *Hybrid Wineberry* | 2 | H |
| **Carmichaelia kirkii** | *climbing broom, Kirk's broom* | 1.5 | C |
| **Carmichaelia petriei** | *Desert Broom* | 1 | S |
| **Carpodetus serratus** | *Marbleleaf, Putaputaweta* | 3 | H |
| **Clematus marata** | *Shrubland Clematis* | 1 | C |
| **Coprosma cheesemanii** | *Cheeseman's coprosma* | 1 | S |
| **Coprosma crassifolia** | *Thick-leaved Coprosma* | 1 | H |
| **Coprosma dumosa** | | 1 | S |
| **Coprosma intertexta** | *Intertwined Coprosma* | 1.5 | H |
| **Coprosma linariifolia** | *mikimiki, yellow wood* | 3 | H |
| **Coprosma propinqua var propinqua** | *mingimingi* | 2 | H |
| **Coprosma rigida** | | 1.5 | S |
| **Coprosma virescens** | *Orange Coprosma* | 2 | H |
| **Corokia cotoneaster** | *Korokio, Wire netting bush* | 1 | H |
| **Fuscapora cliffortoides** | *Tawhai, Mountain Beech* | 2 | H |
| **Griselinia littoralis** | *Broadleaf* | 2 | H |
| **Halocarpus bidwillii** | *Bog Pine* | 1 | S |
| **Helichrysum intermedium** | | 0.5 | S |
| **Helichrysum lanceolatum** | | 1 | H |
| **Kunzea robusta** | *Manuoea, Titira, Atitira, Kanuka* | 2 | H |
| **Melicope simplex** | *Poataniwha* | 1 | H |
| **Melicytus alpinus** | *Porcupine shrub* | 0.5 | S |
| **Melicytus flexuosus** | *Leafless Mahoe* | 2 | H |
| **Muehlenbeckia complexa** | *Pohuehue* | 1 | C |
| **Muehlenbeckia ephedroides** | *Leafless pohuehue,* | 1 | C |
| **Myrsine divaricata** | *Weeping matipo, weeping mapou* | 2 | S |
| **Olearia cymbifolia** | | 1 | S |
| **Olearia fimbriata** | | 2 | H |
| **Olearia lineata** | | 2 | H |
| **Olearia odorata** | *Scented tree daisy* | 2 | H |
| **Olearia. fragrantissima** | *Fragrant tree daisy* | 2 | H |
| **Ozothamnus vauvilliersii** | *Mountain tauhinu* | 1 | H |
| **Pittosporum tenuifolium** | *Kohuhu* | 2 | H |
| **Podocarpus laetus** | *Hall's tōtara* | 2 | H |

| | | | |
|---|---|---|---|
| **Teucridium parvifolium** | | 1 | S |
| **Veronica cupressoides** | *Cypress hebe* | 1 | H |
| **Veronica salicifolia** | *koromiko* | 1.5 | H |
| **Veronica subalpina** | *Hebe* | 1 | S |

## EXOTIC SHRUBS HEDGES AND CLIMBERS

| Botanical Name | Common Name | Maintained Height (m) | H-Hedging S-Shrub C-Climber |
|---|---|---|---|
| **Carpinus betulus** | Common Hornbeam | 1 | H |
| **Corylus avellena** | Common or European Hazel | 1.5 | H |
| **Crataegus phaenopyrum** | Washington Hawthorn | 1 | H |
| **Escallonia x exoniensis** | Escallonia | 1 | H |
| **Lavendula spp** | Lavender | 1 | H |
| **Prunus lusitanica** | Portuguese laurel | 1 | H |
| **Quercus ilex** | Holm Oak | 2 | H |
| **Ribes spp.** | Currants | 1.5 | H |
| **Rosmarinus officinalis** | Rosemary | 1 | H |
| **Teucrium fruticans** | Silver Germander | 1 | H |
| **Viburnum tinus** | Laurustinus | 1.5 | H |

## INDIGENOUS GRASSES SEDGES AND FLAXES

| Botanical Name | | Height (m) | |
|---|---|---|---|
| **Anthosachne falcis** | Sickle-leaved wheatgrass | 0.5 | |
| **Austroderia richardii** | South Island Toetoe | 1.5 | |
| **Carex albula** | White sedge | 0.3 | |
| **Carex buchananii** | Buchanans sedge | 0.5 | |
| **Carex comans** | Hair sedge | 0.5 | |
| **Carex flagellifera** | Glen Murray tussock, Trip Me Up | 0.3 | |
| **Carex uncinata (uncinia rubra)** | Hook sedge, kamu, matau-a-maui | 0.3 | |
| **Chionochloa conspicua subsp. conspicua** | Hunangamoho, broad-leaved bush tussock | 1.5 | |
| **Chionochloa rigida subsp. rigida** | Narrow-leaved snow tussock | 1 | |
| **Dichelachne crinita** | Long-hair plume grass | 0.5 | |
| **Festuca matthewsii subsp. matthewsii** | Matthews Fescue, blue Fescue | 0.5 | |
| **Festuca novae-zelandiae** | Fescue tussock, hard tussock | 0.5 | |
| **Phormium cookianum subsp. cookianum** | Mountain flax, whararíki | 1 | |
| **Phormium tenax** | flax, harakeke, korari | 1.5 | |
| **Poa cita** | Silver tussock | 0.5 | |
| **Poa colensoi** | Blue tussock | 0.5 | |
| **Rytidosperma setifolium** | Bristle tussock, mountain danthonia | 0.5 | |

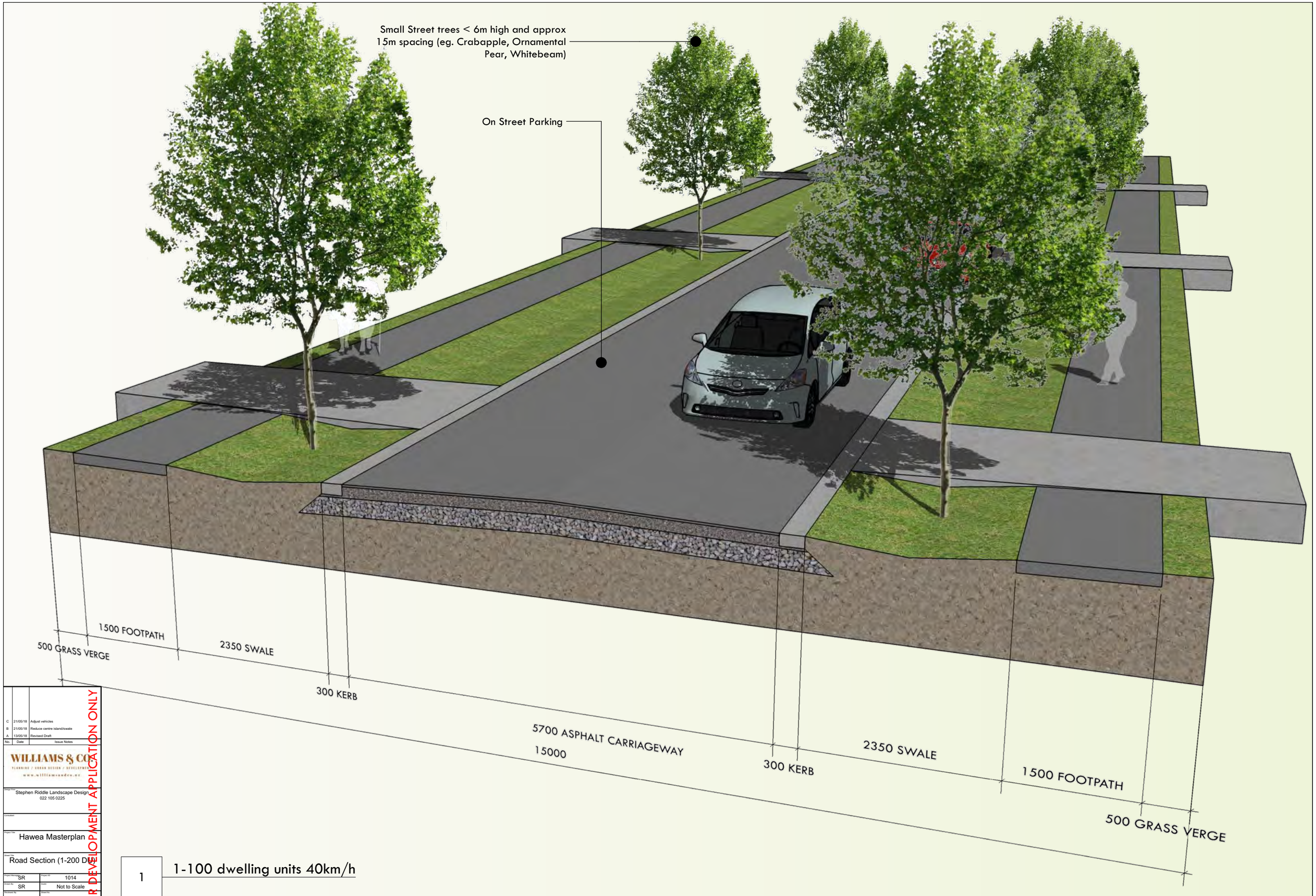
# INDIGENOUS STRUCTURE TREES

| Botanical Name | Common Name | Maintained Height (m) | Growth Rate f= Fast m=Moderate s=Slow |
|---|---|---|---|
| **Sophora microphylla** | Kowhai | 8 | S |
| **Pseudopanax crassifolius** | Lancewood | 5 | M |
| **Pseudopanax ferox** | Fierce Lancewood | 5 | M |
| **Carpodetus serratus** | Marbleleaf | 5 | M |
| **Hoheria lyallii** | Mountain Lacebark | 5 | F |
| **Plagianthus regius subsp. regius** | Manatu/Ribbonwood Lowland Ribbonwood | 10 | F |
| **Olearia lineata** | Needle Leaved Tree Daisy | 8 | F |
| **Cordyline australis** | Cabbage Tree | 6 | F |
| **Olearia hectorii** | Hectors Tree Daisy | 8 | F |
| **Kunzea robusta** | Kanuka | 8 | F |
| **Podocarpus laetus** | Hall's Totara, Thin-Barked Totara, Totara-Kiri-Kotukutuku | 5 | S |
| **Olearia fimbriata** | | 8 | M |
| **Fuscapora cliffortoides** | Mountain Beech | 12 | F |

# EXOTIC STRUCTURE TREES

| Botanical Name | Common Name | | Growth Rate f= Fast m=Moderate s=Slow |
|---|---|---|---|
| **Acer campestre** | Field Maple | 8 | F |
| **Acer negundo** | Box Elder | 8 | F |
| **Acer griseum** | Paperbark Maple | 8 | F |
| **Acer palmatum** | Japanese Maple | 6 | F |
| **Nyssa sylvatica** | Tupelo | 6 | M |
| **Viburnum plicatum** | Japanese snowball | 6 | M |
| **Malus (old varieties)** | Crab Apple | 8 | M |
| **Pyrus calleryana** | Ornamental Pear | 10 | F |
| **Sorbus aria 'Lutescens'** | White Beam | 7 | M |
| **Sorbus aucuparia** | Mountain Ash, Rowan | 8 | F |
| **Prunus spp** | Plum, Peach, Apricot | 6 | M |

| | | | |
|---|---|---|---|
| **Malus domestica** | Apple | 6 | M |
| **Sorbus hupehensis** | Hubei rowan | 6 | F |
| **Amalanchier canadensis** | Shadbush Serviceberry, | 5 | M |
| **Cydonia oblonga** | Quince | 5 | M |
| **Cornus kousa** | Kousa dogwood | 5 | M |
| **Cornus 'Eddies White Wonder'** | Dogwood | 4 | M |
| **Morus alba** | Mulberry | 6 | F |
| | | | |




| No. | Date | Issue Notes |
|---|---|---|
| C | 21/05/18 | Adjust vehicles |
| B | 21/05/18 | Reduce centre island/swale |
| A | 13/05/18 | Revised Draft |

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Design Firm: Stephen Riddle Landscape Design
022 105 0225

Consultant:

Project Title: Hawea Masterplan

Sheet Title: Road Section (1-200 DS)

| | |
|---|---|
| Project Manager: SR | Project ID: 1014 |
| Drawn By: SR | Scale: Not to Scale |
| Reviewed By: | Sheet No: L01 of 2 |
| Date: 7/12/2017 | |
| 1014-1G.vwx | |

FOR DEVELOPMENT APPLICATION ONLY

1 1-100 dwelling units 40km/h

Small Street trees < 6m high and approx 15m spacing (eg. Crabapple, Ornamental Pear, Whitebeam)

Full kerb with drop crossings

500 GRASSED BERM
1000 GRASSED BERM
1500 KERB AND CHANNEL
450 KERB AND CHANNEL
3100 ASPHALT CARRIAGEWAY
1600 GRASSED MEDIAN
150 KERB
150 KERB
3100 ASPHALT CARRIAGEWAY
1000 GRASSED BERM
450 KERB AND CHANNEL
1500 ASPHALT FOOTPATH
500 GRASSED BERM
15000

2 Entry Road 50km/h

FOR DEVELOPMENT APPLICATION ONLY

| No. | Date | Issue Notes |
|---|---|---|
| C | 21/05/18 | Adjust vehicles |
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Design Firm: Stephen Riddle Landscape Design
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Project Title: Hawea Masterplan

Sheet Title: Road Section (Entry Road)

| | |
|---|---|
| Project Manager: SR | Project ID: 1014 |
| Drawn By: SR | Scale: Not to Scale |
| Reviewed By: | Sheet No.: L02 |
| Date: 7/12/2017 | of 2 |
| 1014-1G.vwx | |

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† Pay for a 3.0kW system and receive the inverter for free.

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* To a maximum value of $10,000 incl GST

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1C Traders Lane, McNulty Rd, Cromwell | www.infiniteenergy.co.nz | solar@infiniteenergy.co.nz | 0800 287 3786

# Recommended Species

The following species are a recommended guide. Care should be taken when selecting plants for the development. The skills of a professional horticulturalist, landscaper or landscape architect can prove invaluable when designing a landscape. The successful growth of plants depends on many factors including the quality of the stock, planting preparation and technique at installation and importantly ongoing maintenance.

Preference is given to planting indigenous species of local provenance. Native and indigenous plants not only enhance visual consistency across the landscape, they also express local landscape character, provide better habitat for local fauna and are often more suited to an areas climate and geology. The focus on native and local species does not preclude exotic species but the use of such plants must take into account the relationship to existing stands of remnant vegetation, some exotic species are listed for greater horticultural variety and amenity. Local nurseries are a source of advice on species selection and plant availability in this area.

## INDIGENOUS SHRUBS HEDGES AND CLIMBERS

| Botanical Name | Common Name | Maintained Height (m) | H-Hedging S-Shrub C-Climber |
|---|---|---|---|
| **Aristotelia fruticosa** | *Mountain Wineberry* | 1 | H |
| **Aristotelia x fruserrata** | *Hybrid Wineberry* | 2 | H |
| **Carmichaelia kirkii** | *climbing broom, Kirk's broom* | 1.5 | C |
| **Carmichaelia petriei** | *Desert Broom* | 1 | S |
| **Carpodetus serratus** | *Marbleleaf, Putaputaweta* | 3 | H |
| **Clematus marata** | *Shrubland Clematis* | 1 | C |
| **Coprosma cheesemanii** | *Cheeseman's coprosma* | 1 | S |
| **Coprosma crassifolia** | *Thick-leaved Coprosma* | 1 | H |
| **Coprosma dumosa** | | 1 | S |
| **Coprosma intertexta** | *Intertwined Coprosma* | 1.5 | H |
| **Coprosma linariifolia** | *mikimiki, yellow wood* | 3 | H |
| **Coprosma propinqua var propinqua** | *mingimingi* | 2 | H |
| **Coprosma rigida** | | 1.5 | S |
| **Coprosma virescens** | *Orange Coprosma* | 2 | H |
| **Corokia cotoneaster** | *Korokio, Wire netting bush* | 1 | H |
| **Fuscapora cliffortoides** | *Tawhai, Mountain Beech* | 2 | H |
| **Griselinia littoralis** | *Broadleaf* | 2 | H |
| **Halocarpus bidwillii** | *Bog Pine* | 1 | S |
| **Helichrysum intermedium** | | 0.5 | S |
| **Helichrysum lanceolatum** | | 1 | H |
| **Kunzea robusta** | *Manuoea, Titira, Atitira, Kanuka* | 2 | H |
| **Melicope simplex** | *Poataniwha* | 1 | H |
| **Melicytus alpinus** | *Porcupine shrub* | 0.5 | S |
| **Melicytus flexuosus** | *Leafless Mahoe* | 2 | H |
| **Muehlenbeckia complexa** | *Pohuehue* | 1 | C |
| **Muehlenbeckia ephedroides** | *Leafless pohuehue,* | 1 | C |
| **Myrsine divaricata** | *Weeping matipo, weeping mapou* | 2 | S |
| **Olearia cymbifolia** | | 1 | S |
| **Olearia fimbriata** | | 2 | H |
| **Olearia lineata** | | 2 | H |
| **Olearia odorata** | *Scented tree daisy* | 2 | H |
| **Olearia. fragrantissima** | *Fragrant tree daisy* | 2 | H |
| **Ozothamnus vauvilliersii** | *Mountain tauhinu* | 1 | H |
| **Pittosporum tenuifolium** | *Kohuhu* | 2 | H |
| **Podocarpus laetus** | *Hall's tōtara* | 2 | H |

| | | | |
|---|---|---|---|
| **Teucridium parvifolium** | | 1 | S |
| **Veronica cupressoides** | *Cypress hebe* | 1 | H |
| **Veronica salicifolia** | *koromiko* | 1.5 | H |
| **Veronica subalpina** | *Hebe* | 1 | S |

## EXOTIC SHRUBS HEDGES AND CLIMBERS

| Botanical Name | Common Name | Maintained Height (m) | H-Hedging S-Shrub C-Climber |
|---|---|---|---|
| **Carpinus betulus** | Common Hornbeam | 1 | H |
| **Corylus avellena** | Common or European Hazel | 1.5 | H |
| **Crataegus phaenopyrum** | Washington Hawthorn | 1 | H |
| **Escallonia x exoniensis** | Escallonia | 1 | H |
| **Lavendula spp** | Lavender | 1 | H |
| **Prunus lusitanica** | Portuguese laurel | 1 | H |
| **Quercus ilex** | Holm Oak | 2 | H |
| **Ribes spp.** | Currants | 1.5 | H |
| **Rosmarinus officinalis** | Rosemary | 1 | H |
| **Teucrium fruticans** | Silver Germander | 1 | H |
| **Viburnum tinus** | Laurustinus | 1.5 | H |

## INDIGENOUS GRASSES SEDGES AND FLAXES

| Botanical Name | | Height (m) | |
|---|---|---|---|
| **Anthosachne falcis** | Sickle-leaved wheatgrass | 0.5 | |
| **Austroderia richardii** | South Island Toetoe | 1.5 | |
| **Carex albula** | White sedge | 0.3 | |
| **Carex buchananii** | Buchanans sedge | 0.5 | |
| **Carex comans** | Hair sedge | 0.5 | |
| **Carex flagellifera** | Glen Murray tussock, Trip Me Up | 0.3 | |
| **Carex uncinata (uncinia rubra)** | Hook sedge, kamu, matau-a-maui | 0.3 | |
| **Chionochloa conspicua subsp. conspicua** | Hunangamoho, broad-leaved bush tussock | 1.5 | |
| **Chionochloa rigida subsp. rigida** | Narrow-leaved snow tussock | 1 | |
| **Dichelachne crinita** | Long-hair plume grass | 0.5 | |
| **Festuca matthewsii subsp. matthewsii** | Matthews Fescue, blue Fescue | 0.5 | |
| **Festuca novae-zelandiae** | Fescue tussock, hard tussock | 0.5 | |
| **Phormium cookianum subsp. cookianum** | Mountain flax, whararíki | 1 | |
| **Phormium tenax** | flax, harakeke, korari | 1.5 | |
| **Poa cita** | Silver tussock | 0.5 | |
| **Poa colensoi** | Blue tussock | 0.5 | |
| **Rytidosperma setifolium** | Bristle tussock, mountain danthonia | 0.5 | |

# INDIGENOUS STRUCTURE TREES

| Botanical Name | Common Name | Maintained Height (m) | Growth Rate f= Fast m=Moderate s=Slow |
|---|---|---|---|
| **Sophora microphylla** | Kowhai | 8 | S |
| **Pseudopanax crassifolius** | Lancewood | 5 | M |
| **Pseudopanax ferox** | Fierce Lancewood | 5 | M |
| **Carpodetus serratus** | Marbleleaf | 5 | M |
| **Hoheria lyallii** | Mountain Lacebark | 5 | F |
| **Plagianthus regius subsp. regius** | Manatu/Ribbonwood Lowland Ribbonwood | 10 | F |
| **Olearia lineata** | Needle Leaved Tree Daisy | 8 | F |
| **Cordyline australis** | Cabbage Tree | 6 | F |
| **Olearia hectorii** | Hectors Tree Daisy | 8 | F |
| **Kunzea robusta** | Kanuka | 8 | F |
| **Podocarpus laetus** | Hall's Totara, Thin-Barked Totara, Totara-Kiri-Kotukutuku | 5 | S |
| **Olearia fimbriata** | | 8 | M |
| **Fuscapora cliffortoides** | Mountain Beech | 12 | F |

# EXOTIC STRUCTURE TREES

| Botanical Name | Common Name | | Growth Rate f= Fast m=Moderate s=Slow |
|---|---|---|---|
| **Acer campestre** | Field Maple | 8 | F |
| **Acer negundo** | Box Elder | 8 | F |
| **Acer griseum** | Paperbark Maple | 8 | F |
| **Acer palmatum** | Japanese Maple | 6 | F |
| **Nyssa sylvatica** | Tupelo | 6 | M |
| **Viburnum plicatum** | Japanese snowball | 6 | M |
| **Malus (old varieties)** | Crab Apple | 8 | M |
| **Pyrus calleryana** | Ornamental Pear | 10 | F |
| **Sorbus aria 'Lutescens'** | White Beam | 7 | M |
| **Sorbus aucuparia** | Mountain Ash, Rowan | 8 | F |
| **Prunus spp** | Plum, Peach, Apricot | 6 | M |

| | | | |
|---|---|---|---|
| **Malus domestica** | Apple | 6 | M |
| **Sorbus hupehensis** | Hubei rowan | 6 | F |
| **Amalanchier canadensis** | Shadbush Serviceberry, | 5 | M |
| **Cydonia oblonga** | Quince | 5 | M |
| **Cornus kousa** | Kousa dogwood | 5 | M |
| **Cornus 'Eddies White Wonder'** | Dogwood | 4 | M |
| **Morus alba** | Mulberry | 6 | F |
| | | | |

## QUALITY AND DESIGN OUTCOMES – HIGH QUALITY RESIDENTIAL DEVELOPMENT CRITERIA

The following analysis provides an assessment of the proposal against the criteria set out in Attachment C of the QLDC Lead Policy – 26 October 2017

### 1. Integrating into the Neighbourhood

*a. Connections - Does the scheme integrate into its surroundings by reinforcing existing vehicular, pedestrian and cycling connections and creating new ones; while also respecting existing buildings and land uses along the boundaries of the development site?*

The Masterplan and the location of the SHA have carefully considered the opportunities to connect into the existing street network. The position of the SHA area at the north eastern end of Cemetery Road has been specifically chosen in recognition of the established street pattern that adjoins Cemetery Road in this location and the opportunity it creates for development south of Cemetery Road to connect into the network, an attribute not present further west along Cemetery Road. Accordingly the Masterplan has focussed the street network on Capell Ave, Sentinel Drive and Grandview Road.

Capell Ave, although not formed at this point provides pedestrian and cycle access back into the existing township and lakefront and therefore this connection into the site is considered a key 'main street' in the future hierarchy and will be the focus of the proposed community hub/commercial area in recognition of this connection and the ability for Capell Ave to reinforce the integration of the development with the existing township.

Sentinel Drive is proposed be the location of the first stage of development in recognition of the existing residential character that fronts Cemetery Road in this location, which provides an existing character to draw upon in the development and treatment of Cemetery Road on its southern side.

The grid network of streets proposed in the master plan will also ensure a high level of connectivity within the development whilst north-south connections onto Cemetery Road will reduce the need for individual lots to directly access Cemetery Road and therefore replicate and reinforce the established treatment in this area of Cemetery Road.

*b. Facilities and services - Does the development provide (or is it close to) community facilities, such as shops, schools, parks, workplaces, play areas?*

As noted above and discussed in the body of the EOI a Community Hub/Commercial Area is proposed within the Master Plan and is located on an extension of Capell Ave. This location has been identified given the opportunity for Capell Ave to connect directly back into the existing township and lakefront therefore providing a strong rationale for the proposed 'hub' to service the wider existing community as well as the proposed development.

This ability of the development to create a 'hub' is considered an opportunity given the existing township zoning provides for no commercial activities and there are limited existing amenities within the township. Hawea as a township currently relies on Wanaka for a majority of its amenities and therefore this development provides the opportunity to reduce the frequency people need to travel to and from Wanaka for everyday amenities and

services. The development will not only provide a hub to support the proposed development but also the existing township.

The masterplan has also been developed to ensure a playground and commercial activity can be co-located and can be delivered within Stage 1 of the development. This location is also well placed to contribute to the amenity of the wider community.

Consultation has taken place with the Ministry of Education and it is understood at this stage they would look to focus on Hawea Flat School. However, it is evident that given Hawea does not have a school that in the future, on a forward planning basis it would be logical for a school to be established in Hawea. In this respect Universal Developments has specially sought not to develop its land to the west of Capell Ave in recognition a School site further west of the proposed development may be a logical location, but also noting a school site may be provided in Timsfield across Cemetery Road. Therefore although a school site has not been specifically identified in this proposal (given the Ministry decision-making on this point appears to be well into the future), the Masterplan and grid network is set up to facilitate a school site to the west of Capell Ave in the future if the Ministry and Community considered it the most appropriate location.

*c. Public transport - Does the scheme have good access to public transport?*

Hawea is not currently serviced by public transport, however the connected street network and focus of the hub on Capell Ave and its connection back into the existing township means the development is well placed to support any future public transport network. Furthermore the 'hub' will also assist to contribute to the self-sufficiency of Hawea as a whole and therefore reduce the necessity for people to travel to and from Wanaka.

In addition, the proposed development will contribute to the critical mass of people within the community and therefore potential viability of a future public transport network.

*d. Meeting Local Housing Requirements - Does the development have a mix of housing types and tenures that suit local requirements, including the need for lower cost housing options?*

As has been discussed in the EOI Hawea is a natural fit for contributing to the shortage of affordable housing as its average house prices, although still high, are comparatively low when compared to other areas of the Queenstown Lakes District. Universal Developments has also worked closely with building companies to ensure three house options can be provided at less than $550,000 in a fixed price guarantee product. It is apparent pricing at this level and with this level of certainty is rarely if at all available in the current marketplace. This demonstrates the commitment of Universal Developments to ensure an affordable product can be delivered to the market.

The master plan and street network has been designed to ensure flexibility at the detailed design stage to enable provision of a variety of lot sizes and therefore housing product. It is noted that a 'Low Density' model is proposed which would enable a range of lot sizes whilst being sympathetic to the existing character of the township, which has typically only provided larger lots sizes by virtue of the Township Zoning.

Universal Developments has also confirmed its commitment to providing a 10% contribution to the Housing Trust and has also guaranteed to provide product to the trust in Stage One to

front load a portion of its contribution. Again this illustrates Universal's commitment to the housing challenges facing the district and ability for this development to contribute ta mix of housing types and tenures.

**2. Creating a Place**

*a. Articulation and Design - Does the scheme provide for a good degree of visual interest and variation, as opposed to blandness and homogeneity?*

A hierarchy of streets is proposed with a 'Main Street' focussing on Capell Ave and the hub whilst access opposite Sentinel Drive will draw on this established character to provide a high quality entrance to the development. The grid street network and east west streets will also assist to form viewshafts that will then draw focus to the mountain ranges that enclose the wider Hawea basin, drawing on this sense of place in the character of the development.

*b. Working with the site and its context - Does the scheme take advantage of existing topography, landscape features, habitats, existing buildings, site orientation and microclimates?*

The site is flat and therefore a connected grid street pattern is considered a logical and appropriate design response. As noted above the east-west streets will form view shafts to the mountains that enclose the Hawea basin.

The predominance of north-south streets will ensure an east-west orientated block arrangement providing lots with good access to sunlight deeper into their rear yards. Given this space is private it therefore avoids a predominance of sunny northern aspects of lots on the street, which is a design outcome where privacy issues can arise.

The site is covered in exotic pines at present but as part of the development a planting species list has been prepared to over time promote biodiversity and increased bird life.

*c. Creating well defined streets and places - Are buildings designed and positioned with landscaping to define and enhance streets and public spaces*?

As noted above the street and block arrangement will encourage outdoor living in the rear yard of lots, which will have good access to sunlight and therefore reduce the potential for conflict in front yards caused by privacy issues. Guidelines are also proposed to ensure dwellings are designed to positively contribute to the street and avoid garages dominated the streetscape.

The master plan has also provided for street widths that can accommodate footpaths on both sides of the street, and for street trees to positively contribute to the quality of the public realm and streetscape.

*d. Easy to find your way around - Is the scheme designed to make it easy to find your way around?*

The legibility of the street network is grounded on the connection of key streets back to existing streets in the township. Connections to Capell Ave, Sentinel Drive and Grandview will all contribute to the overall wayfinding within the development. The 'mainstreet' focus of the extension of Capell Ave and 'Hub' will also assist residents and visitors to have a

reference point when arriving and leaving the development. The gird network of street will also provide a simple street pattern that is easily understood.

Additional way finding techniques have also been adopted such as locating the parks and playgrounds near intersections to assist with recognition and legibility.

**3. Street & Home**

*a. Carparking and Access Is sufficient – but not excessive – parking and access provided in an integrated manner, in a way that the street and internal site environment is not dominated by it?*

Cross sections have been provided that illustrate the future street design and integration of carriageway, on-street parking, street trees and footpaths. The use of indented parking bays will also assist to visually narrow the street.

*b. Public and private spaces - Are public and private spaces clearly defined and designed to be attractive, functional, well managed and safe?*

The orientation of lots as discussed above has been developed to reduce the potential for conflict between public and private space with a predominance of east-west orientated lots. The block depth is also sufficient to ensure lots have room behind the dwelling for private open space therefore avoiding it having to be located in the front yard.

Guidelines are also proposed to manage the street frontage of lots to ensure future dwellings positively engage with the street and public realm. The guidelines will also promote passive surveillance of the street through limiting garaging in the streetscape and allowing visual connection between the dwelling and street.

*c. Good Quality homes - Are the homes well designed, comfortable, well insulated and practical, optimise solar gain, and provide good storage?*

The arrangement and orientation of lots is considered the key basis for then influencing the layout and orientation of dwellings and as noted above the lots have been specifically designed to promote logical and well-orientated dwellings. Plans and renders have been provided for the three house types Universal Developments has worked with building companies to ensure they can be delivered to the market at or below $550,000 price mark.

In addition Universal Developments has negotiated an arrangement with Infinite Energy NZ Ltd to provide a free upgrade from their base system to the next size up and no extra cost for anyone who purchases as system in for their house in the development.

Universal Developments is also exploring the possibility of an embedded solar community network, which would provide a centralised battery system for individual home owners with solar panels to feed back into.

A degree of flexibility is promoted in the subdivision within the parameters of the guidelines to ensure good sound design principles are adopted without being overly prescriptive and therefore impacting the ability of the development to provide an affordable house product.

**4. Environmental Responsibility**

*a. Reducing environmental footprint - Does the scheme demonstrate methods for minimising its environmental footprint? And in particular does the development achieve at least four of the following:*
*• Buildings are healthy and comfortable, where it is easy to keep the warmth in and the moisture out*

The site has very good access to sun throughout the year and this along with the layout of the subdivision will ensure all lots have good access to sun to ensure buildings are dry and easier to keep warm with opportunities for solar gain.

*• Minimise energy consumption through energy efficient devices, reducing appliance numbers and onsite energy generation*

As discussed above Universal Developments has negotiated a deal with Infinite Energy NZ ltd to provide a free solar upgrade for any person who purchases a solar package for their house within the development therefore assisting to incentives the uptake of solar systems.

*• Water efficiency of taps, showers and toilets. Reusing, collecting and treating water onsite.*
*• Systems for reducing waste and increasing recycling*
*• Site and building aspect to maximise passive solar gain*

Street and block orientation will assist to ensure good solar gain to all lots. The lot shape will also assist to provide for logical storage spaces and room for recycling and waste recycling bins on site.

*• Select sustainable building materials Does the scheme provide compact housing in locations near centres or on / near public transport routes and pedestrian and cycle routes, and access to food growing areas?*

Fundamental to the Masterplan and focus of the development has been developing a masterplan that can positively contribute to Hawea becoming a more self-sufficient township. The Community Hub/Commercial area is evidence of this given the limited amenities the township currently has and the reliance existing residents have on travelling to and from Wanaka for day-to-day needs.

The proposed playground and reserve to be built in stage one will also contribute to the social cohesion and overall amenity of the development and wider community. The connected street network and link back to Capell Ave will ensure an efficient network that can contribute positively to any future public transport system. Capell Ave extending into the development will also provide a strong pedestrian and cycle route from the development back through the existing township to the lakefront.

30 May 2018
Universal Investments Hawea LP

Dear Tim,

# RE: Proposed Hawea Universal Developments Special Housing Area – Ecological Review

## 1.0 Introduction

On the 25th May 2018, e3Scientific Ltd (e3s) walked over the proposed 34-hectare SHA site just outside of Hawea, accessed from Cemetery Road (see Figure 1). The site was dominated by exotic pasture grasses and clover, and mature exotic conifer trees and hedgerows.


**Figure 1: Site Location and distribution of indigenous plants observed on site.**

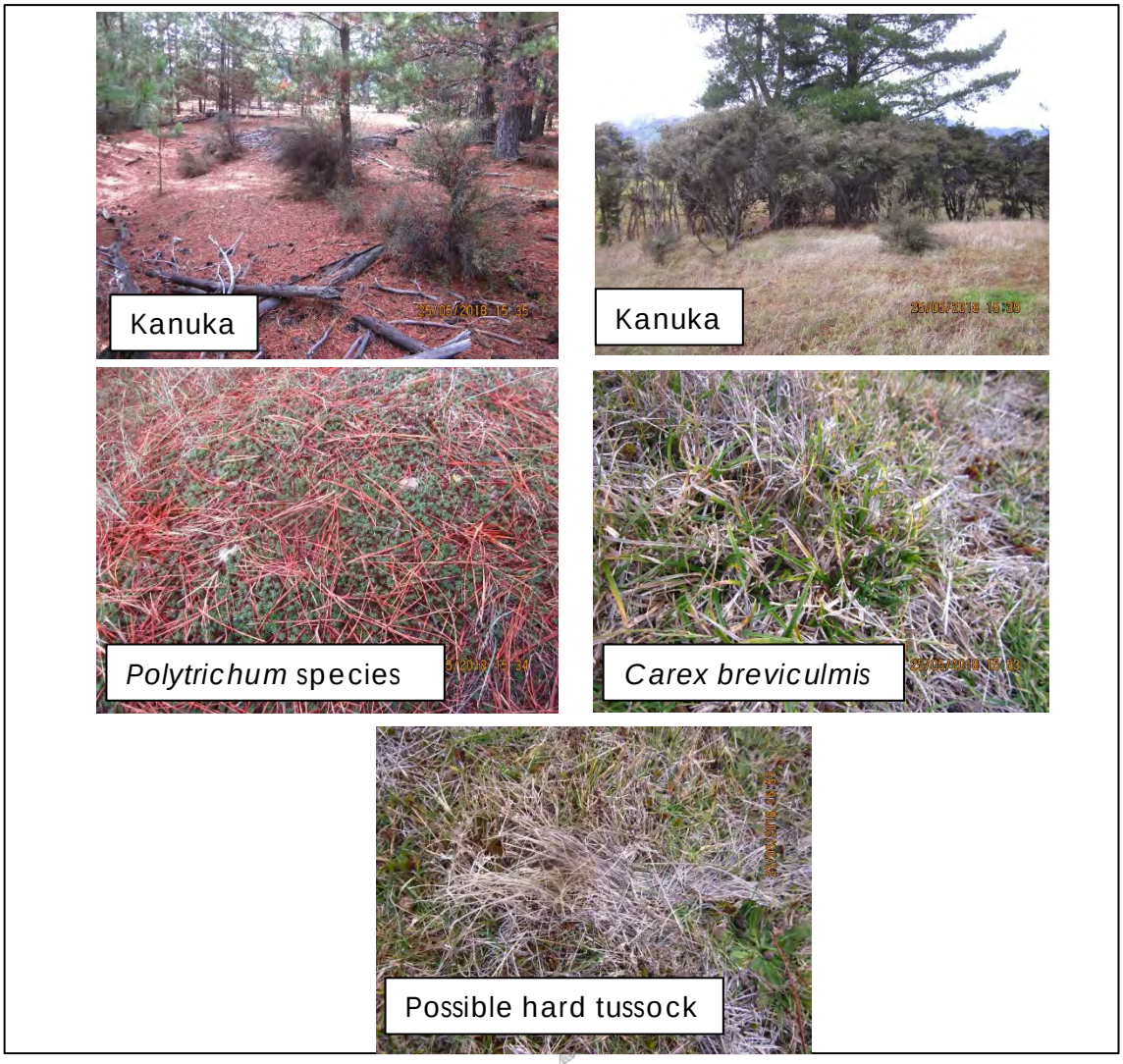


**Plate 1: Photographs of the native plants observed on site.**

Given the small number of native plants remaining, and their isolated and scattered nature, they do not constitute 'indigenous vegetation' under the Operative and Proposed District Plan definitions. The native plants on site are too isolated and scattered to constitute a 'community' or native 'vegetation', nor are they 'important in terms of coverage, structure and/or species diversity'.

If you have any further questions, please contact Glenn Davis on 03 409 8664

Yours sincerely,

Glenn Davis
Principal Environment Scientist

**To:** Universal Developments Hāwea Ltd

**Date:** 5 June 2018

**Re:** Geotechnical Feasibility for Proposed Special Housing Area
Cemetery Road
HĀWEA

This letter represents a preliminary geotechnical feasibility assessment to the proposed Universal Development Hāwea Ltd development of Special Housing Area. Mt Iron Geodrill have a good understanding of the likely site conditions having completed a number of other investigations in the area. No onsite investigation has been undertaken at this point. On site investigation would be required to confirm and further define the site conditions for the development.

The site is considered to consist of glacial outwash gravels across the site. These outwash gravels, are as the name implies, predominantly gravels and cobbles, with sand and boulders. It may be possible that some silty lenses are present within the material. The amount of fine material is variable, but generally low to moderate due to the reworking and washing of these deposits.

It is not expected that any conditions should be encountered which would require complex engineering design and or construction works.

It is understood that onsite storm water disposal is to be undertaken for the site. It is considered that the gravels should be suitable for onsite disposal.

**Gavin Tippett**
**Engineering Geologist**
B.Sc (Geol), P.G.Dip.Eng.Geol, M.Sc (Eng.Geol), MEngNZ

ENGINEERING NEW ZEALAND OFFICIAL MEMBER

**Schedule D**

**Amended Plans**

LAKE HAWEA

TIMS FIELD

SENTINEL PARK

SWANN STREET

CAPELL AVE

SENTINEL DRIVE

GRANDVIEW RD

DOMAIN ROAD

CEMETERY ROAD

TOWNSHIP SERVICE CENTRE

STAGE 1

NEIGHBOURHOOD PARK

NEIGHBOURHOOD PARK

UNFORMED LEGAL ROAD

HAWEA RIVER

DOMAIN ROAD

PRODUCTIVE RURAL LAND

PRODUCTIVE RURAL LAND

LEGEND

- SHA SITE
- NEIGHBOURHOOD PARKS
- EXISTING RURAL RESIDENTIAL
- LOW DENSITY RESIDENTIAL
- MIXED USE/ COMMERCIAL
- EXISTING URBAN AREA
- FURTHER INVESTIGATION
- HAZARD (FLOODING DUE TO DAMBURST)
- STAGE 1 (APPROX 96 HOUSES)
- EXISTING TRAILS
- NEW TRAIL CONNECTION

| No. | Date | Issue Notes |
|---|---|---|
| AC | 01/10/18 | Adjust SHA Bdy |
| AB | 01/10/18 | Survey Street layout |
| AA | 26/09/18 | Add commercial |
| Z | 26/09/18 | Adjust Arrows |
| Y | 25/09/18 | Extend Arrows Context |
| X | 24/09/18 | Add Subdvn Moraine Pl |

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www.williamsandco.nz

Stephen Riddle Landscape Design
022 105 0225

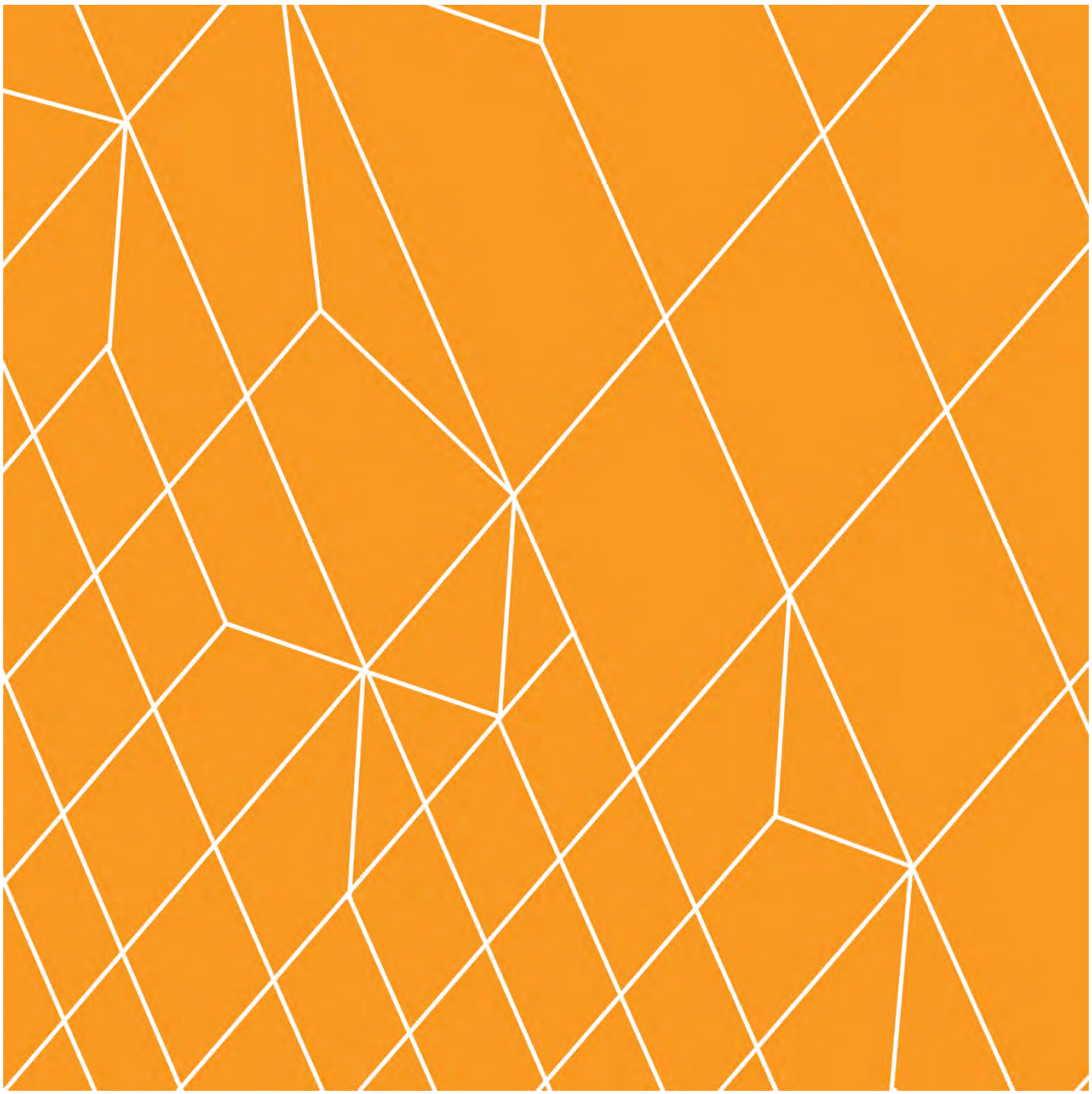
Hawea Masterplan

Indicative Masterplan

| | |
|---|---|
| SR | 1014 |
| SR | 1:10,000@A3 |
| 7/12/2017 | L01 of 6 |
| 1014-1E.vwx | |

## Schedule E

## Three Waters Reports



# Lake Hawea Special Housing Area Infrastructure Peer Review

Lake Hawea Township

Wanaka

Report

Holmes Consulting

Revision 1
23 May 2018
136999.00

Holmes Consulting

Level 1, 39 Market Place
Viaduct Harbour
PO Box 90745
Auckland 1142
holmesgroup.com

**Report**
Lake Hawea Special Housing Area
Infrastructure Peer Review

Prepared For:
Queenstown Lakes District Council

Date: 1 June 2018
Project No: 136999.00
Revision No: 2

Prepared By:

Jordan Gibson
DESIGN ENGINEER
Holmes Consulting LP

Reviewed By:

Andrea Jarvis
PROJECT DIRECTOR
Holmes Consulting LP

## Report Issue Register

| DATE | REV. NO. | REASON FOR ISSUE |
|---|---|---|
| 22/05/2018 | 1 | Draft for QLDC Comment |
| 1/06/2018 | 2 | Final |
| | | |
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| | | |
| | | |

Holmes

CONTENTS



Holmes

# 1 INTRODUCTION

Holmes Consulting LP (HC) has been engaged by Queenstown Lakes District Council (QLDC) to complete a peer review of the infrastructure assessments carried out by Southern Land Ltd for the Lake Hawea Special Housing Area (SHA).

The Lake Hawea SHA is proposed for a 35 hectare site in the Lake Hawea Township, between Cemetery Road and Domain Road. The site is proposed to be developed for both residential and commercial uses. Water supply and wastewater short term servicing options have been proposed by the developer so that reticulation of the SHA is not dependant on the QLDC planned infrastructure upgrades.

# 2 SCOPE OF WORK

The scope of work for this project included the following:

1. Review the existing infrastructure report from Southern Land and provide comment on the assessments undertaken.
2. Review the supporting water supply modelling report carried out by Watershed Engineering Ltd and provide comment on the assessment undertaken.
3. Undertake a high level assessment for wastewater demand based on the QLDC Code of Practice.
4. Undertake a high level assessment for stormwater requirements based on the New Zealand Building Code.
5. Provide comments on feasibility and practicality of upgrades proposed by the developer.

# 3 LIMITATIONS

Findings presented as a part of this project are for the sole use of Queenstown Lakes District Council in its evaluation of the subject properties. The findings are not intended for use by other parties, and may not contain sufficient information for the purposes of other parties or other uses.

Our assessments are based on a desk top study only. Condition assessments of existing infrastructure have not been undertaken and it has been assumed that any deficiencies due to damaged or aged infrastructure will be addressed within existing renewals budgets.

Our professional services are performed using a degree of care and skill normally exercised, under similar circumstances, by reputable consultants practicing in this field at this time. No other warranty, expressed or implied, is made as to the professional advice presented in this report.

# 4 WASTEWATER

## 4.1 Wastewater Demands

The wastewater demands generated by the proposed development have not been assessed in the Southern Land Infrastructure Report. Holmes has therefore undertaken a high level assessment of the wastewater demands from the proposed SHA.

As noted in the Southern Land report, the Lake Hawea Township discharges wastewater to the Hawea Wastewater Treatment Plant on Domain Road and QLDC accepts this treatment plant is currently operating above its capacity. QLDC has allocated funding in its CAPEX programme for infrastructure upgrades connecting Lake Hawea Township to the Project Pure Wastewater Treatment Plant (WWTP) by way of a new pump station and 12 km long pipeline.

Any new wastewater infrastructure required for the Lake Hawea SHA is proposed to be appropriately sized to convey full future demands. Therefore, QLDC should allow for residential wastewater demands, in the order of the design flows we have calculated below, in any assessment of required network upgrades.

| Development Stage | Design Population | Average Dry Weather Flow (L/person/day) | Peak Dry Weather Diurnal Flow (L/s) | Peak Wet Weather Flow (L/s) |
|---|---|---|---|---|
| Full Development of 400 Lots | 1200 | 250 | 8.68 | 17.36 |

Table 4-1: Wastewater Demands from the Full Lake Hawea SHA Development (HC Assessment)

Design population is based on 3 people per dwelling, similar to the water supply modelling. A dry weather diurnal peaking factor of 2.5 and a dilution/infiltration factor of 2 for wet weather was applied, as obtained from QLDC's Land Development and Subdivision Code of Practice (CoP) Section 5.3.5.1 (a). This high level assessment does not include wastewater demand for commercial developments. However, as the dilution/infiltration factor of 2 was applied for the whole site, we would argue that the peak flow of 17.36 L/s is conservative enough to account for any commercial demands. This can be refined further once more information regarding the layout of the 'community hub' part of the development is available.

## 4.2 Wastewater Upgrades

Southern Land has discussed three interim options with QLDC for servicing the Lake Hawea SHA should the planned infrastructure upgrades not be completed before development of the SHA begins. They are summarised below:

1. Temporary storage chambers: chambers situated at the downstream end of the Lake Hawea SHA gravity system would act to attenuate peak flows. The chambers would collect day-time flows and pump wastewater to the Hawea treatment plant during low flow periods (ie. night time).
2. Truck transfer: chambers situated at the downstream end of the Lake Hawea SHA gravity system would collect wastewater to be transferred to the Project Pure treatment plant by truck.
3. On site treatment: temporary onsite treatment for the Lake Hawea SHA could be established. This treatment plant could be decommissioned once the pipeline to Project Pure is established.

Whichever short term option is selected will be required to service any initial dwellings in the Lake Hawea SHA before the new pipeline to the Project Pure WWTP is commissioned. We have kept our high level assessment of the options limited to an initial stage of 50 dwellings as it is unlikely that more than 50 dwellings would be constructed by the time the planned infrastructure upgrades are complete. The peak dry weather diurnal flow is shown in the table below.

| Development Stage | Design Population | Average Dry Weather Flow (L/person/day) | Peak Dry Weather Diurnal Flow (L/s) |
|---|---|---|---|
| Initial Stage of 50 Lots | 150 | 250 | 1.09 |

Table 4-2: Wastewater Demand for an Initial Development Stage of 50 Lots (HC Assessment)

Design population is based on 3 people per dwelling, similar to the water supply modelling. A dry weather diurnal peaking factor of 2.5 was applied, as obtained from QLDC's Land Development and Subdivision Code of Practice (CoP) Section 5.3.5.1 (a). A dilution/infiltration factor for wet weather was not applied as it is assumed any interim infrastructure installed is unlikely to be greatly affected by infiltration over its

short design life (the construction of the Project Pure pipeline is due to begin in 2 years' time. Upon completion, any short term option will be decommissioned).

### Interim Option 1

Based on a peak dry weather diurnal flow of 1.09 L/s and initial staging of 50 lots, the following storage would be required (24 hour emergency storage is required to allow for any pump failure):

| Development Stage | Peak Dry Weather Flow (L/s) | Primary Storage ($m^3$) | Emergency Storage ($m^3$) | Total ($m^3$) |
|---|---|---|---|---|
| Initial Stage of 50 Lots | 1.09 | 95 | 95 | 190 |

Table 4-3: Required Design Volume for Short Term Option 1 (HC Assessment)

However, pumping additional wastewater to the Hawea WWTP which is already above capacity is not recommended. To determine if this option is viable, modelling of the current Hawea WWTP would be beneficial to confirm any negative impacts (flooding, loss of treatment efficiencies etc), which might occur with the additional wastewater demand introduced by the Lake Hawea SHA.

### Interim Option 2

Based on the same conditions as Option 1, the storage requirements are as noted in the table below.

| Development Stage | Peak Dry Weather Flow (L/s) | Primary Storage ($m^3$) | Tanker Volume ($m^3$) | Daily Tanker Movements[1] (approx.) |
|---|---|---|---|---|
| Initial Stage of 50 Lots | 1.09 | 95 | 43[2] | 3 |

Table 4-4: Design Volume for Short Term Option 2 (HC Assessment)

It would require 3 daily tanker movements to the Project Pure WWTP if the full 50 lots assumed in the initial stage were occupied. Tanker movements would be less frequent if fewer dwellings are occupied. The tanker movements could be scheduled to occur during off-peak times to avoid any congestion on the roads between Lake Hawea Township and Project Pure WWTP.

### Interim Option 3

It is likely a proprietary onsite wastewater treatment and disposal system would be required, based on the volumes calculated above. This cost would likely be more than Options 1 or 2 and would be borne entirely

[1] This is considering tanker movements to the Project Pure WWTP only.

[2] Based on a standard large tanker truck volume capacity

by the developer and may impact the future use of any land that was used for a treated wastewater disposal field.

### Preferred Option

All the above options require costs borne entirely by the developer. Subject to understanding the practicalities of Option 1 (to confirm any negative impacts), Option 2 presents the lowest cost, with more flexibility in the infrastructure required upfront of any dwellings being occupied. For example, the volume of storage required can easily be increased in stages as more lots require reticulation. There is also flexibility in the number of tanker movements required, all dependant on the volume of wastewater collected and the volume of tanker available. Option 1 may be feasible, but further discussion with QLDC is required to confirm negative impacts on the operation of the plant can be adequately mitigated.

It is noted that to allow the planned connection to the Project Pure WWTP, upgrades to the Project Pure WWTP itself are required. It is possible that if the developer volunteers to share in these reticulation upgrades, it may offset any cost associated with expediting the planned pump station and 12 km pipe connection scheduled to begin in 2 years' time. This would be favourable to the developer as it may remove the requirement for any short term reticulation infrastructure.

## 5 WATER SUPPLY

### 5.1 Water Supply Demands

Watershed Engineering Ltd have assessed the water supply demand generated by the proposed development, based on initial stages of 50 to 200 lots, up to a full development of 400 lots.

The design populations used for each stage of the modelling are based on 3 people per dwelling, with an average water demand of 700 litres/person/day. The average and peak daily demands are as summarised below:

| Development Stage | Design Population | Average Demand (L/s) | Peak Daily Demand (L/s) |
|---|---|---|---|
| Initial Stage of 50 Lots | 150 | 1.22 | 2.43 |
| Initial Stage of 100 Lots | 300 | 2.43 | 4.86 |
| Initial Stage of 200 Lots | 600 | 4.86 | 9.72 |
| Full Development of 400 Lots | 1200 | 9.72 | 19.44 |

Table 5-1: Average and Peak Daily Water Supply Demands for Lake Hawea SHA (Watershed Assessment)

An average day to peak day factor of 2 (PF of 2 for populations under 2,000) has been applied, giving a peak day load of 1679.62 $m^3$/day for the full development scenario.

The water demands calculated by Watershed have considered only residential development and have not made allowance for commercial water demands that could arise in the 'community hub'. While the demands calculated considering only residential lots are appropriate for the site, further modelling may be required to confirm any impact of a mixed use development, particularly with regard to fire-fighting water supplies. Even if the commercial buildings are sprinklered, the combined demand for the sprinkler system

and hydrant flow requirements would likely exceed the level of service usually provided by QLDC for residential development (FW2 as defined in SNZ PAS4509:2008).

### 5.2 Water Supply Upgrades

The Watershed modelling is based on two scenarios:

1. Initial development scenario; 50 to 200 lots in the Lake Hawea SHA
2. Future demand scenario (2058 growth figures for Hawea) with full-development scenario; 400 lots in the Lake Hawea SHA

Both of these scenarios require infrastructure upgrades. In order to adequately supply the initial development, approximately 1.8 km of 150 mm dia. pipe is required (through the undeveloped Capell Avenue to existing infrastructure in the west end of Cemetery Road). This is a planned upgrade in QLDC's CAPEX programme (budgeted $306,638).

For the future scenario, upgrades include two large diameter trunk mains (350 mm dia. from Scott's Beach Bore Field through to Capell Avenue and a 250 mm dia. main through Cemetery Road, adjacent to Timsfield). The 150 mm dia. water mains mentioned previously also form part of the supply network for the future demand scenario.

Neither of the proposed upgrades noted above are as a direct result of the Lake Hawea SHA. As such, it is expected that the Lake Hawea SHA developer would contribute to these upgrade costs through standard developer contributions plus any cost associated with expediting these upgrades. It is noted however, email correspondence from Stuart Pile of QLDC shows that any new housing developments of significant size would likely result in pump upgrades to the existing Hawea Bore Pump Station and Treatment Plant. Therefore, this may result in specific developer costs.

## 6 STORMWATER DEMANDS

The Southern Land infrastructure report has not carried out any assessment of stormwater runoff generated by the SHA. The infrastructure report states that it is not proposed to extend any existing schemes to service the site. Instead it is proposed to attenuate post-development peak stormwater flows to pre-development levels through use of Low Impact Design (LID) systems in line with QLDC's engineering standards. The catchment of the subject site is approximately 35 hectares.

In order to gauge the expected attenuation flows for any development, Holmes Consulting has carried out the following high level assessment.

The site is currently in pasture, with an associated stormwater run-off coefficient of 0.3. Although the final mix of development is unknown, it is estimated that a run-off coefficient of 0.65 (as defined in the New Zealand Building Code clause E1 for "Industrial, commercial, shopping areas and town house developments") is appropriately conservative.

A return interval of 20 years has been chosen and a duration of 60 minutes has been adopted, as per QLDC CoP Section 4.3.5. From NIWA's HIRDS database, this translates to a rainfall intensity of 16.1 mm/hour for the pre-development condition and 18.6 mm/hr for the post-development condition, with a 2 degree temperature increase to allow for climate change.

Using the Rational Method as per NZBC:E1, run-off rates for the pre-development and post-development situations are as follows:

$$Q = CIA/360$$

Q (pre-development) = 0.3*16.1*35/360 = 0.47 $m^3/s$

Q (post-development) = 0.65*18.6*35/360 = 1.175 $m^3/s$

This is likely to be a conservative estimate, assuming development of the entire site.

Southern Land has consulted with Otago Regional Council (ORC), who identified two significant issues in relation to stormwater management:

1. The need to recharge local aquifers with stormwater
2. The treatment of stormwater to avoid contamination of groundwater.

We agree that the LID approach to stormwater design proposed is likely to help achieve both these issues. Test pits and soakage tests at an adjacent site (Sentinel Park), show that stormwater disposal via onsite soakage is a viable option. Treatment of stormwater to the standards required by ORC will be required prior to discharge to ground. Any cost associated with stormwater infrastructure will be borne entirely by the developer.

## 7 ADDITIONAL UTILITIES

Review of correspondence between Southern land and both Chorus and Aurora show the Lake Hawea SHA can be readily serviced with both power supply and telecommunications infrastructure.

## 8 CONCLUSIONS

In general, adequate infrastructure can be made available for this proposed SHA. We concur with the recommendations given by Southern Land and Watershed, however we note the potential to enter into an agreement with the developer to expedite the planned wastewater and water supply upgrades. It may suit the developer to explore with QLDC contributing the cost associated with short term reticulation options directly to the infrastructure upgrades, should that allow the upgrades to be completed earlier, therefore removing the need for any short term reticulation.

We further note that both the water supply upgrades in Lake Hawea Township and the Project Pure WWTP upgrades mentioned in correspondence with QLDC may require direct cost contributions from the developer. However, a better understanding of wider catchments benefitting from the water supply and wastewater upgrades is required before any costs could be directly attributed to the Hawea (Universal Developments) SHA.

**Schedule F**

**Hawea SHA Purchaser Vetting Process**

**Schedule F**
**UNIVERSAL DEVELOPMENTS HAWEA LTD**
**HAWEA SHA PURCHASER VETTING PROCESS**

UNIVERSAL DEVELOPMENTS HAWEA LIMITED ("UDH") shall during the course of its development of the Universal Developments Land maintain a categorisation list of potential buyers.

The purpose of maintaining this categorisation list is that UDH will provide preference for the construction of homes for first home-buyer permanent residents.

Parties wishing to have their names placed on the categorisation list shall provide details such as:

- Purchaser's name.
- Purchaser's contact details.
- Purpose of purchase eg occupation by self or family member as primary place of residence.
- Details of steps taken by the purchaser regarding building finance eg details of Kiwisaver status, first home grant status, details of mortgage pre-approval, details of cash resources available.
- Details of steps taken to date and anticipated timeframes in relation to building eg building company selected, house design selected, option list completed, and tentative start date and completion date if determined.

Whenever UDH is making a new release it shall give;

(i) first choice priority to first home-buyer owner-occupiers that it considers have made reasonable preparations to enable building to commence within twelve months of title; and

(ii) second preference to other intended owner occupiers that it considers have made reasonable preparations to enable builidng to commence within twelve months of title.

(iii) contracts shall only be offered to other potential purchasers after preference purchasers have been given reasonable opportunity to take up contracts.

## Execution

Signed by **Lane Andrew Clayton Hocking** as the director of Universal Developments Hawea Limited:

Signature of witness

CRISANTA DASALLA
Full name of witness

DOMESTIC HELPER
Occupation

7 HOLLYHOCK LANE, WANAKA
Address

Executed for and on behalf of **Queenstown Lakes District Council** pursuant to a delegated authority:

Tony Avery
General Manager, Planning and Development

Signature of witness

REBECCA NASH-JONES
Full name of witness

EXECUTIVE ASSISTANT
Occupation

31 MARSTON ROAD, LOWER SHOTOVER
Address

Executed by
as a trustee for and on behalf of
**Queenstown Lakes Community Housing Trust**:

Signature of witness

Julie Scott
Full name of witness

Executive Officer
Occupation

Queenstown
Address

Executed by
as a trustee for and on behalf of
**Queenstown Lakes Community Housing Trust**:

Signature of witness

Claire Sarah Irving
Full name of witness

Litigation PA
Occupation

Queenstown.
Address