CURTIS ROAD SUBDIVISION, CARDRONA

Archaeological Assessment
May 2020

Origin
CONSULTANTS

Archaeological Assessment for Curtis Road Subdivision, Cardrona

Archaeological Sites: F41/562, F41/565, F41/589, F41/590, F41/842

Commissioned by Roberts Family Trust

Prepared by Benjamin Teele

Origin Consultants Ltd

May 2020

Copy of Cardrona Survey District map from 1882 showing water races and surveyed sections (cropped)(Archives NZ).

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Introduction

This archaeological assessment has been prepared for Roberts Family Trust for a proposed subdivision adjacent to Curtis Road, Cardrona (Figure 1, Figure 2). This will include the construction of 16 new house lots with associated access roads and provision of services. Due to historic 19th century activity on and near the site, an archaeological assessment is a requirement due to likelihood that proposed work will impact archaeological material. The area assessed is outlined in Figure 2. The site is located within the Queenstown Lakes District.

The legal description of the assessment site has been identified as:

- LOT 1 DP 433836
- LOT 6 DP 344432
- Lot 1 DP 425263

The assessment site incorporates a large area covered in pasture grass and modern fencing. Pongs Creek dissects the site, running downhill towards the Cardrona Road. Part of Pringles Creek runs across the northern edge. The site contains four previously recorded archaeological sites or parts thereof. The site is situated within the Cardrona Valley, which was the focus of historic alluvial mining from the 1860s.

The purpose of this assessment is to identify any archaeology that may be affected by the proposed subdivision works on the site. This will determine whether an Archaeological Authority Application is required under the Heritage New Zealand Pouhere Taonga Act 2014, and if so, provide appropriate recommendations for the mitigation and management of any archaeological material encountered. The author of this report is Benjamin Teele, Principal Archaeologist at Origin Consultants Ltd and a member of the New Zealand Archaeological Association.

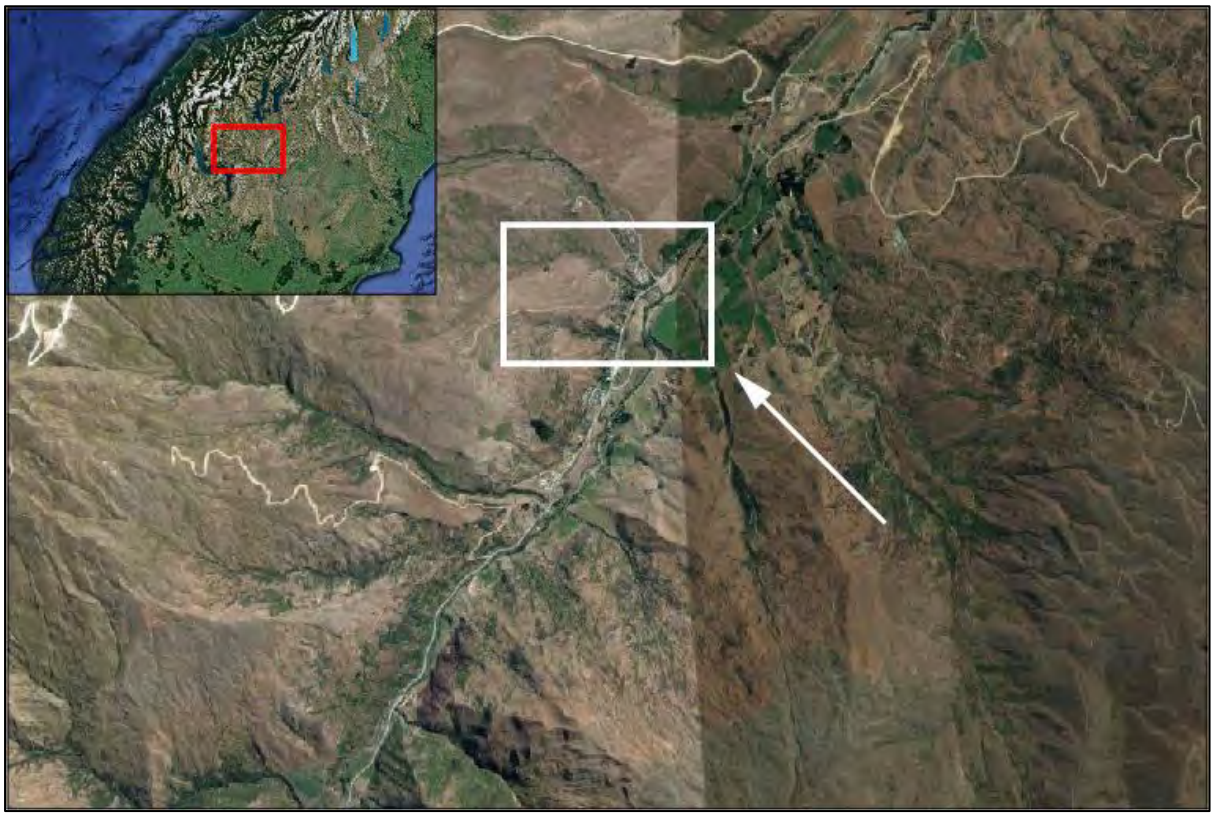

Figure 1. Location of site north of Cardrona Township within the Cardrona Valley (Google Earth).

Figure 2. Aerial imagery of assessment site at Curtis Road, Cardrona as defined by red line.

Statutory Requirements

There are two main pieces of legislation in New Zealand that control work affecting archaeological sites. These are the Heritage New Zealand Pouhere Taonga Act 2014 ('HNZPT Act 2014') and the Resource Management Act 1991 (RMA).

Heritage New Zealand Pouhere Taonga ('HNZPT') administers the HNZPT Act 2014. The Act contains a consent (authority) process for any work affecting archaeological sites, where an archaeological site is defined as:

(a) any place in New Zealand, including any building or structure (or part of a building or structure), that --:

(i) Was associated with human activity that occurred before 1900 or is the site of the wreck of any vessel where the wreck occurred before 1900; and

(ii) Provides or may provide, through investigation by archaeological methods, evidence relating to the history of New Zealand; and

(iii) Includes a site for which a declaration is made under section 43(1)

Any persons who intend carrying out work that may damage, modify or destroy an archaeological site, or to investigate a site using invasive archaeological techniques, must first obtain an authority from HNZPT. The process applies to sites on land of all tenure including public, private and designated land. The HNZPT Act 2014 contains penalties for unauthorised site damage or destruction.

The archaeological authority process applies to all sites that fit the HNZPT Act 2014 definition, regardless of whether:

- The site is recorded in the NZ Archaeological Association Site Recording Scheme or registered by HNZPT,

- The site only becomes known about as a result of ground disturbance, and/ or
- The activity is permitted under a district or regional plan, or a resource or building consent has been granted.

Once an authority has been granted, modification of an archaeological site is only allowed following the expiration of the appeals period or after the Environment Court determines any appeals. Any directly affected party has the right to appeal the decision within 15 working days of receiving notice of the determination. HNZPT may impose conditions on the authority that must be adhered to by the authority holder (Section 52). Provision exists for a review of the conditions (see Section 53). The authority remains current for a period of up to 35 years, as specified in the authority. If no period is specified in the authority, it remains current for a period of five years from the commencement date.

The authority is tied to the land for which it applies, regardless of changes in the ownership of the land. Prior to any changes of ownership, the landowner must give notice to HNZPT and advise the succeeding landowner of the authority, its conditions, and terms of consent.

HNZPT also maintains the List of Historic Places, Historic Areas, Wahi Tapu and Wahi Tapu Areas. The List can include archaeological sites. The purpose of the List is to inform members of the public about such places and to assist with their protection under the Resource Management Act (1991).

The RMA requires City, District and Regional Councils to manage the use, development, and protection of natural and physical resources in a way that provides for the wellbeing of today's communities while safeguarding the options of future generations. The protection of historic heritage from inappropriate subdivision, use, and development is identified as a matter of national importance (section 6f).

Historic heritage is defined as those natural and physical resources that contribute to an understanding and appreciation of New Zealand's history and cultures, derived from archaeological, architectural, cultural, historic, scientific, or technological qualities.

Historic heritage includes:

- historic sites, structures, places, and areas
- archaeological sites;
- sites of significance to Māori, including wahi tapu;
- surroundings associated with the natural and physical resources (RMA section 2).

These categories are not mutually exclusive and some archaeological sites may include above ground structures or may also be places that are of significance to Māori.

Where resource consent is required for any activity the assessment of effects is required to address cultural and historic heritage matters (RMA 4th Schedule and the District Plan assessment criteria).

Methodology

An archaeological assessment is required to accompany an application for an archaeological authority, as stipulated in the Heritage New Zealand Pouhere Taonga Act (2014). The archaeological assessment for this site was carried out using desk-top research methods and included a site visit to assess any current standing structures and site features.

The desk-top assessment methodology consulted a range of archival sources to try and determine the history of the area. The assessment used the following types of sources to trace the historic activity on the site:

- 19th century surveyors' maps and section subdivision maps;
- Land titles and land transfer surveys (LINZ);
- Photographic and documentary archives (Hocken Library, Dunedin City Library Heritage Collections, family photograph albums, on-line archive repositories - Archives NZ, DigitalNZ, Hocken Library, National Library of NZ, Museum of New Zealand/Te Papa Tongarewa; PapersPast, Appendix to the Journal of the House of Representatives);
- Historic aerial surveys from Retrolens;
- Local histories and similar publications;
- Hocken Library;
- NZAA ArchSite.

The site visit was undertaken to make a visual assessment which included an appraisal of:

- The approximate age and architectural style of any extant structures on the site.
- The environs within the site including spatial usage such as recent earthworks, topography, vegetation and any ground-level features of heritage relevance.

The visual assessment was supported by digital photographs that recorded the features of the site. The site visit was undertaken on the 31st of May 2019 by Benjamin Teele and Jeremy Moyle.

Physical Environment or Setting

Cardrona is a small, scattered historic township situated in the Cardrona Valley and spreading north-south along the Cardrona Valley Road. Historically, the town is most well-known for its 19th century goldmining associations. 20th century activity was mostly limited to pastoral farming and the slow growth of the township.

The site forms part of the eastern slope of Mt Cardrona. The gradient of the slope flattens towards Cardrona Road. Two creeks, Pringles Creek and Pongs Creek run east to west and feed into the Cardrona River. The Cardrona River has its origins in an area of boggy ground just below the saddle. The vegetation cover is a mix of exotic grass and woody scrub. The river and tributary creeks were the focus of early alluvial mining efforts where gold was more easily extracted. 19th century gold mining activity in the immediate area has modified the landscape in parts, particularly in areas close to water.

Historical Background to the Assessment Area

Māori Settlement

The earliest human occupation of the South Island and Otago region is considered to be by Polynesian settlers dating from around 1280AD who quickly spread across the region, developing different types of settlement sites dependent on the available local resources and environmental conditions (Wilmshurst, Anderson, Higham, & Worthy, 2008). These included settled village sites along the coast adjacent to rich and sustained food resources such as seals and moa; seasonal inland sites for collecting stone resources and hunting; and comparable seasonal coastal sites for 'fishing and moa processing' (Hamel, 2001). Such settlement and utilisation of the abundant resources was not without its impacts however, with much of the forest along the coastal region reduced in extent, changes in patterns of hunting and fishing, and the use of smaller, more mobile occupation sites by the 16th and 17th centuries. This was followed by further changes in subsistence, based on organised food gathering and processing that created settled village communities along the Otago coastline from the mid-18th century onwards (Hamel, 2001).

The Cardona Valley was used by Māori as an important route to walk between the Wakatipu Basin and Lake Wanaka, allowing them to cross the Crown Range. It formed part of the ara tawhito (old trails) across to the West Coast (Tai Poutini) and to Lake Wakatipu and the Dart Valley (Te Koroka) for gathering pounamu. Anderson notes that this was "the route of the old inland trail known for centuries to the southern Maori, referred to in tradition, and used until the second half of the nineteenth century by both Maori travellers and Maori guides to European explorers" (Anderson, 1986). The steep sided valley walls restricted passage to a narrow route through the centre of the valley following the Cardrona River.

There has not yet been any archaeological documentation of Māori using this route before the arrival of Europeans. This may be due in large part to the subsequent extensive and intensive use of the narrow valley floor by 19th century gold miners (Petchey, 1999). Therefore, the small number of recorded archaeological sites do not accurately represent the extent of Kāi Tahu association with these areas.

A more detailed cultural history of Māori use of the Cardrona Valley can be found in the Cultural Values Report prepared by KTKO Consultancy Ltd for the Arrow and Cardrona Rivers (Kleinlangevelsloo & Clucas, 2017). This allows a better understanding of the historic use of the valley by Māori following the widescale disturbance caused by early European use and occupation.

> Māori occupation and seasonal hapū/whānau heke (migrations) to Central Otago were in decline by the time of European settlement of the inland lakes. The last accounts of kāika (settlements) are known from the stories of Puoho's raiding party on the lakes, from which Anderson (1982)draws the conclusion that 'few more than 20 people were distributed, largely on family lines, amongst four or five settlements in the Wanaka-Hawea district but none were living elsewhere along the main trail to the south', and that occupation consisted of temporary encampments.
>
> Hunting parties set out to Central Otago, including the Arrow and Cardrona, to obtain resources throughout the year, depending on when the resource was at its best. Tuna were captured during summer, whereas weka were fattest during winter (Anderson, 1982). Seasonal visits to the inland lakes were still being undertaken in the 19th century, and were recorded by early European settlers (Anderson, 1998). A well documented example is of the party of Moeraki whanau in 1865 and an undated report of Waikouaiti Māori camped at the top end of Wakatipu (Duncan, 1969). Ōtākou hapū were frequenting the Arrow and Cardrona, Te Waipapa o Karetai (the calabash of Karetai). The name attests to its relevance to Ōtākou whānau as a mahika kai destination. Fishing and gathering was much in evidence during European settlement. In some cases, mōkihi (rafts) were used and the return trip to the coast was relatively swift. Potato gardens (Anderson, 1998) are thought to have made permanent settlements possible for a time around Whakatipu, Hawea and Wanaka, part of the shifting resource adaptation of Kāi Tahu during early European contact (Simmons, 1969). Evidence of occupation in the

interior included whare rau, which were used by the miners, and abandoned eel nets and stakes (Anderson, 1998).

Archaeologist Brian Allingham (pers. comm. 2017) provided detail about Kāi Tahu's intimate knowledge and use of the Arrow and Cardrona catchments. According to Allingham Kāi Tahu/Murihiku values are very evident in the landscape associated with the Arrow and Cardrona Rivers, although they are not widely known. The Arrow and Cardrona Rivers both had trails running alongside them. As one of the easiest passes, the route along the Cardrona and over the natural bridge at the Roaring Meg would have been a major ara tawhito providing an important link to the Nevis and down into Southland. "The trail over the Cardrona was a very important, very easy route. It's an obvious and important link in the network of trails" (Allingham, pers. comm. 2017). There are many large rock shelters and a cave on this route that would have been well used.

Within the Kā Huru Manu atlas the only reference in the area relates to Ōrau (the Cardrona River). The Ōrau was a traditional travel route between Whakatipu Waimaori (Lake Wakatipu) with lake Wanaka and Hawea. The Royal Commission of Inquiry into Ngāi Tahu land claims in 1879 noted the Ōrau as a source of kainga mahinga kai (food gathering place) where tuna (eels), pora (Maori turnip), and weka were gathered.[1]

European Settlement

The first Europeans to explore the Cardrona Valley were the early runholders and their employees. William Rees and Nicholas von Tunzelmann travelled to the Wakatipu via the Cardrona Valley in early 1860. They followed the route from R. Wilkin's Wanaka Station over the saddle, finding the valley full of scrub, impeding their progress. They only reached the summit of the Crown Range on their second attempt. After the establishment of Rees' run at present day Queenstown, the Cardrona Valley became the favoured route between the pastoral stations. In 1861, James McKerrow, the first surveyor of the area, travelled between Wilkin's Station and the Wakatipu via the Cardrona Valley (Petchey, 1999).

The discovery of gold at Gabriels Gully led to subsequent gold rushes across Central Otago. After news of Hartley and Reilly's deposit of a substantial amount of gold in Dunedin, miners spread up the Cromwell Gorge and into the neighbouring valleys. The Cardrona field was discovered in 1862 by Michael Grogan and Mullins who were searching for William Fox and his Arrowtown workings. Grogan was walking along the river and found a track formed by cattle. Mullins came up the track and showed Grogan some gold that he had found, presumed lost from other miner. A newspaper report at the time outlines the diggings:

> I heard that a party of miners were digging up the valley of the Cardrona River, which is a tributary to the Molyneux from the south, and that they were supposed to be doing well... One party of these Fox hunters however, a few hours before I overtook them had accidentally discovered a rich spot from which they had already taken out 6 ozs. of rough waterworn gold, some of the pieces being over half an ounce weight... The deposit was strictly local, however, for their companions had sunk holes up and down the gully, in similar positions, and only obtained a fair prospect in one other case. Nevertheless, I have no doubt from other indications that this valley will prove highly auriferous... For the first 8 miles it is narrow, rugged, and tortuous, with a very rapid fall, but below that it is expanded... It was where it thus changes its character that this rich patch was found, in a land slip of the older tertiary strata mixed with fallen rocks from the adjacent cliffs (Otago Daily Times, 1862).

By 1863 there were upwards of 300 miners working in the Cardrona field, concentrated in the upper part of the valley. The early workings were alluvial, focused in the stream beds, and were fairly shallow. As a result of the rush, a township was quickly laid out, and consisted of canvas-covered sod buildings erected for stores and saloons. These were quickly replaced by timber structures with iron roofs. During this rush, most of the gold was obtained from around the township, mined from alluvial claims. This area of working was particularly concentrated between the road and the Cardrona River, which provided water for sluicing. Ultimately, the

[1] Ōrau – Cardrona River – Kā Huru Manu - http://www.kahurumanu.co.nz/atlas

ground was worked right up to the edge of the township. The returns on some rich claims below the town at one point yielded on average 100 pounds a week per man.

In 1865, deeper excavations were underway along the terraces in the valley. The Cardrona Hotel was built during this time and was one of four hotels in the township, offering accommodation, livery services and a coaching-stop for gold miners and itinerant travellers. Mining continued to be prosperous for some over the next decade, with newspaper accounts reporting some good returns (Otago Witness, 1873). The Chinese moved to Cardrona from 1867. They tended to rework ground already mined and abandoned by Europeans. They created their own small township, which contained three large Chinese stores, cookshops, and gambling dens (Otago Witness, 1918). Petchey notes that it is reasonable to assume that a number of these Chinese miners were working in the upper valley (Petchey, 1999). At its peak in the 1870s, Cardrona is estimated to have had a population of between 3000 and 4000, with four hotels, three European stores, four butchers, a post office, bakery, blacksmith, bank, school, police headquarters, and a jail (Otago Witness, 1918). There was also a public library established, and the Warden and Magistrate's Courts sat monthly (Otago Witness, 1918).

By 1878, tunnelling was nearly the only mining technique being undertaken in the valley. The mining population declined through the 1880s (Figure 3). A small rush occurred to a terrace near the Cardrona Township in 1888. As one newspaper reported:

> Morrow's new rush and subsequent discoveries in unsuspected localities have at last drawn attention to the extensive terraces in the Cardrona Valley. "Your Own" modestly claims a small share of credit in having persistently advocated the auriferous nature of these terraces for the past 10 years, and ventures to predict that the same formation of terraces, extending to the valley of the Clutha will some day be found to pay a great number of enterprising miners (Otago Witness, 1888).

Around forty miles of water races were constructed to enable the ground to be worked by hydraulic sluicing. Newspapers printed encouraging stories of the potential new rush. "Things continue very brisk at the Cardrona on the account of the recent finds on the higher terraces on the eastern side of the Valley, and the coming summer bids fair to be a prosperous season, both in the way of mining and business" (Lake Wakatip Mail, 1888). This rush soon petered out, and mining wasn't revived until dredges were brought in at the turn of the century, continuing until 1913

Cardrona remained a significant commercial hub through the 1870s and 1880s, although its fortunes waned as the initial momentum of the gold boom quickly dwindled. Some men stayed on and although the mining days were over, a small settlement of farmers raising cattle persisted in Cardrona well into the 20th century. By the 1890s only the Cardona Hotel (originally called the Empire Hotel) and the All Nations Hotel remained, along with two stores and a blacksmith. With a shortage of timber in the area, most of the remaining sound buildings were transported to the growing township of Pembroke, later renamed Wanaka.

Figure 3. Undated image of Cardrona, likely around the late 19th early 20th century. View is looking west over the river towards the Cardrona Valley Hotel (EL 2025 – Lakes District Museum)

Previous Archaeological Work

There are four previously recorded archaeological sites within the survey area.

F41/562 was recorded as a hut/enclosure site. This site is located to the southwest of Pringles Creek.

F41/565 is identified as hut ruins located to the south of Pongs Creek.

F41/589 is identified as the Cardrona Company Water Race and is shown on topographical maps. It runs approximately south to north through the western edge of the site. Due to the limitations of ArchSite, this feature is not shown within the survey area.

F41/590 is identified as Little's water race and runs approximately parallel to the Cardrona Company Water Race but located downslope. Again, due to the limitations with ArchSite this site is not shown within the survey area. Hamel described the race as large and well-formed, up to two metres across and 80cm deep.

Jill Hamel undertook a survey of the Pringles and Pongs Creek area as part of an earlier proposed subdivision in 2000. This was part of a resource consent by Cardrona Holdings covering approximately 40 hectares. The proposal was for four allotments. Hamel undertook the field survey in October 2000. She produced a sketch map of the recorded features within the survey area (Figure 4). The four proposed housing lots are shown as squares on the sketch map, and do not correspond to any physical features on site. The sketch map shows Little's Race and the Cardrona Company Race running along the western edge of the site. Geographical features include Pringles and Pongs Creek, shown running across the site, Cardrona Road, and some escarpments. F41/562 was identified as no.5 on the sketch map and described as a small hamlet with around five huts and garden enclosures, watered from a race and reservoir system (Figure 5). Hamel identified this site as most likely being occupied by Chinese miners. It was partly defined by a sod wall that it shown as no. 16 on the sketch map. In addition to these features, Hamel also showed two water races running down-hill parallel to Pongs Creek, labelled no. 15. Hamel shows what is now recorded as F41/565 with a symbol of two trees and labelled no. 10. Another section of race was shown coming of the Cardrona Company Race and running towards the hamlet site (no. 7). Scatters of rock features were also recorded closer to the eastern boundary of the site (no. 12, 13). A smaller side race is shown branching off from Pongs Creek and running towards the access road (no. 17).

Her examination for mine workings in Pringles Creek noted that the flow of the creek was fairly vigorous and minor features could have been obliterated.

Her summation was that all the sites likely pre-dated 1900. The Chinese mine workings and associated hamlet were dated in the records to around 1878. The sod wall was assessed as likely dating from period of greatest population on the site, and as shown on an 1882 map. The two races, Littles and Cardrona Company, were most active between 1885 and 1894. The other sites had fewer clear dates but based on analogous sites and pattern of distribution indicated to Hamel a 19th century date.

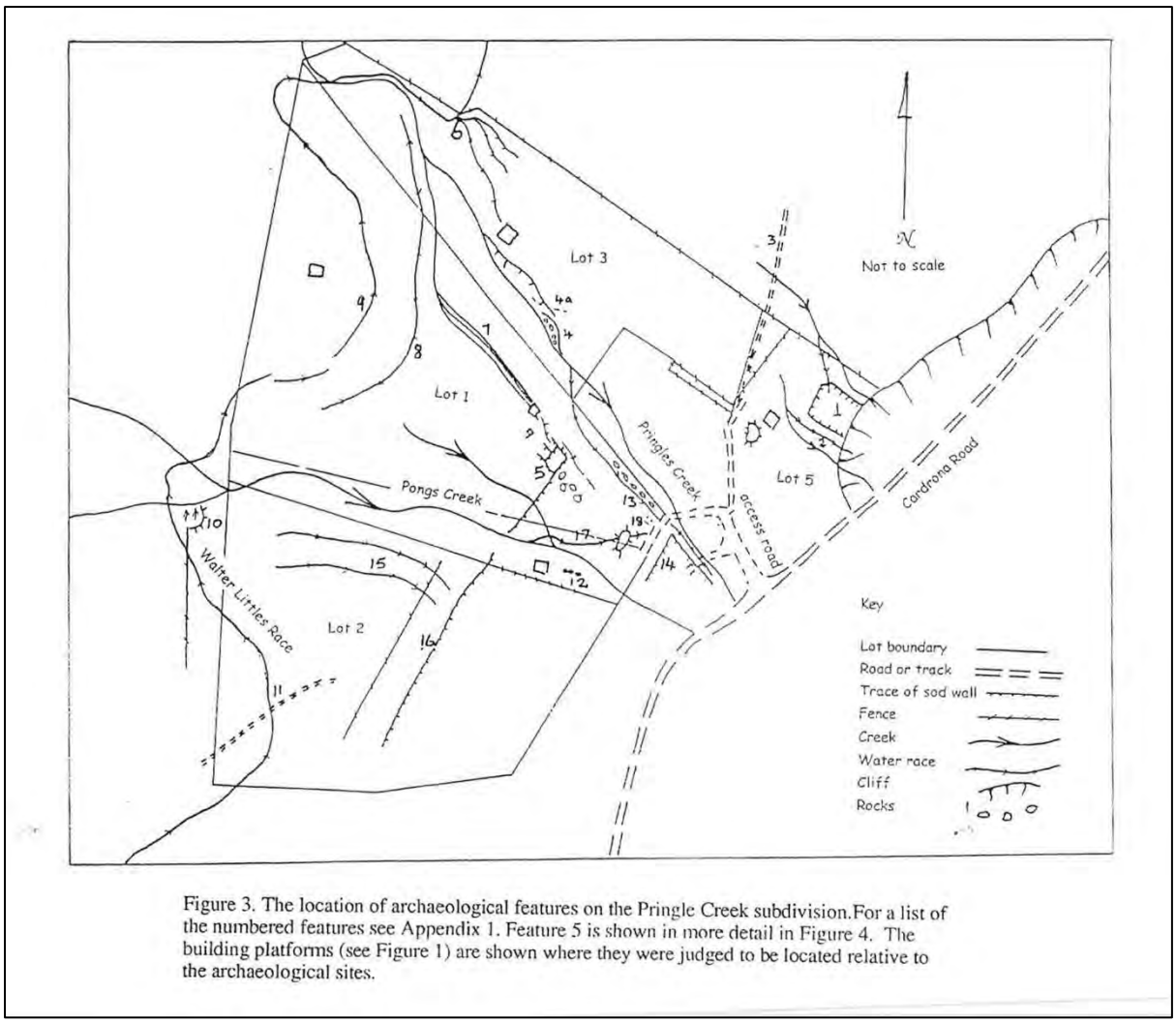

Figure 3. The location of archaeological features on the Pringle Creek subdivision. For a list of the numbered features see Appendix 1. Feature 5 is shown in more detail in Figure 4. The building platforms (see Figure 1) are shown where they were judged to be located relative to the archaeological sites.

Figure 4. Figure from Hamel's report in October 2000 on the Pringles and Pongs Creek subdivision.

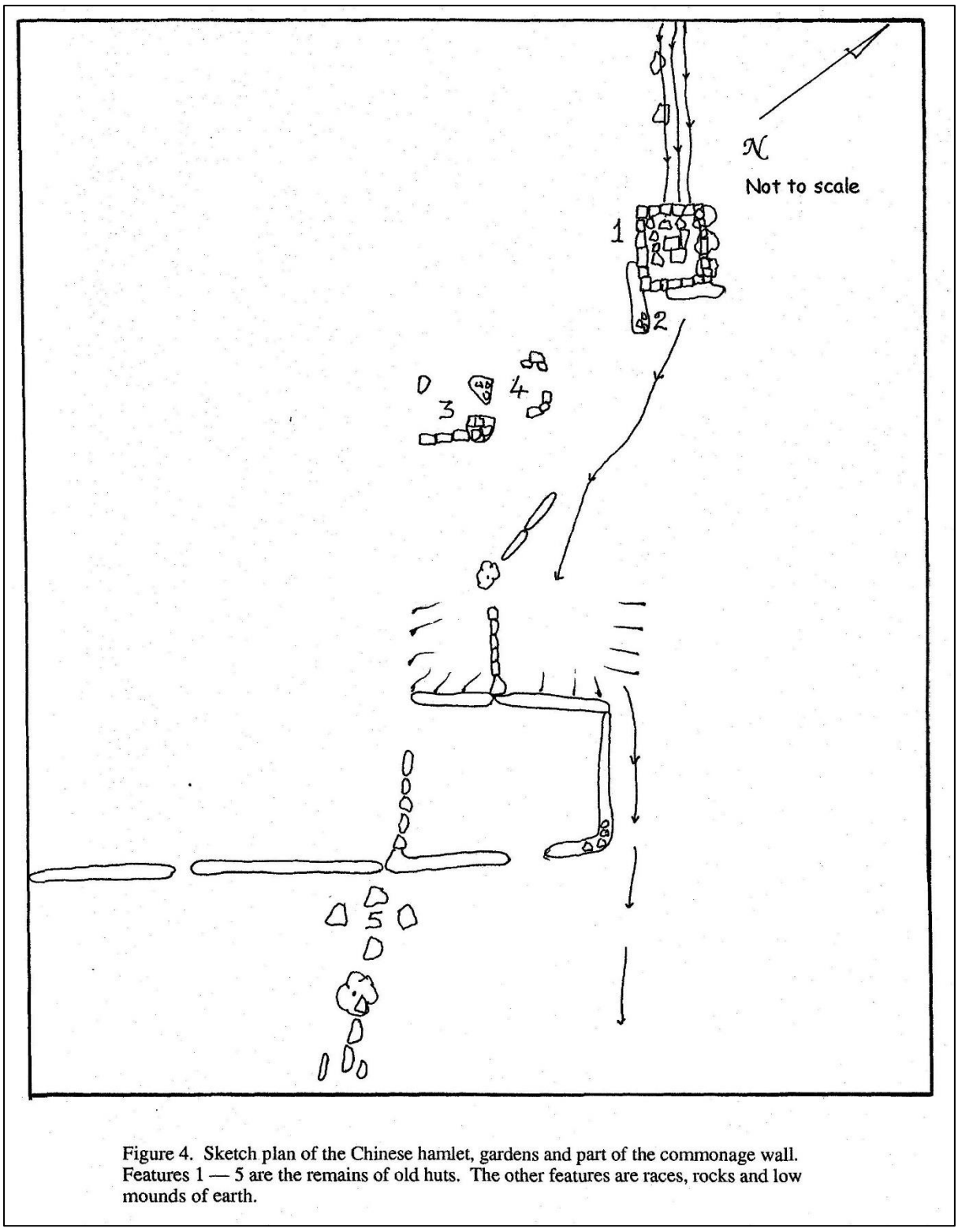

Figure 4. Sketch plan of the Chinese hamlet, gardens and part of the commonage wall. Features 1 — 5 are the remains of old huts. The other features are races, rocks and low mounds of earth.

Figure 5. Sketch map from Hamel's 2000 report showing detail of F41/562. The five potential huts/buildings are labelled no. 1-5, and the sod wall enclosure is shown extending into the area.

Figure 6. Features associated with F41/562 as shown on aerial imagery.

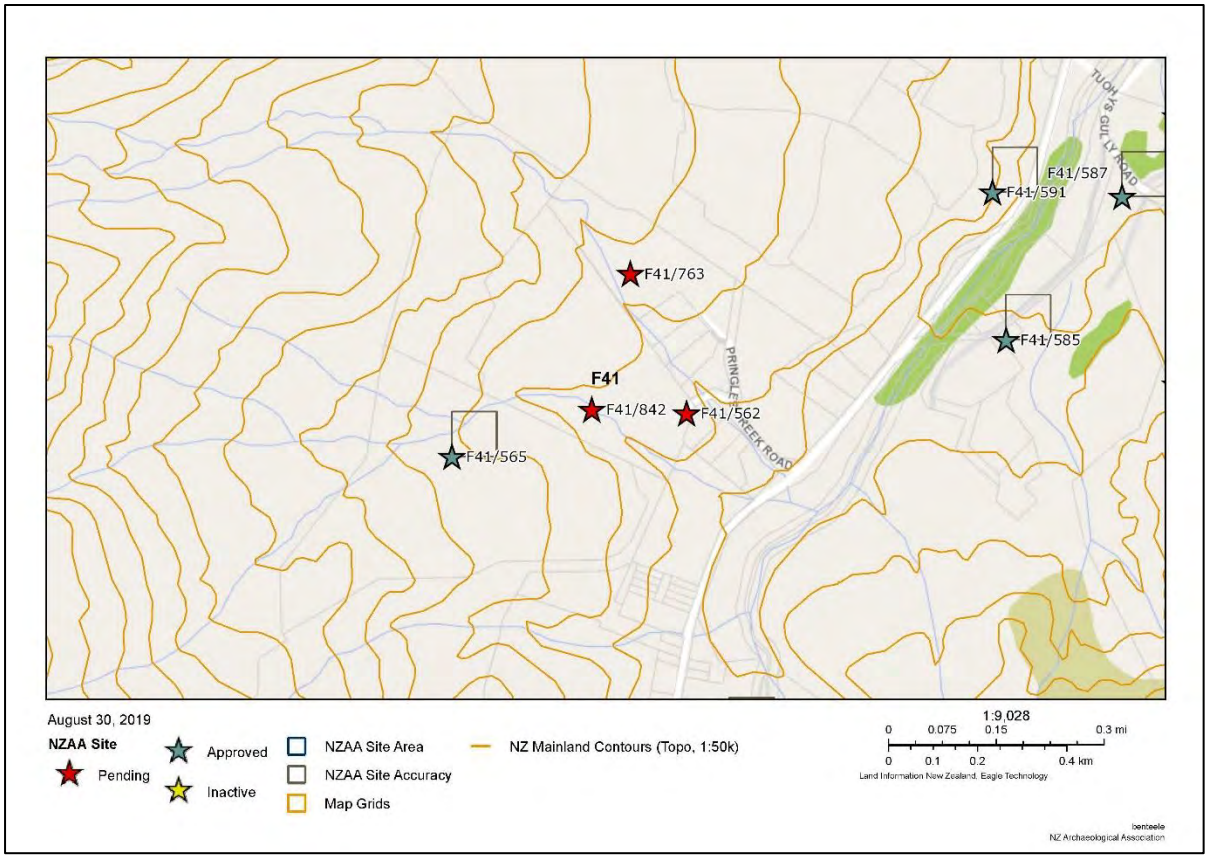

Figure 7. Map showing location of recorded archaeological sites in the assessment area (ArchSite 2019). Note due to the races being a linear feature they are not recorded in this map.

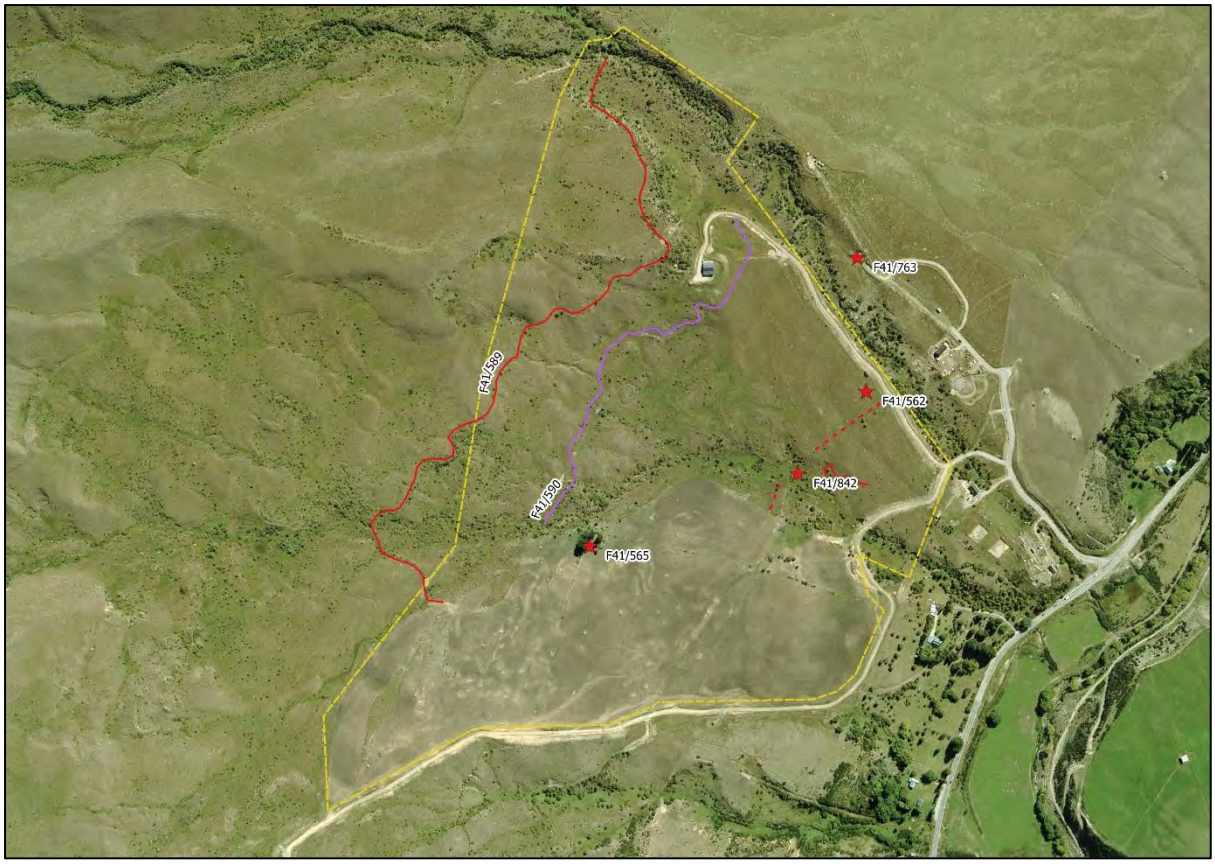

Figure 8. Previously recorded archaeological sites corrected based on ground survey and overlain with modern aerial imagery.

Constraints and Limitations

The key constraints and limitations on the archaeological assessment for the Curtis Road subdivision are as follows:

- This assessment is based upon desk-based research and a visual inspection of the site – no intrusive or investigatory work into the site or its environs has been undertaken to confirm the results of the assessment.
- The area under assessment has been extensively modified during the 20th century following a shift from 19th century mining activity to pastoral farming. This has resulted in significant modification to the landscape outside the creek beds. As a result, shallow archaeological features are easily obscured or destroyed by ploughing.

Outcomes – Research Results

Historical Documentation

In 1874 a survey map of sections 4 and 5 was created (Figure 9). It listed J. McGrath as leasee of Section 4, which incorporated Pongs Creek along its northern boundary. Section 5 listed James Corbet (also spelled Corbett) as leasee. Pringles Creek is shown running just to the north of the northern boundary. Sections of the race now known as Littles Race is shown running through the corners of each of the section. Another water race is shown running through the eastern part of Section 4, and roughly corresponds to the features recorded under no. 15 by Hamel in Figure 5.

John McGrath appears to have been living in the Cardrona area from the 1870s. In 1877 he was appointed as one of Board of Wardens for the Cardrona Depasturing District (Lake Wakatip Mail, 1877). McGrath appears to have been a hotelier in Cardrona and ran the Golden Age Hotel (Lake County Press, 1873b). He subsequently shifted his focus to mining, and died in 1883 (Lake County Press, 1883).

James Corbet(t) was also living in the Cardrona area from the 1870s. Prior to that a James Corbett was farming in the Wakatipu (Lake Wakatip Mail, 1868). In 1873 he applied for an agricultural lease of Section 5, which was adjacent to McGrath's area (Lake County Press, 1873a). This is likely the reason that SO3588 was produced. Corbett was subsequently declared bankrupt in 1876 and appears to have left the district shortly after (Cromwell Argus, 1876).

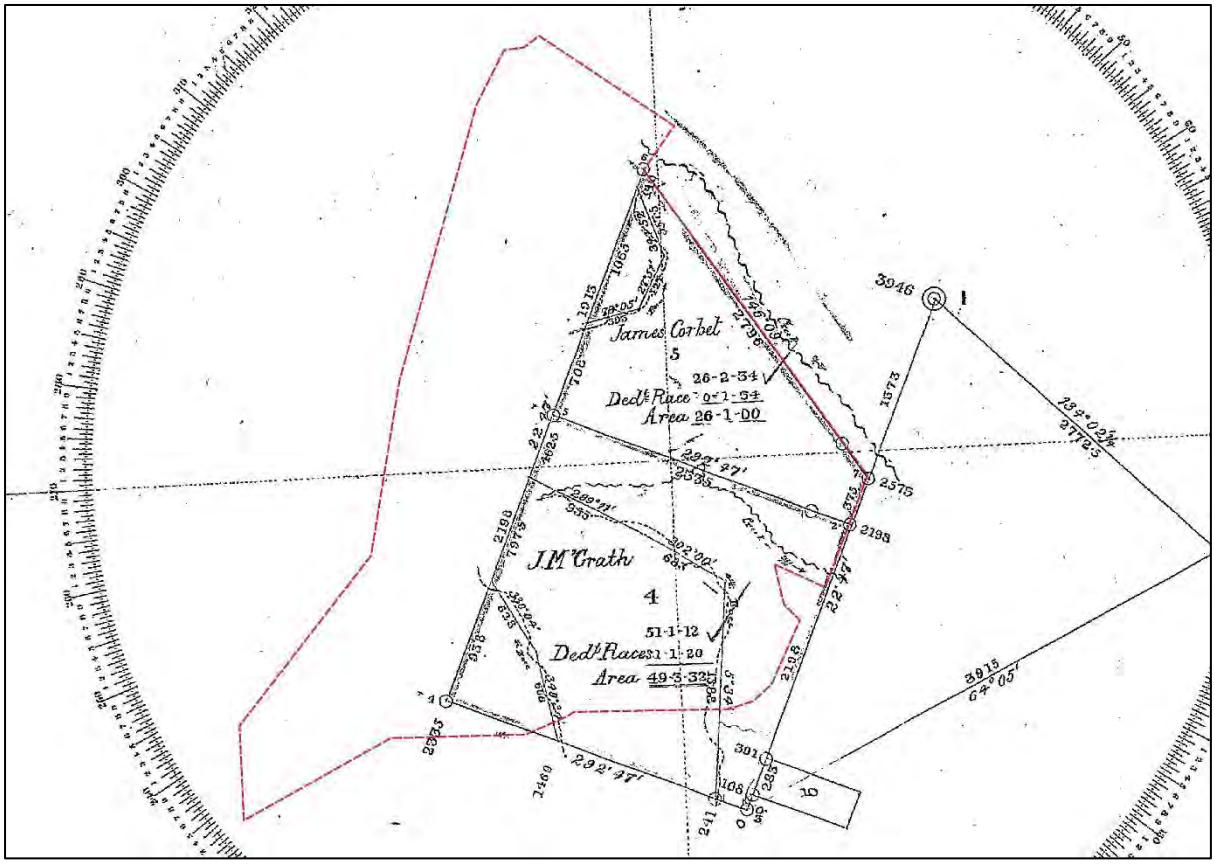

Figure 9. SO3588 from 1874 which shows survey of sections 4 and 5 with current site boundaries overlain in red.

With Corbett leaving the district after bankruptcy, Section 5 was subsequently acquired under freehold title by Wong Yow, storekeeper of Arrowtown in 1881 (Ot55/65). It was transferred to Iek Hee in 1886, and Way Young in 1887. Hee and Young were likely Chinese miners, and the section boarded Pringles Creek where the Chinese had found gold in 1878. Wong Yow, one of the five listed storekeepers in Cardrona, may have purchased Section

5 to provide an area for Chinese to live away from the township. According to Ng (1993), the relationship between European and Chinese miners was particularly poor between 1878 to 1890. Having a section of freehold land would have allowed the Chinese miners to live some distance away from European miners, who often reacted aggressively to their presence on a goldfield.

The Cardrona Company Race (F41/589) appears to have been mentioned in a warden report from 1892, which described a syndicate of 13 miners who formed a company to work an area through hydraulic elevation. They brought in water from the Cardrona Creek along the valley.

The lower race on site was at one time owned by Walter Little (F41/590). Little arrived in New Zealand in 1866 and worked as a shepherd on My Pisa. In 1880 his occupation is given as a carrier and miner, and undertook hydraulic sluicing at Branch Creek (Hamel, 2000). Hamel believed that Little's water race was constructed after the Cardrona Company Race. However, SO3588, dated to 1874, clearly shows parts of this race crossing Section 4 and 5. As such, Little's Race was built by a man named Bolton and his associates. A reference from 1873 recorded miners working sluicing claims in Branch Creek (Cromwell Argus, 1873). Bolton and party were at that stage constructing a water race from the Cardrona River above the township. A survey plan from 1875 shows a section of this race above the town and is labelled as Bolton's Race (SO14127). It appears that by 1874 Bolton had extended the race far enough for it to be surveyed on the assessment site as shown in Figure 9. In 1879 Bolton's party were doing well with their claim, commanding fine heads of water for sluicing in Branch Creek (Otago Witness, 1879). Little likely subsequently took over operation of the race after Bolton left in the 1880s.

In 1885 Chinese miners were still working claims along the Cardrona River (Otago Witness, 1885). In 1887 17 Chinese miners were summoned for mining without miners' rights. They were described as very poor, and dependent on Mr McDougall's generosity for keeping 'body and soul together' (Lake County Press, 1887). By the 1890s mining in Cardrona had declined, and a number of both Europeans and Chinese miners had left. At least two Chinese miners based in Cardrona committed suicide in the early 1900s. A photograph taken of Cardrona in the early 20th century shows a complex of sod enclosure walls on the western side of Cardrona Road, including over parts of the assessment site (Figure 10). A small building can also be seen adjacent to one these walls. These walls were likely used to define the section boundaries and would have allowed the Chinese living on Section 5 to keep wandering stock out of their gardens. The sluiced area of Pongs Creek is also visible in this photograph. Small parties of Chinese continued to mine in the area into the 1910s. Section 5 was subsequently abandoned by its last owner Wah Young, presumably after he left the district or died.

Figure 10. Photograph of Cardrona circa 1905. Earthen sod walls can be seen on the site in the distance on the other side of the road (cropped)(EL1528 – Lakes District Museum).

The rest of the site was part of two renewable leases on small runs which ran in strips from Cardrona Road up Mt Cardrona. The run on the south side of Section 5 was taken up by Timothy Enright in 1921. It was later acquired after two other owners by Cardrona Holdings in 1970. The run to the north of Section 5 was taken up by John McDougall in 1921. It was also later acquired by Cardrona Holdings (Hamel, 2000). Section 5 was subsequently acquired by Cardrona Holdings in 1996 as abandoned land.

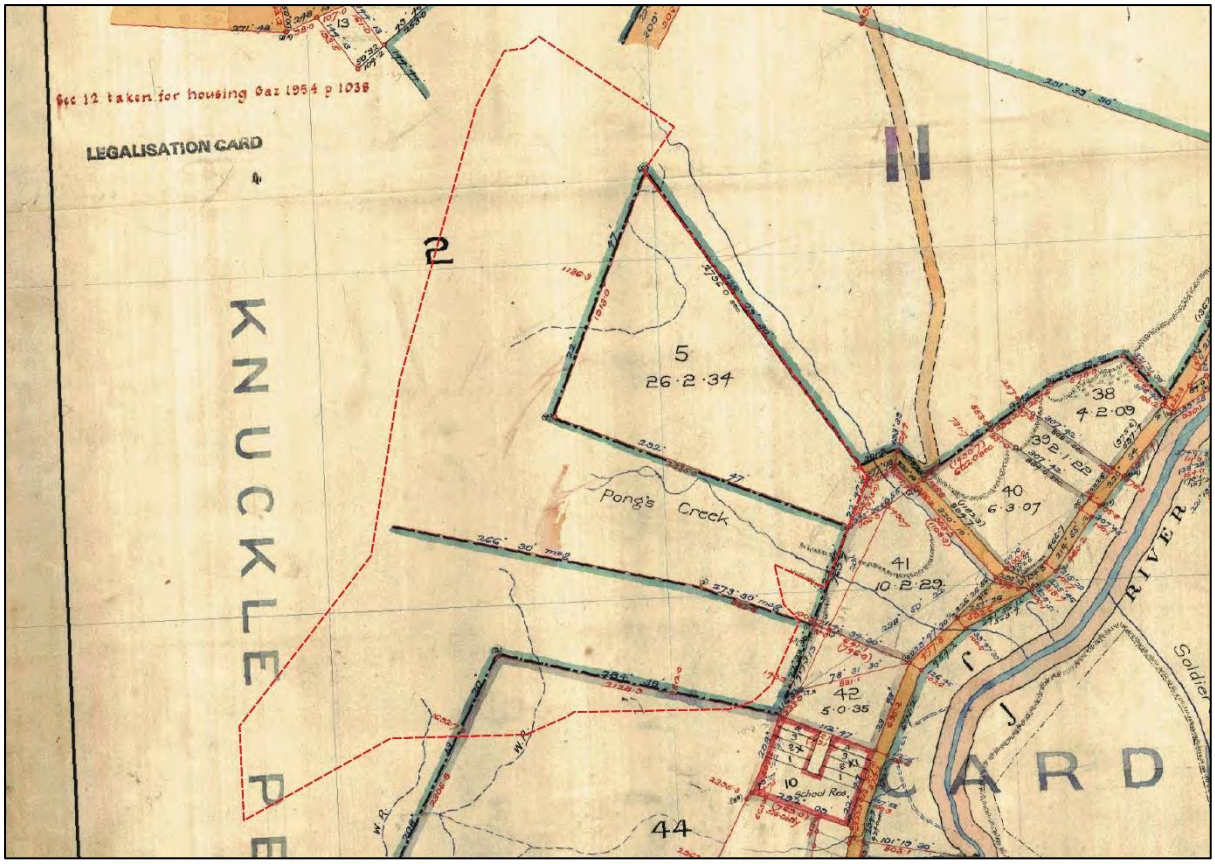

Figure 11. SO285 from 1921 with current site boundaries overlain in red.

On-site Observations

A site visit was conducted by Benjamin Teele and Jeremy Moyle on the 31st of May 2019.This was undertaken to investigate if there were any potential archaeological features visible and to place the site within the context of the surrounding area.

Pongs Creek runs through the centre of the site, approximately west to east (Figure 12). Along the creek remains of alluvial workings are visible. These are in the form of sluicing scars and worked over ground, which has been eroded and smoothed over throughout the creek bed. The upper part of Pongs Creek within the site shows the clearest evidence of this alluvial working (Figure 13). The lower portion closest to Curtis Road is more difficult to define, likely due to more erosional process occurring (Figure 14). These workings have been recorded as an archaeological site on ArchSite (F41/842).

Figure 12. View looking east across site showing Pongs Creek.

Figure 13. View looking north across Pongs Creek showing area of alluvial workings.

Figure 14. Lower portion of Pongs Creek showing residue of alluvial worked banks.

To the south of the creek are two stone heaps. These have been interpreted as the result of ploughing the surrounding fields, with stone uncovered being piled into discrete piles. The southern portion of the site is fenced and turned over to pasture (Figure 17). It has been extensively ploughed over. Any existing features within this paddock that may have been in this part of the site such as Littles Race, have been destroyed. This ploughed paddock has a small cluster of *Pinus radiata* located adjacent to Pongs Creek (Figure 18). This is the site recorded by Hamel as a potential hut site (F41/565). Examination of the area revealed no clear evidence of human occupation. The presence of mature trees is suggestive of some specific use for this part of the site, but there is no clear determination of either its age or possible use. There are no visible features that would indicate a pre-1900 use of the site. The area immediately to the north within Pongs Creek shows clear signs of alluvial working (Figure 19-Figure 20).

Figure 15. Stone remains identified above Pongs Creek to the south.

Figure 16. Collection of stone deposited near fence line, likely created during ploughing of paddock.

Figure 17. View looking west from southern part of site where most of the new housing is proposed.

Figure 18. Top of a hill previously identiifed as hut ruins (F41/565).

Figure 19. View across top part of Pongs Creek looking towards trees at F41/565. The top part of the creek shows signs of alluvial working.

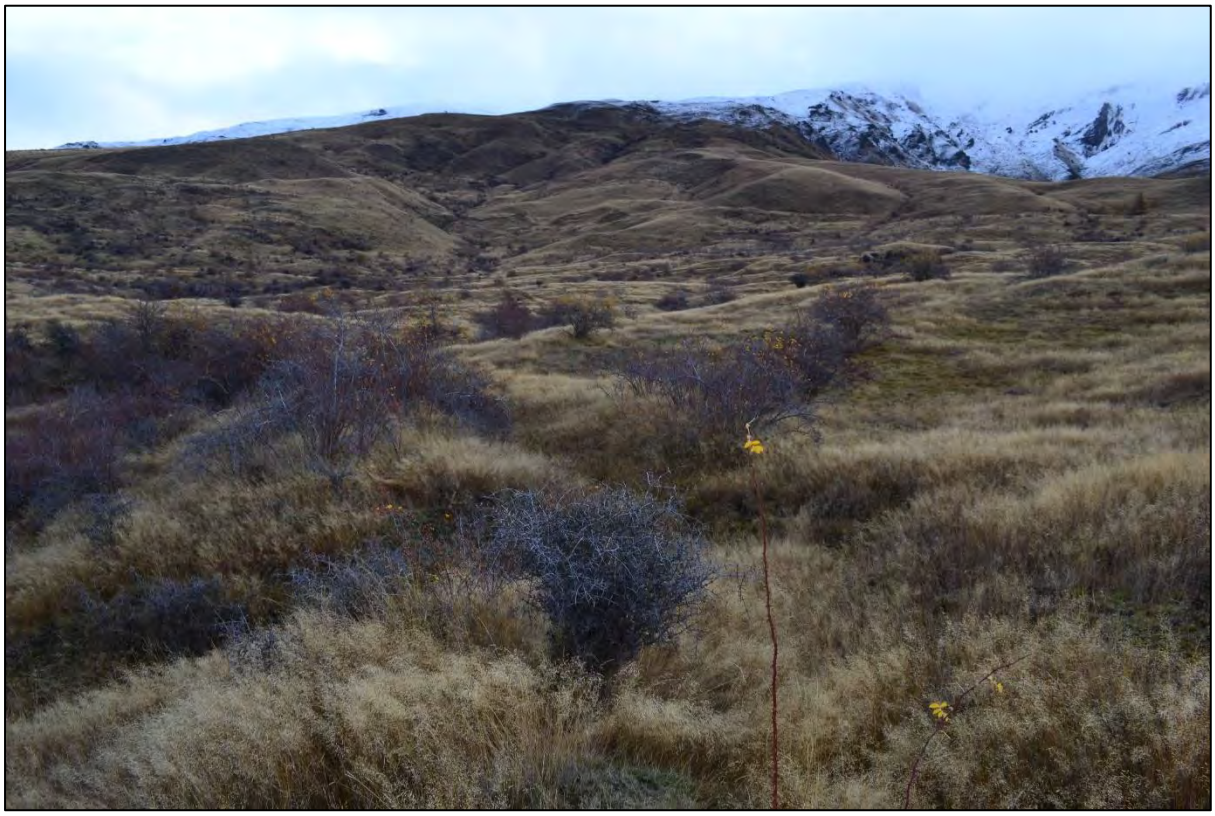

Figure 20. Closer view of alluvial workings at top part of Pongs Creek.

Running across the western edge of the assessment site are the two sections of the previously recorded water races. Littles Race (more accurately Bolton's Race) is clearly visible running along the hillside from the northern edge of Pongs Creek towards the northern boundary of the site (Figure 21). The race is well-defined in places, earth mounded on the downhill side of the race forming a clear channel. The Cardrona Company Race cuts onto the site along the western boundary before extending into Pringles Creek (Figure 22). This race is also well-defined in places, although parts have been damaged by ongoing erosion of the slope and within Pringles Creek. Where the races extend into Pringles Creek, they have been modified or destroyed in sections by ongoing changes to the creek bed or through the creation of a modern driveway.

Figure 21. Portion of Little's Race (F41/590) adjcaent to Pongs Creek.

Figure 22. Portion of Cardrona Company Water Race (top) and Little's Water Race (bottom) running across northern section of site.

To the north of Pongs Creek, the area is also kept in pasture. The ploughing of this part of the site does not appear to have been as intensive, and as a result features are more visible. Several features were identified in a cluster towards the north eastern part of the site, which Hamel identified as a Chinese hamlet (F41/562). These features are defined by a mix of stone and earthen features. Adjacent to a modern fence line is the remains of a rectangular enclosure (Figure 24). To the southwest are two more features defined by clusters of stones indicative of building platforms and chimneys (Figure 25-Figure 26). Part of this site has the remains of raised earthen walls, presumably the remains of some form of enclosure (Figure 27). The remains of a sod wall extend from the edge of the site to the southwest towards Pongs Creek (Figure 28). Subsequent erosional process to the site, either from farming activity or general decay to earth structures, have resulted in the extensive loss of definition to features at this site. It appears that ploughing activity has removed the ephemeral elements of the site, with only portions anchored by large stones buried in the ground surviving. The sod enclosure wall is difficult to locate on the ground due to loss of definition as the feature has eroded.

Figure 23. Aerial image showing recorded features within F41/562 and correlated with Hamel's sketch map (Figure 5).

Figure 24. Rectangular stone enclosure at F41/562 located adjacent to a modern fence line.

Figure 25. Remains of stone foundations for building at F41/562.

Figure 26. Remains of a stone chimney within F41./562.

Figure 27. Part of F41/562 formed by remains of earthen walls and embankments.

Figure 28. Portion of sod wall enclosure which has subsequently collapsed.

Archaeological and Other Values

Six main criteria have been used for assessing the archaeological values of the Curtis Road subdivision site. These are:

- Condition – the physical condition of the site and any associated features.
- Rarity/Uniqueness – the degree of rarity of the site within its immediate and/or wider contexts.
- Contextual Value – the contribution of the site to its broader contextual situation (e.g. cultural, local and archaeological contexts).
- Information potential – the potential for additional information to be recovered by archaeological means and its nature.
- Amenity value – the potential contribution of the site as a local amenity.
- Cultural associations – the cultural associations of the site.

Sites	**Value**	**Assessment**
F41/562, F41/589, F41/590 LOT 1 DP 433836 LOT 6 DP 344432 Lot 1 DP 425263	Condition	The condition of the remains of the Chinese hamlet F41/562 are poor. The area has been extensively damaged by 20th century farming activity. Features which were built of stone have survived in a better condition and can be more accurately defined on the ground. The condition of the two water races is moderate where they have survived. Extensive ploughing of the southern portion of the site has removed that part of F41/590 and erosional processes within Pringles Creek have also damaged sections of both races. Assessment – poor to moderate, subsurface likely poor
	Rarity/ Uniqueness	The remains of the Chinese hamlet is a rare site within Otago. While Chinese miners were present across most of the goldfields, their habitation sites were located outside of townships, and the use of earth and stone building materials has seen the subsequent loss of many of these sites. To clearly identify the remains of 19th century Chinese occupation is highly uncommon. Water races are a common feature within the central Otago landscape. However, increasingly these sites have been damaged by farming activity and increasing development. Assessment – F41/562 – high, Races - moderate

	Contextual Value	There is a high contextual value associated with the remains of F41/562. There are a number of visible features that form the hamlet, including the association with the sod wall enclosure. The site has a clear 19th century documentation. Initially with agricultural leases for two European's living in Cardrona, followed by Section 5's acquirement by a Chinese storekeeper. The two races are also clearly documented to alluvial mining activity focused in Branch Creek. While they are linear features and only sections cross part of the assessment site, they are still situated within a landscape that contains a number of 19th century mining features reflective of the development of the Cardrona goldfield. Assessment – High
	Information Potential	Archaeological investigations have been undertaken into Chinese settlements in Arrowtown, Cromwell, and Lawrence. This has revealed a substantial amount of information related to the 19th century lives of Chinese miners. The archaeological potential of F41/562 is limited by its condition and 20th century disturbance. The location and distribution of features within the site holds potential for better understanding smaller Chinese settlements within the goldfields, but its earlier disturbance will limit the amount of excavation potential to the site. The two races are clearly recorded on modern cadastral maps as well in aerial photography. The construction of the races was undertaken by hand, and there is limited information potential in any excavation. Their information value is highest when assessed as part of a wider archaeological landscape. Assessment – moderate
	Amenity Value	F41/562 is located on private land with limited visibility from the road. The features are confined to the remains of building foundations and the earthen enclosures are difficult to define on the ground. The two water races are clearly visible across the slopes of Mt Cardrona, extending from above the Cardrona Township towards Branch Creek. In sections they retain good definition and their form can easily be discerned. Assessment – F41/562 – low, Races - moderate

	Cultural Associations	There is a clear association with most of the 19th century features with Chinese mining and settlement. This is documented in historic records, although there appear to be few contemporary accounts of specific activity. The two water races were built by European miners are part of working their claims in Branch Creek. It is not known whether water was sourced from Littles Race for workings within Pongs Creek. Assessment – F41/562 – Chinese, Races – European, Ōrau/Cardrona Valley - Māori
	Other Values	The Ōrau/Cardrona River was a traditional travel route between Whakatipu Waimaori (Lake Wakatipu) with lake Wanaka and Hawea. The Ōrau was also a source of kainga mahinga kai (food gathering place). The likelihood for encountering material deposits that reflect this historic use of the valley by Māori at the site has been assessed as low due to extensive 19th and 20th century disturbance, but the possible value of the site and its location in broader, Māori cultural value terms is acknowledged. Assessment – low likelihood of encountering material remains

Assessment of Effects

Proposed Site Works

The proposed site works will include the creation of 16 new building lots, with all but two concentrated in the paddock in the southern part of the site (Figure 29-Figure 32). These will be accessed via the construction of a new access road off the exiting Curtis Road. Of the remaining two house lots, one house will be located in the southwest corner of the site and one will be located in the northwest corner adjacent to Pringles Creek. These two houses will require construction of new driveway access. The construction of all new house lots will require earthworks in the form of benching parts of the slopes to create level building platforms. New services will be provided to each house lot including power and water. The septic system will require the creation of dispersal fields. Due to limitations on site for appropriate drainage, the main dispersal field for the subdivision will be located adjacent to the northern boundary (Figure 30). A smaller dispersal field associated with the house lot in the northwest corner will be situated adjacent.

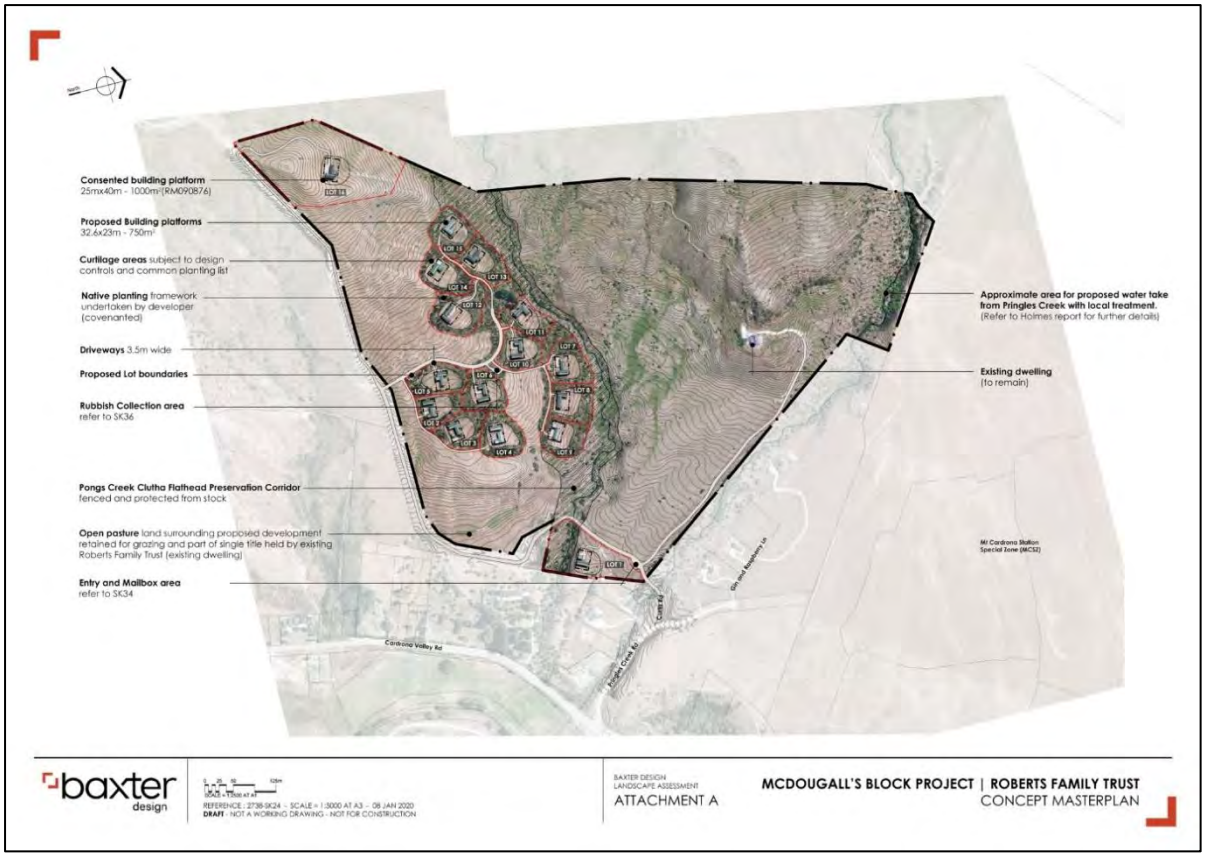

Figure 29. Baxter Design concept plan for proposed house lots for the Curtis Road subdivision (January 2020).

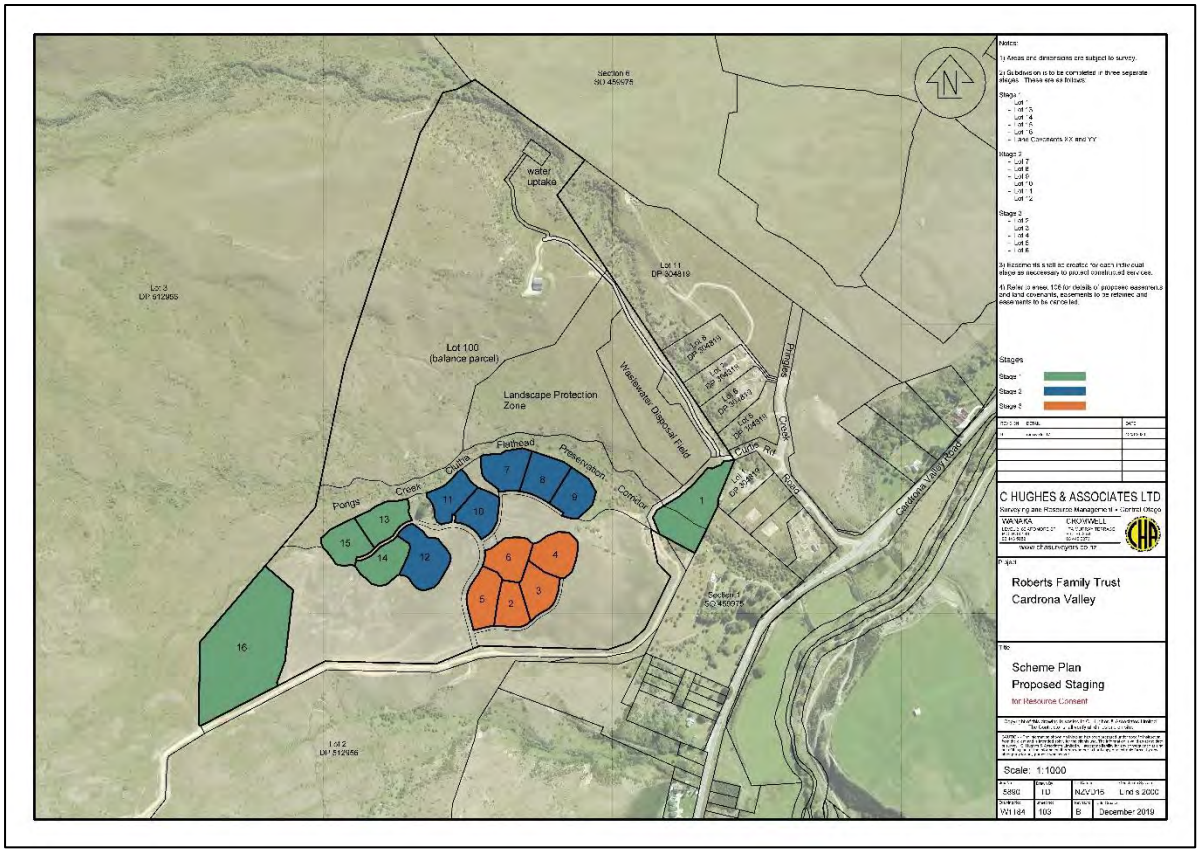

Figure 30. Plan showing location and staging of lots, as well as areas not being developed (December 2019)(C Hughes & Associates Ltd).

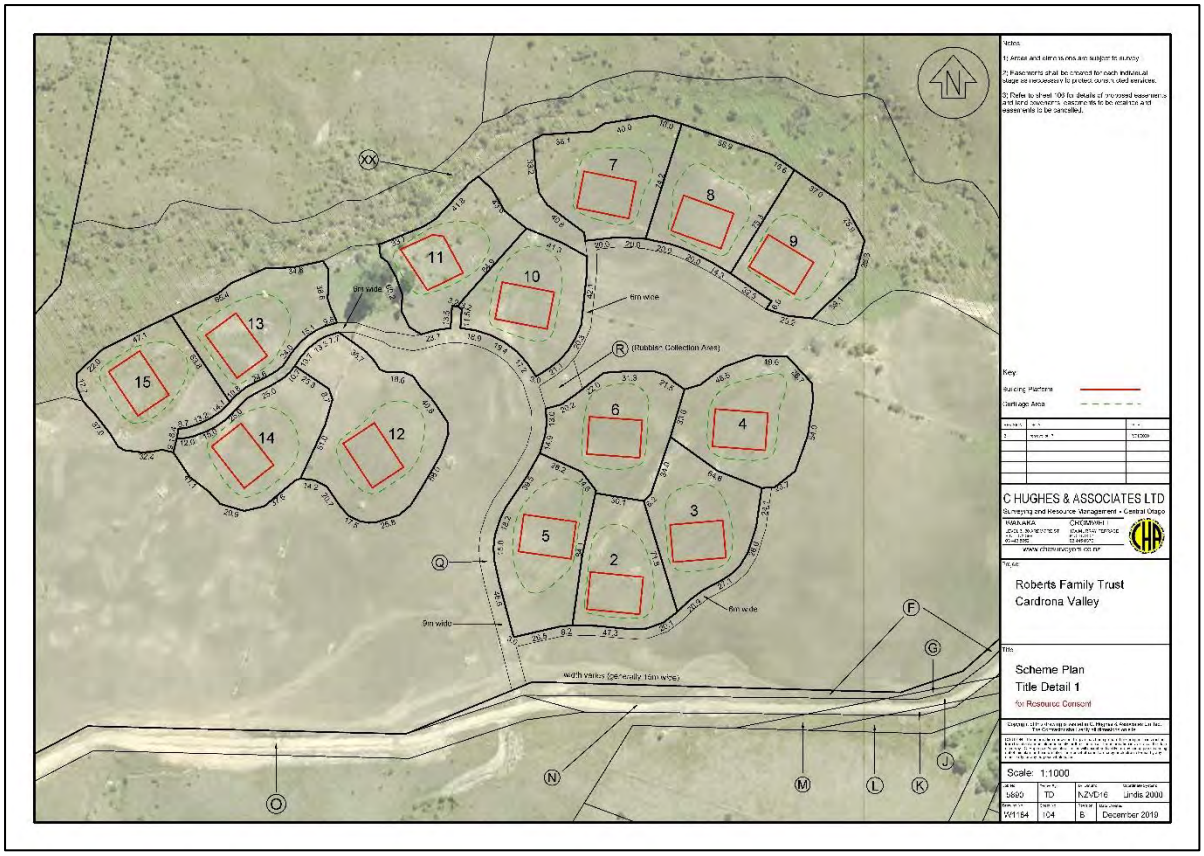

Figure 31. Plan showing proposed lots in the western portion of the site (December 2019)(C Hughes & Associates Ltd).

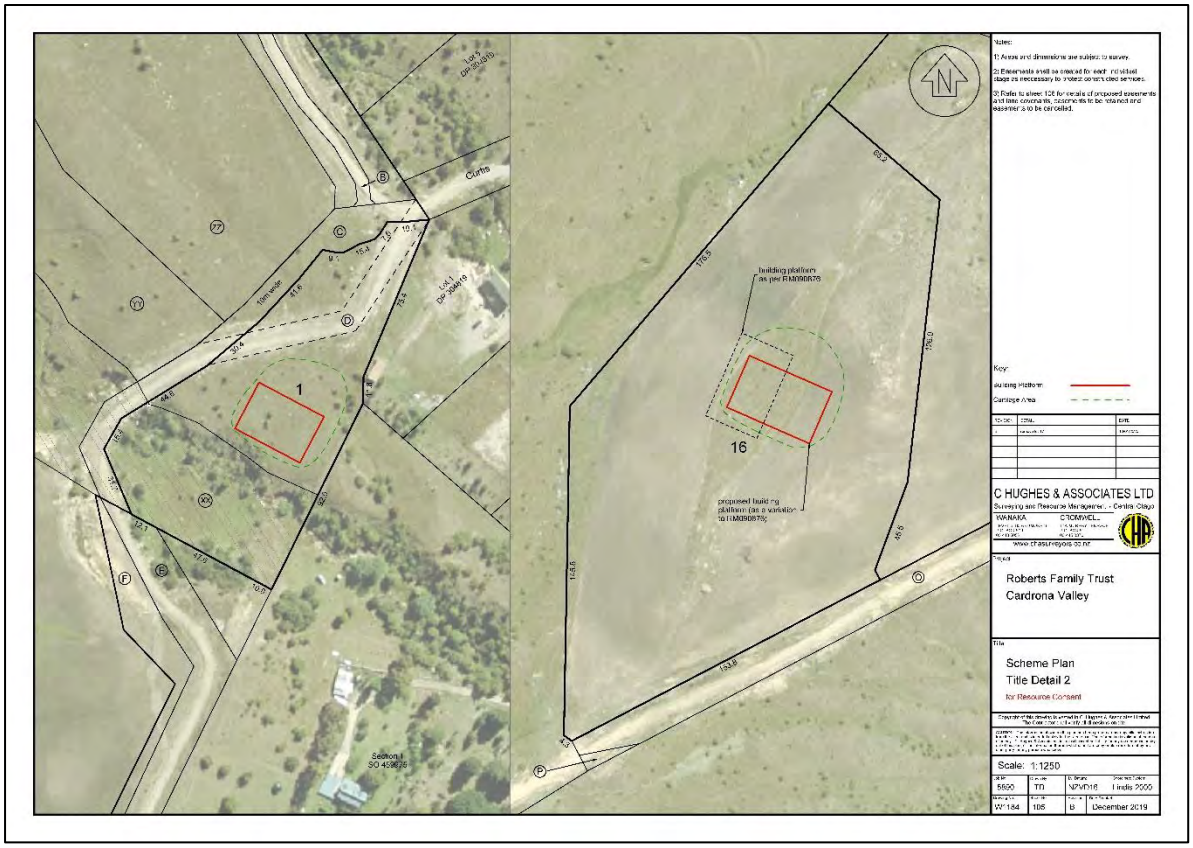

Figure 32. Plan showing the two proposed lots in the north and south part of the site (December 2019)(C Hughes & Associates Ltd).

The Effects of the Proposed Works

The effects of the proposed works on recorded archaeological sites will be limited to some minor disturbance of portions of the two races (F41/589, F41/590) and shallow disturbance around F41/562. The location of the proposed house lots are mostly confined to the extensively ploughed paddock in the southern portion of the site. It is likely that the requirement for creating required levels and drainage will see the area identified as F41/565 disturbed. The creation of a dispersal field adjacent to F41/562 may encounter subsurface features. However, the area immediately outside the defined features on site has already been extensively modified by ploughing. The installation of the dispersal field will require a series of narrow shallow trenches to be excavated in order to install the pipelines. This has the potential to disturb small parts of this site. The construction of a dispersal field for the proposed house lot in the northwest corner will have a minor effect on part of F41/589. These works will require clay bunds to be installed to prevent overflow and subsequent leakage of the septic system.

Alternative options

Following the site visit, the recorded archaeological features were mapped. This information was used to adapt the initial concept plan to avoid recorded archaeological features. Boundaries of house lots were modified to avoid impacts to features within Pongs Creek. A surveyor subsequently mapped the visible features associated with F41/562. The dispersal field located to the west and south of the site was then moulded around the known features to prevent any disturbance of surface features. A similar approach was undertaken to the dispersal field in the northwest corner of the site in relation to minimising disturbance of F41/589. Complete avoidance of F41/562 and a small portion of F41/589 was impossible due to the limited drainage availability of the site which is restricted by the presence of Pongs and Pringles Creeks and their drainage catchment.

Examination of what was recorded as a potential hut site F41/565 revealed no indication of 19th century occupation or use. As such, no alternative option was considered for this site.

The poorly defined alluvial mining features within Pongs Creek will not be impacted by the proposed works.

Site management

During initial site works, the recorded site of F41/565 should be investigated by an archaeological to determine if any 19th century activity was associated with the site.

The excavation of the drainage system for the dispersal field adjacent to F41/562 and F41/589 should be monitored by an archaeologist to determine if any subsurface material might be present and to prevent accidental damage to visible archaeological features.

Conclusion and Recommendations

Assessment Summary

This report provides an assessment of the proposed Curtis Road subdivision and the potential effects on the archaeological values of the site.

The site area appears to have initially been under agricultural leases from the early 1870s over what was Section 4 and 5, associated with local Cardona residents. The leases for the sections subsequently expired, and the Section 5 title was acquired in fee-simple by a Chinese storekeeper based in Cardrona. Following this, it appears that a small Chinese hamlet became established on the northern part of the site. Earthen sod walls were built on both sides of Pongs Creek and were likely used to exclude grazing stock from the site. The wider area beyond the site was given over to pastoral farming as part of a larger run, and the Chinese miners would have wanted to prevent stock getting onto site. The hamlet itself appears to have consisted of at least five buildings,

including some with stone foundations and rectangular earth enclosures, possibly for holding a small number of animals. The houses may have been built of sod or earth, which no longer survives. Pongs Creek appears to have had a low to moderate level of alluvial working undertaken during this period (F41/842). Whether this was initially undertaken by European miners is unclear but was almost certain subsequently worked by the local Chinese. Two water races, Littles and the Cardrona Company were constructed from the Cardrona River to Branches Creek. Littles Race was built by Bolton in 1873, and the Cardrona Company built later in the 1880s to provide water for sluicing operations. The rest of the site was likely incorporated into part of the wider pastoral run. Following the decline of the Cardrona gold field, most of the Chinese miners left or subsequently died. Section 5 was abandoned, and the site was the focus of 20th century farming activity. 19th century features that survived this activity were limited to Pongs Creek and where they had substantial enough foundations to avoid being destroyed by the plough.

This assessment has identified that the works within the site area will be limited to minor disturbance of part of F41/562 and F41/589. The creation of 16 new house lots will be located away from known archaeological features. The potential remains of a hut site at F41/565 is likely to be damaged or destroyed, but on-site observations revealed no indication of 19th century use of the area. Disturbance of F41/562 will be limited to the excavation of shallow trenching and will be located away from recorded building foundations. A small portion of what remains of the sod enclosure wall will be disturbed by this trenching. A small portion of F41/589 will also be impacted by the proposed works in the northwest corner of the site.

Recommendations

Based on the proposed plan to construct 16 new house lots and associated services as part of the Curtis Road subdivision, Origin Consultants make the following recommendations:

- Due to the extensive disturbance of the site from 20th century farming activity, it is unlikely that subsurface material in the form of refuse pits or similar will be uncovered within the assessment area. However, trenching in close proximity to F41/562 has the potential to uncover scattered material associated with the Chinese occupation of the site and parts of the Cardrona Company Water Race (F41/589) will be damaged by works. As such, an archaeological authority under Section 44 of the Heritage New Zealand Pouhere Taonga Act (2014) should be obtained from Heritage New Zealand prior to any earthworks commencing on site. F41/565 should be investigated during initial earthworks to determine if any 19th century activity occurred at the site.
- As a first principle, every practical effort should be made to avoid damage to any archaeological site, whether known, or discovered during works. This is particularly important around F41/562 as material may have survived relating to Chinese occupation.
- Contractors should be informed and briefed of the possibility that archaeological material may be uncovered during works as well as the wider archaeological site values. This includes immediate cessation of works in the area of discovery and communication with the approved archaeologist.
- If any subsurface archaeological features are uncovered during excavations, these should be recorded using appropriate archaeological standards by the approved archaeologist.
- If at any stage during site works Māori material is discovered, Heritage New Zealand should be consulted in the first instance. There are historic recordings of isolated Māori features and material culture in the wider area, but it is unlikely the proposed works will encounter any such items. If Māori material is encountered during works, then all work is to cease immediately with a 20m exclusion zone established around the find with damage to any material minimised or avoided. Once the Regional Archaeologist has been contacted, they will advise on the best way to proceed. If any Māori material is encountered, they will be, prima facie, property of the Crown and decision made regarding their management, including recording, analysis and custody will be made in collaboration with mana whenua.

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ARCHSITE archaeological site recording scheme

Site Record Form

NZAA SITE NUMBER: F41/562

SITE TYPE: Historic - domestic

SITE NAME(s):

DATE RECORDED:

SITE COORDINATES (NZTM) Easting: 1284236 **Northing:** 5023148 **Source:** CINZAS

IMPERIAL SITE NUMBER: **METRIC SITE NUMBER:** F41/562

Finding aids to the location of the site

Brief description

HUTS/ENCLOSURE

Recorded features

Other sites associated with this site

SITE RECORD HISTORY	NZAA SITE NUMBER: F41/562

Site description

Condition of the site

Statement of condition

Current land use:

Threats:

SITE RECORD INVENTORY	NZAA SITE NUMBER: F41/562

Supporting documentation held in ArchSite

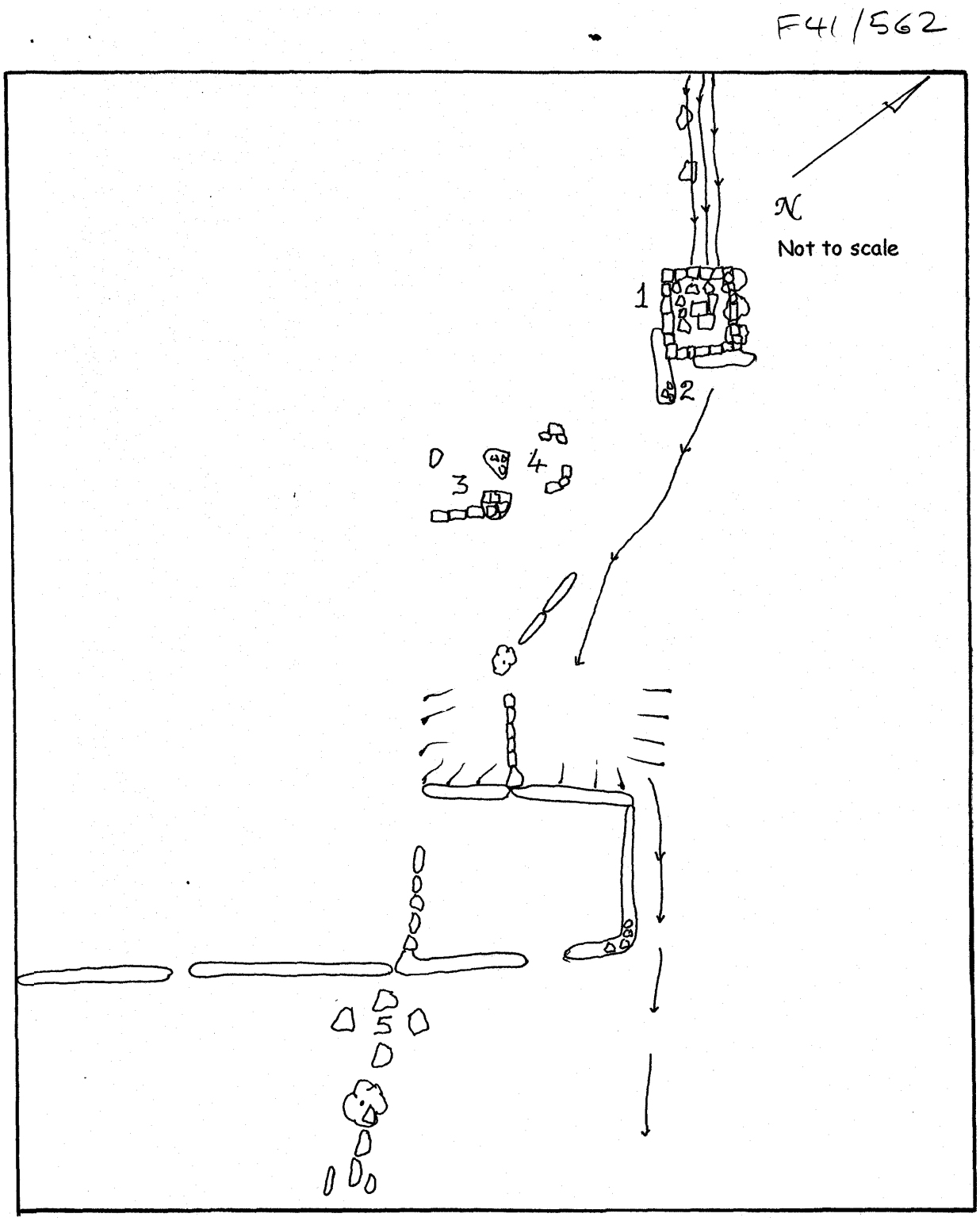


Figure 4. Sketch plan of the Chinese hamlet, gardens and part of the commonage wall. Features 1 — 5 are the remains of old huts. The other features are races, rocks and low mounds of earth.

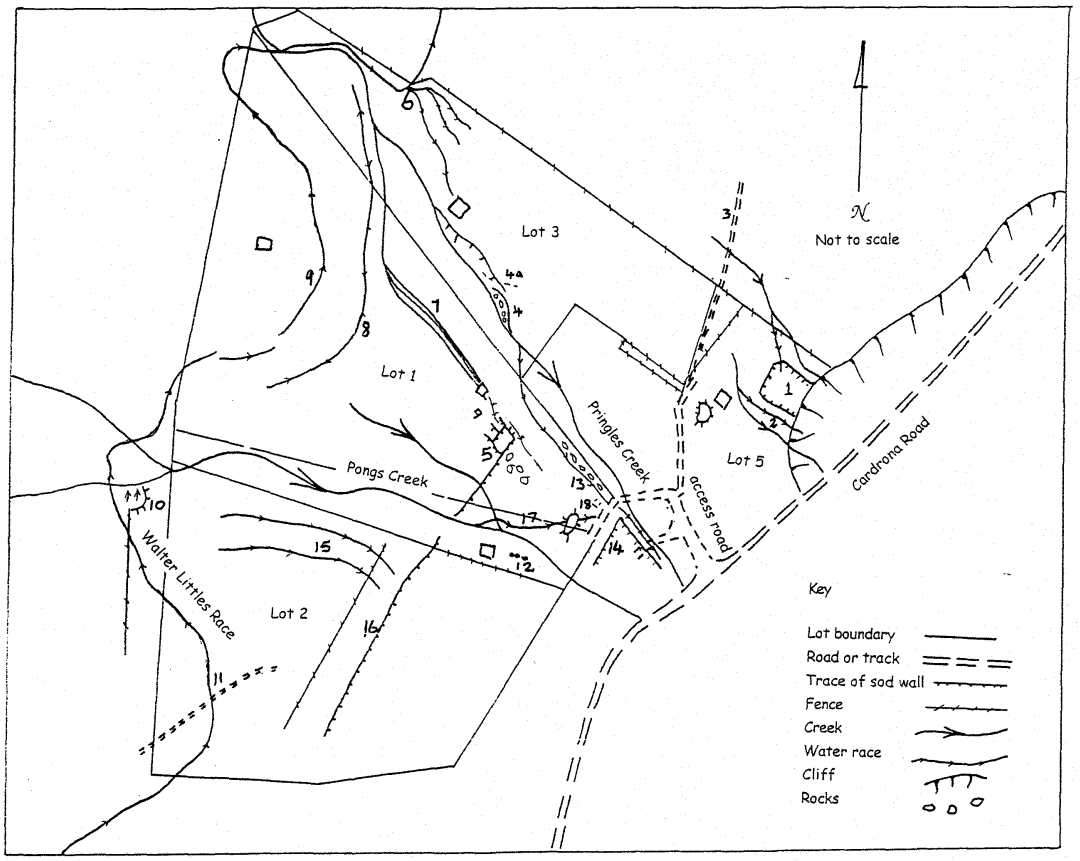


Figure 3. The location of archaeological features on the Pringle Creek subdivision.For a list of the numbered features see Appendix 1. Feature 5 is shown in more detail in Figure 4. The building platforms (see Figure 1) are shown where they were judged to be located relative to the archaeological sites.

F41/562

F41/562

Appendix 1.

Archaeological features on the Pringle Creek subdivision, Cardrona.

1. Traces of a sod walled enclosure
2. Small race
3. Old road line running north out the subdivision
4. Sluiced area in Pringles Creek

4a.Short dray road down on to the flat by the creek

5. The Chinese hamlet of about five huts and three reservoir/garden enclosures.
6. Bywash channels out of Walter Little's Race
7. Triple channel running down to the Chinese hamlet
8 Minor race
9. Walter Little's Race
10. Pine tree clump and possible hut site in upper Pongs Creek
11. Track bulldozed across Walter Little's Race.
12. Short stone alignment in lower Pongs Creek.
13. Race on true right of lower Pringles Creek
14. Trace of sod wall enclosure on true right of lower Pringles Creek
15. Minor races
16. Trace of sod wall
17. Small race out of Pongs Creek
18. Hut visible in lower corner of Lot 1 in an old photograph of Cardrona township.

F41/562

Pringles and Pongs Creek subdivision, Cardrona Valley

Jill Hamel
October 2000

Contents

List of figures

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD FORM (NZMS260)

NZMS 260 map number F41
NZMS 260 map name Arrowtown
NZMS 260 map edition 2004

NZAA METRIC SITE NUMBER **F41/562**
DATE VISITED 28/11/2005
SITE TYPE ~~historic~~ Enclosure / huts
SITE NAME: MAORI
OTHER ~~Chinese?~~

Grid Reference Easting .2 1.9 | 4 | 2 | 1~~7~~ 00 . . Northing 5.5 8 | 4 | 8 | 9~~5~~ 00 . .

1. **Aids to relocation of site** *(attach a sketch map)*
To the west of Curtis road (off Pringles Creek Road) in the Cardrona Valley, at the top of a slope just to the north of Pong's Creek. Don't have cadastral info but there is a single house on this lot, identified as Lot 1 C.T. 17B/975 Sec 5 in 2000. GPS E2194217 N5584895

2. **State of site and possible future damage**
Not known – sighted from a distance.

3. **Description of site** *(Supply full details, history, local environment, references, sketches, etc. If extra sheets are attached, include a summary here)*
Site consists of an enclosure of low stone walling about 40 cm high. This encloses an area 5.5 x 8.5 metres which has been dug out slightly & paved with flat stones. On the lower side of the stone walled enclosure there are traces of sod walling with stones embedded in it, which may have enclosed a hut 5.5 x 6.5 metres. A water race runs away from the stone wall to a complex of low earth walls.
About 16 metres away are the remains of what was likely to have been a chimney – a mound of stone with other mounds of stone and sod. Other remains of sod & stone suggest a total of about five huts with garden enclosures watered from a race and reservoir system, likely to have been occupied by Chinese.
A major sod wall was part of this complex when Jill Hamel identified the features in 2000. On this visit it was difficult to see any part of the sod wall which formerly conntinued into the property on the south boundary.
This site was not visited but was viewed from a distance. Jill Hamel identified the site during fieldwork in 2000 and has described and sketched it in "Pringles and Pongs Creek subdivision, Cardrona Valley". I have also been informed of an historic map that identifies Chinese gardening in this location, but have not yet found a reference for this.

4. **Owner** Not known
Address
Tenant/Manager
Address

5. **Nature of information** *(hearsay, brief or extended visit, etc.)* Viewed from neighbouring property
Photographs *(reference numbers and where they are held)*
Aerial photographs *(reference numbers and clarity of site)*

6. **Reported by**
Address
Filekeeper
Date

7. **Key words**

8. New Zealand Register of Archaeological Sites *(for office use)*
NZHPT Site Field Code
HA Type of Site DD Present Condition
-- Land Classification TJ Local Body

F41/562

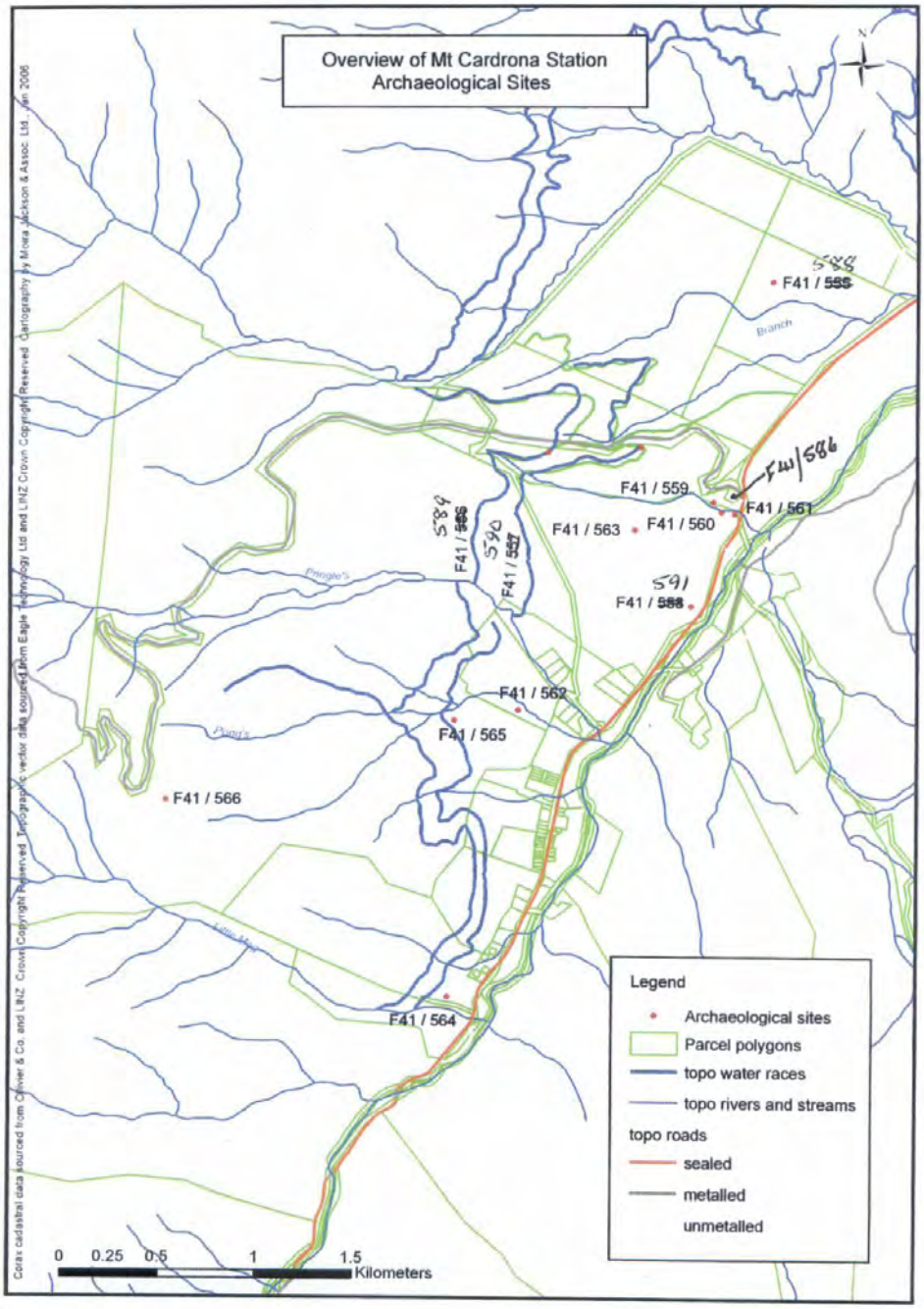


Figure 3. Overview of Mt. Cardrona Station archaeological sites.

ARCHSITE archaeological site recording scheme

Site Record Form

NZAA SITE NUMBER: F41/565

SITE TYPE: Historic - domestic

SITE NAME(s):

DATE RECORDED:

SITE COORDINATES (NZTM) Easting: 1283906 **Northing:** 5023098 **Source:** CINZAS

IMPERIAL SITE NUMBER: **METRIC SITE NUMBER:** F41/565

Finding aids to the location of the site

Brief description

HUT RUINS

Recorded features

Other sites associated with this site

Printed by: benteele 30/05/2019

SITE RECORD HISTORY	NZAA SITE NUMBER: F41/565

Site description

Condition of the site

Statement of condition

Current land use:

Threats:

SITE RECORD INVENTORY	NZAA SITE NUMBER: F41/565

Supporting documentation held in ArchSite

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD FORM (NZMS260)

NZAA METRIC SITE NUMBER **F41/565**

DATE VISITED 28/11/2005

NZMS 260 map number F41

NZMS 260 map name Arrowtown

NZMS 260 map edition 2004

SITE TYPE ~~Historic~~ hut ruins

SITE NAME: MAORI

OTHER ~~European~~

Grid Reference Easting .2 1.9 | 3 | ~~8 8 6~~ 900 . . Northing .5 5.8 | 4 | 8 | ~~4 1~~ 00 . .

1. Aids to relocation of site *(attach a sketch map)*

Off Curtis Road (off Pringles Creek Road) in the Cardrona Valley. To the west of the gate on Curtis Road. Stand of macrocarpa trees on a knoll to the west. The intersection of Little's water race and Pong's Creek is about 20 metres behind the clump of macrocarpas.

GPS E 2193886 N5584841

2. State of site and possible future damage

Disturbed by recent clearing.

3. Description of site *(Supply full details, history, local environment, references, sketches, etc. If extra sheets are attached, include a summary here)*

There is likely to have been a hut or enclosure within the shelter of the macrocarpa trees. Jill Hamel identified this site during her 2000 survey, "Pringles and Pongs Creek subdivision". There is a second levelled area behind the trees, close to the creek and water race, with a small amount of stone on the surface that may also have been a hut or enclosure site.

See SRF F41/562

4. Owner Address Mt. Cardrona Station

Tenant/Manager Address

5. Nature of information *(hearsay, brief or extended visit, etc.)* Visit

Photographs *(reference numbers and where they are held)*

Aerial photographs *(reference numbers and clarity of site)*

6. Reported by Address Angela Middleton
31 Royston Street
N.E.V.
Dunedin

Filekeeper Date J. Hamel 11/06.

7. Key words

8. New Zealand Register of Archaeological Sites *(for office use)*
NZHPT Site Field Code

Latitude S

Longitude E

HA Type of site

CD Present condition & future danger of destruction

Local environment today

Security code

AC Land classification

Local body

ARCHSITE archaeological site recording scheme

Site Record Form

NZAA SITE NUMBER: F41/589

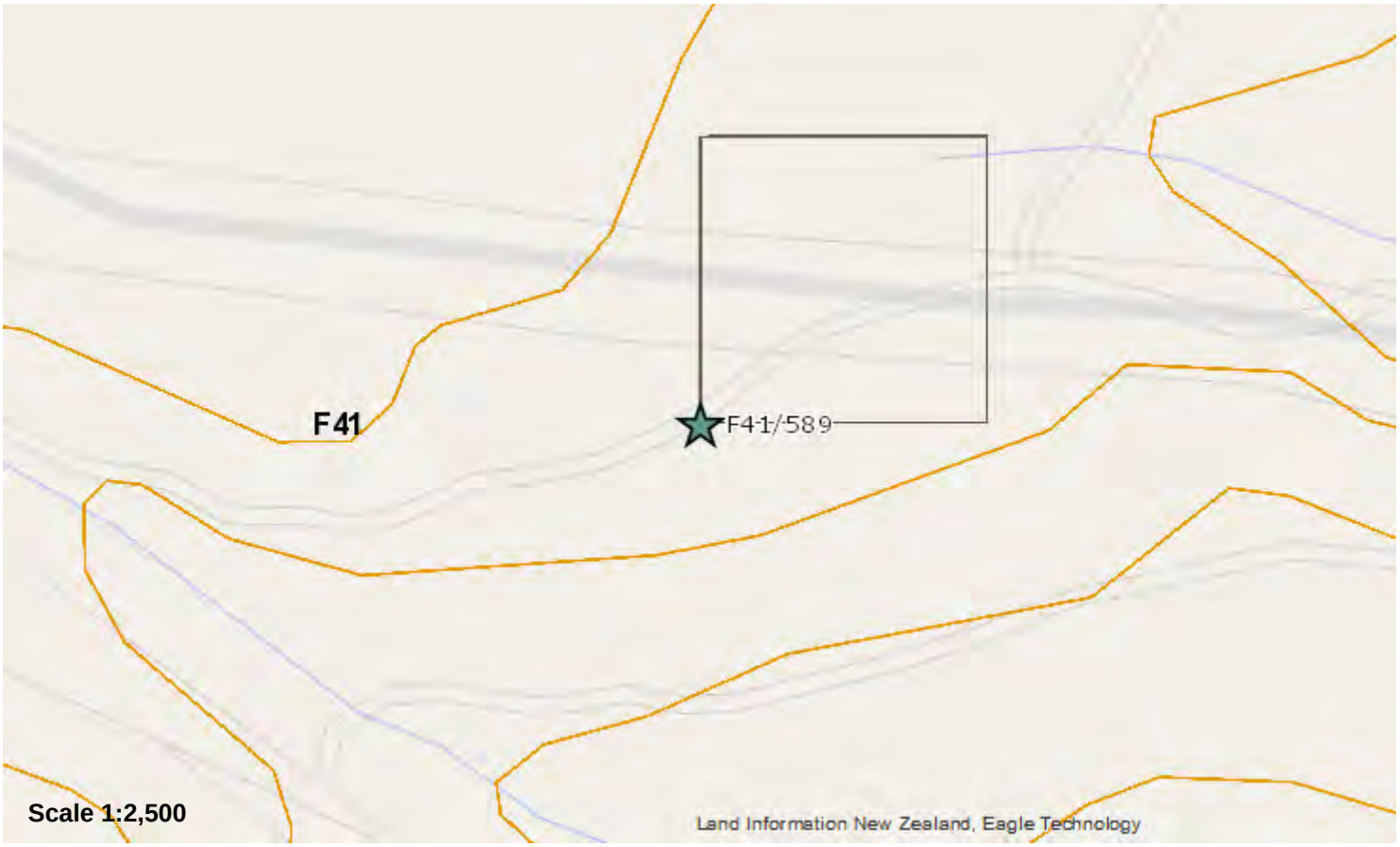
SITE TYPE: Industrial

SITE NAME(s):

DATE RECORDED:

SITE COORDINATES (NZTM) Easting: 1284385 **Northing:** 5024489 **Source:** CINZAS

IMPERIAL SITE NUMBER: **METRIC SITE NUMBER:** F41/589



Finding aids to the location of the site

Brief description

WATER RACE

Recorded features

Other sites associated with this site

Printed by: benteele 30/05/2019

SITE RECORD HISTORY	NZAA SITE NUMBER: F41/589

Site description

Condition of the site

Statement of condition

Current land use:

Threats:

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD INVENTORY	NZAA SITE NUMBER: F41/589

Supporting documentation held in ArchSite

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD FORM (NZMS260)

NZMS 260 map number: F41	NZAA METRIC SITE NUMBER: F41/~~556~~ 589
NZMS 260 map name: Arrowtown	DATE VISITED: 28/11/2005
NZMS 260 map edition: 2004	SITE TYPE: ~~Historic~~ Water race
	SITE NAME: MAORI
	OTHER: ~~European~~ Cardrona Company WR

Grid Reference Easting 2.1 9.|4|3|~~6+5~~ 00. . Northing .5.5 8|6|2|~~3+4~~ 00. .

1. Aids to relocation of site *(attach a sketch map)*

Cardrona Company water race can be seen running for some kilometres north along the west side of the Cardrona valley, below Mt. Cardrona.
It runs towards Boundary Creek and Branch Burn from somewhere south of the site of the former Cardrona township, now identified principally by the location of the Cardrona Hotel.
This water race is identified on the topographic map and can also be identified on aerial photographs. E2194365 N5586234

2. State of site and possible future damage

This water race is in good condition in some parts – but in other areas it has been damaged, e.g. in the formation of the Cardrona skifield road, which now bisects it.
The race was not followed for the complete distance that it runs – so it is not possible to verify its condition from beginning to end.
Grid ref point was taken from south of the Skifield Road where the race can be clearly seen on aerial photos

3. Description of site *(Supply full details, history, local environment, references, sketches, etc. If extra sheets are attached, include a summary here)*

The Cardrona Company, a syndicate of 13 gold miners, developed this water race in the 1890s to work ground 40 feet deep by hydraulic elevation.
Jill Hamel's 1990 report, "The Little and Cardrona Races" provides background about this water race.
See also Angela Middleton report "Mt. Cardrona Station archaeological sites" 2006.

4. Owner Address Mt. Cardrona Station

Tenant/Manager Address Cardrona Valley

5. Nature of information *(hearsay, brief or extended visit, etc.)* Visit 28/11/2005

Photographs *(reference numbers and where they are held)*

Aerial photographs *(reference numbers and clarity of site)*

6. Reported by Address
Angela Middleton
31 Royston Street
N.E.V.
Dunedin

Filekeeper Date J Hamel 11/06

7. Key words

8. New Zealand Register of Archaeological Sites *(for office use)*
NZHPT Site Field Code

Latitude S

Longitude E

HHA Type of site

199 Present condition & future danger of destruction

| | | Local environment today

| | | Security code

AC Land Classification

TJ Local Body

Printed by: benteele 30/05/2019

ARCHSITE archaeological site recording scheme

Site Record Form

NZAA SITE NUMBER: F41/590

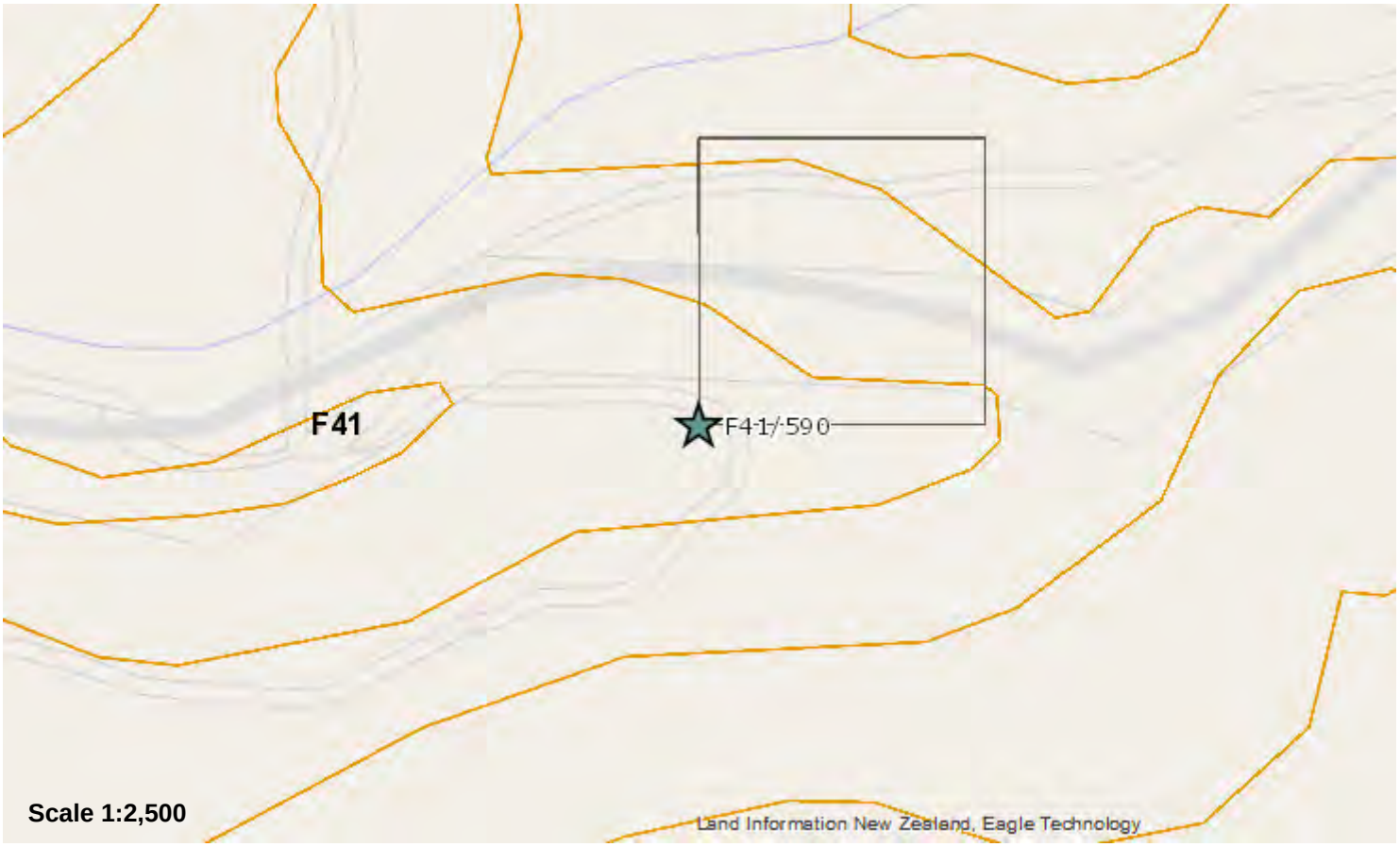
SITE TYPE: Industrial

SITE NAME(s):

DATE RECORDED:

SITE COORDINATES (NZTM) Easting: 1284866 **Northing:** 5024520 **Source:** CINZAS

IMPERIAL SITE NUMBER: **METRIC SITE NUMBER:** F41/590



Finding aids to the location of the site

Brief description

WATER RACE

Recorded features

Other sites associated with this site

Printed by: benteele 30/05/2019

SITE RECORD HISTORY	NZAA SITE NUMBER: F41/590

Site description

Condition of the site

Statement of condition

Current land use:

Threats:

SITE RECORD INVENTORY	NZAA SITE NUMBER: F41/590

Supporting documentation held in ArchSite

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD FORM (NZMS260)

NZAA METRIC SITE NUMBER F41/~~557~~ 590
DATE VISITED 28/11/2005
SITE TYPE ~~Historic~~ Water race
SITE NAME: MAORI
OTHER Little's water race

NZMS 260 map number F41
NZMS 260 map name Arrowtown
NZMS 260 map edition 400

Grid Reference Easting .2 1.9 | 4 | 8 | 4 | 4. . Northing .5 5.8 | 6 | 2 | ~~6~~ 95 .

1. Aids to relocation of site *(attach a sketch map)*

Little's water race can be seen running for some kilometres north along the west side of the Cardrona valley, below Mt. Cardrona. It runs parallel to some extent with the Cardrona Company water race, also running north.
It runs towards Boundary and Branch Creeks from Cardrona no. 11 bridge, just south of the site of the former Cardrona township, now identified principally by the location of the Cardrona Hotel.
This water race is identified on the topographic map.
The race can be seen on either side of the skifield road. It can be identified on the south side of the road at a pine plantation about 500 metres from the skifield road entrance.
Grid ref south of Skifield Road. GPS E 2194844 N 5596261

2. State of site and possible future damage

Parts of the race are in good condition while in other areas it is damaged or destroyed. It has been destroyed by the formation of the skifield road for example. It has also been destroyed just south of the confluence with Pong's creek, across the adjacent paddock in the line it must formerly have followed to Curtis road. It has also been destroyed by the formation of Curtis road, and on the other side of this road has been turned into a track. Its line from these two points can still be made out on aerial photographs.

3. Description of site *(Supply full details, history, local environment, references, sketches, etc. If extra sheets are attached, include a summary here)*

Walter Little, a Cardrona resident and gold miner, developed this water race in the 1890s. Its intake, according to Hamel (1990) is from Callaghan's Creek, south of the site of the former Cardrona township.

See Jill Hamel's 1990 report, "The Little and Cardrona Races", for further information.
See also Angela Middleton report "Mt. Cardrona Station archaeological sites" 2006.

4. Owner Mt. Cardrona Station
Address
Tenant/Manager Address Mt. Cardrona Valley

5. Nature of information *(hearsay, brief or extended visit, etc.)* visit 28/11/2005
Photographs *(reference numbers and where they are held)*
Aerial photographs *(reference numbers and clarity of site)*

6. Reported by Angela Middleton
Address 31 Royston Street
N.E.V.
Dunedin
Filekeeper Date J. Hamel 11/06

7. Key words
HA Type of site
AC Land Classification
BD Present condition
TJ Local Body

ARCHSITE archaeological site recording scheme

Site Record Form

NZAA SITE NUMBER: F41/842

SITE TYPE: Mining - gold

SITE NAME(s): Pongs Creek workings

DATE RECORDED:

SITE COORDINATES (NZTM) Easting: 1284219 **Northing:** 5023203 **Source:** On Screen

IMPERIAL SITE NUMBER: **METRIC SITE NUMBER:** F41/842

Finding aids to the location of the site

Site is located within Pongs Creek catchment, located northwest of Cardrona Valley Road.

Brief description

Site is comprised of eroded and poorly defined alluvial gold mining features.

Recorded features

Mining workings

Other sites associated with this site

F41/562

SITE RECORD HISTORY	NZAA SITE NUMBER: F41/842

Site description

Updated 30/08/2019 (Field visit), submitted by benteele , visited 31/05/2019 by Teele, Benjamin
Grid reference (E1284219 / N5023203)

Site is comprised of eroded and poorly defined alluvial gold mining features. These features are restricted to the immediate area either side of Pongs Creek, with more intact features visible upstream. The site was likely worked by both European and Chinese miners from the 1860s, possibly through to the early 20th century. A small Chinese hamlet (F41/562) is located nearby to the northeast, and may be associated with the site. Two water races (F41/589, F41/590) cut across Pongs Creek upstream.

Condition of the site

Updated 30/08/2019 (Field visit), submitted by benteele , visited 31/05/2019 by Teele, Benjamin

Ongoing erosional processes from Pongs Creek and likely stock damage have resulted in poorly defined alluvial mine features.

Statement of condition

Updated: 01/09/2019, Visited: 31/05/2019 - Poor - Visible features are incomplete, unclear and/or the majority have been damaged in some way

Current land use:

Updated: 01/09/2019, Visited: 31/05/2019 - Rural residential

Threats:

Updated: 01/09/2019, Visited: 31/05/2019 - Property development

SITE RECORD INVENTORY	NZAA SITE NUMBER: F41/842

Supporting documentation held in ArchSite

Upper portion of Pongs Creek showing area worked by alluvial methods. B. Teele. 31/05/2019

Lower portion of Pongs Creek showing alluvial workings. B. Teele. 31/05/2019

Memorandum of Proposed Land Covenants

Pongs Creek Clutha Flathead Preservation Corridor (PCCFPC). To be registered against and for the benefit and burden of all titles to lots 1-16 and the balance lot:

1. The management company to be established to manage the shared facilities of lots 1 – 16 (**management company**), will also be responsible for maintaining the planting of the PCCFPC. Levies will be payable by the owners of lots 1-16, and the balance lot to meet the maintenance costs.

2. All lot owners shall be required to take a share in the management company.

3. Lot owners and their tenants/invitees shall be entitled to use the PCCFPC for walking, leisure and enjoyment, however strictly in accordance with the rules contained in these covenants, and any further rules which may be set by the management company from time to time.

4. All lot owners acknowledge that Pongs Creek running through the PCCFPC contains a threatened species of native fish, known as the Clutha Flathead Glaxias, and agree to comply with all rules contained in this covenant and any further rules set by the management company in order to protect the native species of fish.

5. The PCCFPC shall at all times be fenced to prevent the wandering of stock into the PCCFPC, and in the event of any part of the fence becoming damaged or destroyed, the management company shall be responsible for immediately remedying the damage.

6. When using the PCCFPC, no user shall:

    a. Swim or paddle in Pongs Creek;
    b. Wash or clean in Pongs Creek;
    c. Allow animals of any kind (including pets) to enter the PCCFPC;
    d. Pollute, contaminate or discharge any poisonous, noxious or dangerous substance or thing onto the PCCFPC;
    e. Dispose of rubbish onto the PCCFPC;
    f. Light a fire;
    g. Discharge a firearm;
    h. Wilfully or carelessly damage any plant, bush, shrub or tree;
    i. Engage in any motorised or equestrian activity;

7. All lot owners and their tenants and invitees shall make every practical effort not to disturb or damage the archaeological sites located within the PCCFPC identified in the Origin Consultants Report dated January 2020.

8. If any lot owner, or their tenants or invitees causes any damage or destruction to the PCCFPC then that lot owner shall be responsible for the cost of reinstating the PCCFPC to it’s original condition prior to the damage or destruction.

9. Signs relating to the PCCFPC must be obeyed at all times.

10. The management company shall be permitted to arrange for the spraying of noxious weeds (eg. broom) using noxious sprays within the PCCFPC, provided that no spraying is undertaking withing 10 meters from either side of Pongs Creek. Any noxious weeds within 10 metres of Pongs Creek shall be controlled by way of manual removal.

Landscape Protection Zone (LPZ). To be registered for the benefit of lots 1-16 and the burden of the balance lot:

1. Further subdivision of the LPZ is not permitted.

2. The erection of buildings, sheds, dwellings within the LPZ is not permitted.

3. The parking of vehicles, caravans, boats and trailers within the LPZ is not permitted.

4. Relocatable or temporary buildings or structures are not permitted within the LPZ.

5. The construction of underground services (eg. wastewater, stormwater, electricity, telecommunications) within the LPZ is permitted, provided that the surface of the land is reinstated with the planting of grass and/or other native shrubs, plants and trees.

6. The recommendations in the Origin Consultants Report dated January 2020 shall be followed in relation to the archaeological site identified as F41/562, and every effort should be made not to disturb such archaeological site.

Draft Consent Notice

The following conditions do not apply to Lot 16 DP XXXXXX as the building platform has been previously consented by RM090876.

Architectural Controls

1. All buildings, including ancillary buildings must be located within the building platform.

2. All buildings must not extend beyond 4.5m of a specified datum floor level to the highest point of the roof.

3. All buildings must not exceed a site coverage of 50% of the building platform area.

4. The main roof forms of the residential dwellings across lots 2.16 are to be gabled with the pitch of these roofs to be a minimum of 35%. 15% of the roof can be flat to allow for connections between gabled forms.

5. Mono-pitched roof is permitted for Lot 1.

6. Hip roofs are not permitted, no gables shall run into one another.

7. Roof colours should have an LRV between 5 – 22%. Roof materials shall be restricted to one material from the following:
    - Steel tray cladding/roof in Resene (or similar) 'Element', 'Grey Friars', 'Ironsand', 'Nocturnal', 'Charcoal', 'Cave Rock', 'Karaka', 'Windswept', with matte finish only.
    - Profiled Steel in Resene (or similar) 'Element', 'Grey Friars', 'Ironsand', 'Nocturnal', 'Charcoal', 'Cave Rock', 'Karaka', 'Windswept', with matte finish only.
    - Timber shingles dark stained to match an LRV of 5 – 22%.

8. The roof material for Lot 1, in addition to the above materials, can be grassed (green roof).

9. For lots 2 – 16, the cladding materials shall be selected from the palette below:
    - Natural timber cladding, left to weather, or in dark browns or greys, including burnt larch;
    - Stained timber cladding, in dark stain to match a LRV of 5 – 22%;
    - Stone: random sized schist as cladding and landscape wall elements, laid horizontally, and locally sourced;
    - Profiled metal: standing seam profile in dark colours, pre-weathered zinc, or mild steel;
    - All joinery to have low reflectance glazing with dark aluminum, steel, or timber frames;
    - Concrete: low light reflection coefficient to be achieved through texture or oxide additives, or textured concrete such as 'board-formed'.
    - Corten or mild steel as wall cladding or landscaping features.

10. In addition to the materials listed above, Lot 1 can also include rammed earth as a wall cladding option.

11. All window and door joinery, gutters, and down pipes shall be coloured to match the roof and exterior wall cladding.

12. All glazing shall be anti-reflective ad recessed into wall profiles, or setback under the roof form. Minor tinting may be appropriate.

13. Any ancillary building such as garage or shed is to be no higher than 4.5m of the specified datum floor level to the highest point of the roof.

14. All ancillary buildings to be clad in the same materiality and colour of the residential dwelling.

Landscape Controls

15. Plant species to be used within the lot landscaping area shall be limited to the following list:

Trees:

- Plagianthus regius (Ribbonwood)
- Sophora microphylla (South Island Kowhai)

Grasses/Sedges/Flax:

- Chionochloa rigida (Snow Tussock)
- Phormium cookianum (Whararikí/Mountain Flax)
- Cortaderia richardii (South Island Toe Toe)

Shrubs:

- Coprosma propinqua (Mingimingi)
- Coprosma rugose (Needle-leaved mountain coprosma)
- Coprosma virescens (NZ Coprosma)
- Corokia cotoneaster (Korokio)
- Oleria odorata (Tree daisy)
- Oleria lineata (small-leaved Tree Daisy)
- Oleria bullata
- Oleria hectorii (Hectors Tree Daisy)
- Ozothamnus vauvilliersii (Mountain Cottonwood)

16. Each lot shall plant a minimum of 8 species from the above list within their curtilage areas.

17. No exotic trees or plants are permitted, except small contained vegetable and herb gardens.

18. Plant numbers on slopes must be calculated for the actual surface area and not the plan area to ensure slopes will be sufficiently planting.

19. The lot owner shall ensure that the lot is kept free of noxious weeds and in a neat and tidy condition.

20. Selected species to be sporadically planted to suit the wider context of the alpine and rural character.

Fencing

21. Post and rail fences are permitted to mark the property boundaries on road side and driveway entrances only for proposed lots 2 – 15. The fence shall be no higher than 1m in height.

22. Fences to mark the property boundaries for proposed lots 1 and 16 are permitted and can be constructed with post and rail fence on road side and driveway entrances. Post and wire farm fencing is to be used to mark the remaining boundary.

23. Where fences within the curtilage area shall be no higher than 1m in height and be constructed in traditional post and wire, or waratah and wire, or post and netting, or waratah and netting.

24. Fencing/walls/screens for the purpose of privacy and shelter within the building platforms shall be constructed in the materials specified for architectural wall claddings. Fencing/walls described shall not exceed 1.5m in height.

Driveways

25. Gravel driveways to lot boundaries will be provided. For all other driveways and vehicle courtyards within the lot boundaries, gravel or concrete with an exposed aggregate finish shall be used.

26. Driveways are to be no wider than 3.5m.

27. Ornamental gates or entry features are to be design in similar fashion to the traditional post and wire fence, not exceeding 1m in height and in timber only.

28. Letterboxes are to only be located at the entrance to the development.

External lighting

29. All exterior lighting shall be restricted to down lighting only and for the purposes of lighting private areas within the boundary setbacks.

30. All exterior lighting not fixed to a building shall be no more than 1.2m in height and directed downward.
31. Light sources are to be LED, incandescent, halogen, or other “white light”, not sodium vapour or other coloured light.

Site utilities & Exterior service areas

32. Exterior service areas to be appropriately screened with native planting from planting species list.

33. Air conditioning units, meter readers or any other electronic units relating to the dwelling shall be painted to match the cladding or screened with planting.

34. Air conditioning units, or other units of any kind shall not be mounted on the roof.

35. All exterior service areas must be places within the building platform.

36. All site utilities such as gas supply, electrical supply, storm water piping, foul sewer, telecommunication, shall be underground or contained within the building structure.

37. Water tanks for the purposes of firefighting and potable water shall be concreate and buried.

38. Water tanks for the purposes of irrigation are to be buried.

Swimming & Spa pools

39. Swimming pools and spas must be located within the curtilage areas. The pool plant is to be houses inside the house, garage, or ancillary building and must be acoustically insulated.

40. Pool fencing is to comply with any applicable local authority and safety standards and integrate with the house and landscape design utilising dark colours and natural materials.

Paving

41. Paved areas within the curtilage areas are restricted to mid to dark grey 'natural materials' such as schist paving, asphalt, exposed aggregate, granites, bluestone or similar.

42. Coloured concrete paving in colours other than those described above are not permitted.

Materiality

43. Materials for other landscape features (e.g. fire pits, decking) are to complement the architectural materiality outlined in the architectural design controls.

Sculptures & Garden Art

44. Sculptures and garden art shall be discrete and of an appropriate colour range as described in the controls and to be no higher than 1.5m.

Otago Regional Council

Our Reference: Consent No. RM20.203.03

DISCHARGE PERMIT

Pursuant to Section 104C of the Resource Management Act 1991, the Otago Regional Council grants consent to:

Name: Charles Layton Roberts, Christine Jennifer Roberts and Jo-anne Leslie Johns being Trustees of the Roberts Family Trust

Address: 10 Curtis Road, Cardrona

To discharge sediment laden water to land where it may enter water for the purpose of undertaking residential earthworks for a subdivision.

For a term expiring 29 June 2027

Location of consent activity: Cardrona Valley, approximately 65 metres west of the intersection of Curtis Road and Pringles Creek Road

Legal description of consent location: Lot 1 DP 433836, Lot 6 DP 344432 & Lot 1 DP 425263, Lot 2 DP 512956

Map Reference: Midpoint of site: NZTM 2000 E 1284044 N 5023109

Conditions

Specific

1.
(a) This consent authorises the discharge of sediment laden water to land where it may enter water as a result of residential earthwork activities at the legal descriptions and site shown above.
(b) This consent does not authorise the direct discharge of contaminants or sediment laden water to water.

2. The discharge to land must be carried out in accordance with the plans and all information submitted with the application, detailed below, and all referenced by the Consent Authority as consent number RM21.436:
    a) Application form, and assessment of environmental effects dated 25 June 2020;
    b) Curtis Road Cardrona Ecological Assessment provided with application, E3 Scientific, reversion 1.1, 14/02/2019;
    c) Scheme Plans provided with the application, C Hughes and Associates, Revision C, December 2019;
    d) Infrastructure Report McDougall's Block provided with the application, Holmes Consulting LP, Version 5, 04 March 2020;
    e) McDougall's Block Proposed Onsite Wastewater Management System Site Assessment Report, E3 Scientific, Version C, 15 January 2020;
    f) Geotechnical Report for Resource Consent provided with application, GeoSolve Ltd, Rev 3, January 2020; and
    g) Response to further information request dated 16 May 2021, 23 June 2021, 14 September 2021, 28 September 2021, 19 October 2021, 13 January 2022, 23 March 2022. 28 April 2022 and 11 May 2022.

    If there are any inconsistencies between the above information and the conditions of this consent, the conditions of this consent will prevail.

3. This consent must be exercised in conjunction with Land Use Consent RM21.436.02.

Performance Monitoring

4. Samples of the treated runoff water must be collected and analysed for the following parameters at the frequencies and locations specified below. Samples must be taken at locations agreed to and certified by the Consent Authority, as part of condition 9 (submission of final EMP prior to commencement of works) of the land use consent RM20.203.02.

Parameter	Sampling locations and frequency	Discharge Limit
Turbidity	A sample must be taken and analysed from an uncontrolled release of dirty water at the site boundary or at a surface waterbody where an accurate sample can be achieved.	100 Nephelometric Turbidity units (NTU)
Suspended Solids	A sample must be taken from an uncontrolled release of dirty water at the site boundary or at a surface waterbody where an accurate sample can be acheived. Every sample must be kept on site for 24 hours after the sample was taken in suitable conditions, and upon request by the Consent Authority, have the sample analysed immediately.	50 milligrams per litre of Total Suspended Solids
Hydrocarbons, tannins, paint, waste and litter	A visible inspection must be taken and analysed at an uncontrolled release of dirty water at the site boundary or at a surface waterbody where an accurate inspection can be achieved	No visible trace

All samples must be collected and analysed in accordance with the latest edition of GD05; or by similar methods certified as being equivalent in writing by the Consent Authority.

5. In circumstances where one or more of the limits set out in condition 4 are exceeded, the Consent Holder must resample and/or retest that parameter to confirm the exceedance within 2 hours of the original sampling. In circumstances where one or more of the limits set out in condition 4 are exceeded on two consecutive sampling occasions and these results are confirmed exceedances (i.e. it is not due to faulty testing or other parameters affecting the results), the Consent Holder must report to the Consent Authority within 48 hours of any confirmed exceedance.
   a) This notification must include advice of any corrective actions taken by the Consent Holder.
   b) A comprehensive Environmental incident report must be provided to the Consent Authority within 20 working days of the notification of the exceedance. This report must include:
      i. identification of the likely cause of the limit exceedance;

ii. the effects on the receiving environment likely to arise because of the limit exceedance;
iii. the management responses and remedial action undertaken so far;
iv. actions that may be necessary to prevent any further limit exceedances occurring;
v. identify remedial action that may be necessary and confirmation of implementation *Advice note: The consent holder is required to obtain any resource consents required prior to implementing remedial action.*

c) Within one month of the exceedance being detected, the Consent Holder must update the ESCP in Condition 10 of Land Use Consent RM20.203.02 as necessary and provide a copy to the Consent Authority.

6. Records of all discharge monitoring in accordance with Condition 4 must be kept on site and compiled and submitted to the Consent Authority at any other time upon request by the Consent Authority.

General

7. The discharge, must not give rise to all or any of the following effects in Pringles or Pongs Creeks:
   a) The production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials; or
   b) Any conspicuous change in the colour or visual clarity; or
   c) A noticeable increase in local sedimentation.

8. The Consent Holder must ensure that the discharge authorised by this consent does not cause any flooding, erosion, scouring, land instability or property damage on land not owned by the Consent Holder.

9. The Consent Authority may, in accordance with Sections 128 and 129 of the Resource Management Act 1991, serve notice on the Consent Holder of its intention to review the conditions of this consent during the period of three months either side of the date of granting of this consent each year, or within two months of any enforcement action taken by the Consent Authority in relation to the exercise of this consent, for the purpose of:

   (a) Determining whether the conditions of this consent are adequate to deal with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage, or which becomes evident after the date of commencement of the consent;

   (b) Ensuring the conditions of this consent are consistent with any National Environmental Standards, relevant regional plans, and/or the Otago Regional Policy Statement;

Issued at Dunedin this 29th day of June 2022

Otago Regional Council

Joanna Gilroy
Manager Consents

View Instrument Details

Instrument No	9238838.3
Status	Registered
Date & Time Lodged	19 December 2012 11:56
Lodged By	Smith, Brittany Jane
Instrument Type	Consent Notice under s221(4)(a) Resource Management Act 1991

Affected Computer Registers	Land District
407160	Otago
560898	Otago
561825	Otago
561826	Otago
561827	Otago
561828	Otago
561829	Otago
561830	Otago
561831	Otago
561832	Otago
561833	Otago

Annexure Schedule: Contains 4 Pages.

Signature

Signed by Andrew Bryce Jack as Territorial Authority Representative on 18/12/2012 01:10 PM

***** End of Report *****

(5)

CONSENT NOTICE PURSUANT TO SECTION 221 RESOURCE MANAGEMENT ACT 1991

IN THE MATTER	of Section 221 of the Resource Management Act 1991
AND	
IN THE MATTER	of subdivision consent by MT CARDRONA STATION LIMITED, namely RM110660

BACKGROUND

A. MT CARDRONA STATION LIMITED of Queenstown has applied to the Queenstown Lakes District Council pursuant to provisions of the Resource Management Act 1991 for its consent to subdivide land comprised and described in Computer Freehold Register 560898 and 407160 (Otago Registry) ("the land").

B. Council has granted consent to the proposed subdivision subject to certain conditions which are required to be complied with on a continuing basis by the Owner of the land being those conditions specified in the Operative Part hereof.

OPERATIVE PART

The following condition pertaining to this Consent Notice is to be registered against the titles of the following allotments.

Lot 1 DP 446161 – CFR 561825 Lot 2 DP 446161 – CFR 561826
Lot 3 DP 446161 – CFR 561827 Lot 4 DP 446161 – CFR 561828
Lot 5 DP 446161 – CFR 561829 Lot 6 DP 446161 – CFR 561830
Lot 7 DP 446161 – CFR 561831 Lot 8 DP 446161 – CFR 561832
Lots 9, 10, 11, 12 DP 446161 and Lots 3, 7 & 8 DP21233 – CFR 561833

Servicing

a) At the time of future development all "necessary services" shall be installed to the boundary of each allotment to service future development, to the satisfaction of Council. For the purposes of this condition "necessary services" include a wastewater system, water supply system, storm water disposal system, vehicle access, telecommunications and electricity supply.

b) At the time of future development the owner for the time being shall provide all necessary service mains to also cater for the full development potential of all other allotments within the same catchment/service area unless these services have already been provided by a previous development.

c) All servicing infrastructure shall be implemented in accordance with Council's standards at the time or as otherwise approved by resource consent.

d) Reticulated potable water provided to the boundary of each allotment is restricted to domestic and commercial use only. Any water required for irrigation or other such use must be sourced from a separate supply, for example on site storage of rain water or recycled grey water.

Building Development

e) All buildings shall be constructed in accordance with the '*Mount Cardrona Station Design Guidelines*' dated September 2008 (or as amended by the Mount Cardrona Station Body Corporate or Residents Association (or similar) and approved by Council).

f) No building shall be constructed unless the owner of the lot on which that building is to be constructed has provided to the Council written confirmation from the Mount Cardrona Station Design Review Board that Design Approval has been given for the plans for that building.

g) All buildings shall be constructed in accordance with the terms specified in that approval by the Design Review Board.

Exotic Weed and Animal Pest Control

h) The site is to remain free of animal pests and exotic weed species including:

Gorse	*Ulex europaeus*
Broom	*Cytisus scoparius*
Pine	*Pinus radiata, Pinus muriata, Pinus contorta, Pinus ponderosa, Pinus sylvistris, Pinus nigra, Douglas Fir*
Sycamore	*Acer pseudoplatanus*
Thistles	
Briar Rose	*Rosa rubiginosa*

a. The land owner is responsible for the ongoing maintenance and costs of keeping the site free of the above exotic weed species;

b. Weeds are to be cleared manually, by machinery or through the use of appropriate spray applications. Any use of sprays are to be kept clear of open water ways;

c. The site is to be monitored and maintained in this manner on a continuing basis.

Financial and Development Contributions

i) At the time of any future development no 'deemed historic credit' is to be given relating to development contributions for Reserves (land, improvements and community facilities), roading, water, wastewater or stormwater.

OPERATIVE PART

The following condition pertaining to this Consent Notice is to be registered against the titles of the following allotments.

Lot 1 DP 446161 – CFR 561825 **Lot 2 DP 446161 – CFR 561826**
Lot 3 DP 446161 – CFR 561827 **Lot 4 DP 446161 – CFR 561828**
Lot 5 DP 446161 – CFR 561829 **Lot 6 DP 446161 – CFR 561830**
Lot 7 DP 446161 – CFR 561831 **Lot 8 DP 446161 – CFR 561832**

Pedestrian Access

a) Upon any future subdivision (excluding boundary adjustments) and at the discretion of Council in accordance with part b below the consent holder shall form pedestrian access easements D, E, F & J shown on D.P. 446161. The formation of the pedestrian access easements shall be to the following standards:

***Gradient**: maximum grade 1:10*

***Width**: minimum 1.5m*

***Surface**: compacted aggregate*

***Watercourses (if any):** bridged width at least 1.5m*

b) The Queenstown Lakes District Council can at any stage require in writing to the land owner that the land owner (also being the Grantor) is to form the pedestrian access easements D, E , F & J shown on D.P.446161. The land owner (also being the Grantor) is responsible for the full construction and

costs of forming the pedestrian access easements. The formation of the pedestrian access easements shall be to the following standards:

Gradient: *maximum grade 1:10*

Width: *minimum 1.5m*

Surface: *compacted aggregate*

Watercourses (if any): *bridged width at least 1.5m*

OPERATIVE PART

The following condition pertaining to this Consent Notice is to be registered against the title of the following allotments.

Lots 9, 10, 11 & 12 DP 446161 and Lots 3, 7 & 8 DP21233 – CFR 561833

Homestead Gully Management Plan

a) Homestead Gully is to be managed and maintained on a continuing basis in accordance with the Homestead Gully Management Plan at such time as the plan is approved by Council.

Protection of Water Races

b) The existing water races and their margins are to be managed and maintained on a continuing basis in accordance with the Management Plan at such time as the plan is approved by Council.

SIGNED for and on behalf)
Of the **QUEENSTOWN LAKES**)
DISTRICT COUNCIL by its)
Authorised Officer)

DATED the 7th day of June 2012

Landscape Assessment Report

Roberts Family Trust | McDougall's Block
Curtis Road, Cardrona Valley

January 2019

INTRODUCTION

1. This report assesses the landscape effects of a proposed subdivision off Curtis Road, Cardrona. The Applicant seeks land use consent for the formation of 16 lots (one of which will contain a previously consented building platform under RM090876), including the establishment of 15 additional residential building platforms (RBP), associated curtilages, access ways, infrastructure, earthworks, and landscaping. The proposal also includes provisions for ecological protection and enhancement within the central development area, and a landscape protection zone.

2. This report assesses the potential effects of the proposal on landscape and visual amenity. It includes the following:

    - Description of the site and wider landscape;
    - Description of the proposal;
    - Landscape Assessment;
    - Conclusion.

3. The following Attachments are included in this report:

    - Attachment A – Concept Masterplan (refer: Baxter Design 2738-SK40)
    - Attachment B – Planting Palette (refer: Baxter Design 2738-SK25)
    - Attachment C – Lot Schedule (refer: Baxter Design 2738-SK26)
    - Attachment D – Contour Plan (refer: Baxter Design 2738-SK27)
    - Attachment E – Protection Zones (refer: Baxter Design 2738-SK28)
    - Attachment F – Location Plan (refer: Baxter Design 2738-SK29)
    - Attachment G – Photographic Study A and B (refer: Baxter Design 2738-SK09)
    - Attachment H – Photographic Study C and D (refer: Baxter Design 2738-SK10)
    - Attachment I – Photographic Study E and F (refer: Baxter Design 2738-SK30)
    - Attachment J – Photographic Study G and H (refer: Baxter Design 2738-SK31)
    - Attachment K – Photographic Study I and J (refer: Baxter Design 2738-SK32)
    - Attachment L – MCSSZ Comparison (refer: Baxter Design 2738-SK33)
    - Attachment M – Design Controls

- Attachment N – Water Take Area (refer: Baxter Design 2738-SK41)
- Attachment O – Wastewater Treatment Plant (refer: Baxter Design 2738 SK42)
- Attachment P – Landscape Memo - August 2020

DESCRIPTION OF THE SITE & WIDER LANDSCAPE

1. The Cardrona Valley has a varying typology of landscape and activity including rural farmland, permanent and short-stay housing, and tourism activities which include the Cardrona Ski field, the Snow Farm, walking tracks, horse trekking, a distillery, and the historic Cardrona Hotel. Entering the valley from the south, the base of the valley reads as a flat and narrow channel, widening towards the Cardrona Village. High-density residential dwellings are positioned south of the hotel, while lower density residential lots are scattered amongst the gentle hillock valley floor surrounding the village. Pastoral farms are situated on the valley floor north east of the Cardrona Hotel. The valley is enclosed by picturesque mountainous ranges, scattered alpine vegetation and pastoral lands. The valley is surrounded by significant mountain ranges. On the western side of the valley is Mount Cardrona and the Cardrona ski field, with the Pisa Ranges on the east. An incised escarpment along the western side of Cardrona Valley Road creates a plateau at the foot of Mount Cardrona with gentle hillocks and rolling landscapes spread across the remaining area. The consented Mount Cardrona Special Zone is located on this plateau.

2. The Cardrona Village is adjacent to Cardrona Valley Road on both the eastern and western sides spread across approximately 2.2km of the valley. The village is centred around the historic Cardrona Hotel. Residential lots and dwellings are scattered in and around the perimeter of the village, while high-density accommodation is located south of the hotel. The buildings in the area are a mix of rustic, 'farmyard style' barns, and modern designed dwellings, adding to the rich historic character of the site.

3. Across the road from the Cardrona Hotel, to the east, a proposed 53 lot subdivision of lots 7-17 DP440230 by Brooklynee Holdings Ltd (director Kathy Lynne) is planned as part of RM110441, this proposal is currently on hold according to QLDC. Another development in the same location proposed by Cardrona Village Ltd seeks resource consent for development centred on Soho Street and Rivergold Way as part of RM190669. The proposed development comprises of a mix of hotels, serviced apartments, residential apartments, serviced terrace units, residential terraced units, residential dwellings, and a hostel across approximately 3.2 ha of land currently zoned as Rural Visitor under the QLDC ODP.

4. The Mount Cardrona Special Zone (MCSZ) is situated between the Cardrona ski field access road, and the subject site boundary approximately 1.7km north from the Cardrona Hotel. The zone provides for 480 mixed density housing lots, 80-bed four and a-half star hotel, an an18-hole golf course and facilities, open fields, biking, walking, and horse trails within its 131ha area. Attachment L displays an approximate lot layout scheme which represents the proposed density of the MCSZ in comparison to the applicants site and proposed density

5. Throughout this report 'subject site' refers to the entirety of the area for which this report is for. 'Development area' refers to the area of land within the subject site that is proposed for the bulk of the development (refer Attachment F).

6. The subject site is located on an elevated portion of land, west of the Cardrona Village, and is referred to as the western plateau in this report. The subject site landform is a gently undulating landscape with rolling hills, moderate slopes, and small ridges, north-west of the Cardrona Hotel (refer Attachment F). The site landform falls towards the north, rising up from the flatter terrace form on which the MCSZ is located. Within the site landform are minor gullies, terraces and hillocks.

7. Access to the subject site is via a right of way easement off Curtis Road, which is accessible via Pringles Creek Road, approximately 750m north-west from the Cardrona Hotel off Cardrona Valley Road.

8. The subject site currently contains one residential dwelling, located towards the northern boundary. Five residential lots (four with residential dwellings) are located on Gin and Raspberry Lane, adjacent to the subject site on the eastern boundary near Pringles Creek. Curtis Road is chip-sealed for half of its length. The remainder of the road is gravel. The gravel road then forks to service the residential dwelling to the north, and continues along the western boundary of the site.

9. The subject site landscape is an undulating landform, covered predominantly in open pasture grass with scattered alpine vegetation. Small valleys are present through the site running south-north, with gentle gradients. Pongs Creek flows through the site from west to east. Pongs Creek contains a diversity of alpine plant species which contribute to the natural character, meandering through the pastoral landscape within a defined catchment.

10. This undulating landform continues along the western plateau and rises into the development area which is predominantly pastoral land with remnant native alpine vegetation. Before pastoralism, indigenous vegetation would have dominated this landscape, as evident by the remnant vegetation across the landscape and within Pongs Creek. The development area is bordered by Pongs Creek to the north (refer Attachment F). The general slope across the development area rises from the creek towards the southern boundary where a consented RBP [RM090876] is located.

11. Two historic water races pass through the site, The Cardrona Company Race, and Littles Water Race. These have been damaged due to pastoral activity over time. There are eroded and poorly defined alluvial gold mining features in the landscape either side of Pongs Creek (refer to the Archaeological Assessment from Origin). Some of these features are located in the 'Landscape Protection Zone' with the proposed communal disposal field being designed with respect to these features in order to maintain their integrity.

12. The subject site and development area has expansive views of Mount Cardrona, the Cardrona Valley, and the Pisa Ranges to the east. These undulating terrain, gentle slopes, and ridges have been utilised to drive the design layout of the proposed development, with roading following landform and dwelling clusters located within minor valleys where possible.

DESCRIPTION OF THE PROPOSAL

13. The subject site is legally described as Lot 1 DP433836 & Lot 6 DP 344432 and Lot 1 DP425263 (Roberts Land) and Lot 2 DP 512956 (Mt Cardrona Station Land) and is approximately 54ha in area. The site, in its current form, is predominantly a pastoral landscape with one residential dwelling. Pongs Creek, a small creek, runs from the west to the east and situated north of the proposed development area.

14. This application seeks to subdivide the site into 16 separate lots (refer Attachment A). Each lot will contain a residential building platform (RBP) and residential curtilage areas. Each future residential dwelling will be subject to Design Controls (refer Attachment M) which dictate the future landscape and architectural treatments including, but not limited to, fences, service areas, utilities, planting, building height, cladding colour, materiality, and permitted activities within curtilage areas. These controls will dictate the design vision, enhancing the rural character of the landscape, while recreating a wild alpine ecology through the site. This will ensure the overall

landscape pattern is visually consistent, contiguous, and complimentary to the natural and pastoral character of the site.

15. It is noted that planting controls come in two levels, being those undertaken at the time of the development, 'wrapping' around building platforms and lots, and then those controls which enable that indigenous planting to continue within lots, subject to future landowners owners design layouts.

16. One RBP within the proposed development is previously consented under RM090876 and will be located within Lot 16 (refer Attachment C).

17. The previously consented RBP mentioned above, has been varied slightly to reduce potential adverse effects in regards to earthworks and visibility (refer to earthworks plans prepared by CFMA contained within RM090876). A summary of the variations are;

    i. The RBP remains as 1000m^2
    ii. The RBP has been rotated approximately 90° clock-wise to orientate the RBP 'along' the slope, rather than against the slope, reducing cut/fill.
    iii. The proposed driveway is orientated to 'run with' the topography, reducing earthwork cut/fill.
    iv. As a result of the above, the RBP has been lowered approximately 2m from an F.F.L of 667.00 to 665.00
    v. The removal of the additional mounding located on the ridgeline east of the RBP.
    vi. The removal of the proposed planting.

    (Refer to Holmes calculations for proposed Lot 16 for confirmation of the above)

18. A single access to the proposed development will come off Curtis Road and follow the western edge of the boundary firstly servicing Lot 1 (refer Attachment C). This road will connect to an existing easement which borders the southern boundary edge of the site. A proposed 5.5m wide chip sealed road will enter the site from the southern boundary edge, pass through the site to service the 14 Lots within the development area. Two secondary roads branch off the main road each 3.5m wide. The first road will service lots 2 - 4, and the second will service the lower creek lots 7 - 9. Gravel driveways will be constructed to provide access to each lot. Each driveway is to be no more than 3.5m in width as set out in the Design Controls (refer Attachment M).

19. Lot 16 has separate access off the current right of way easement from the south. (refer Attachment C).

20. Lots 1, and 16 are positioned outside the main development area occupying the eastern, southern, and northern corners of the subject site (refer Attachment A and C).

21. Each RBP and lot has a specified datum and approximate area (refer Attachments D and C respectively).

22. The positioning of the lots within this application are set out in Attachment C and are as follows;

23. Lot 1 is situated on the northern side of Pongs Creek in the eastern corner of the subject site. This lot includes a small portion of Pongs Creek which will be protected by covenant (refer Attachment C).

24. Lots 2 – 6, 'The Valley Cluster', is the first cluster of residential lots in the development area. These lots have been positioned behind a small eastern ridge nestled into a small valley (refer Attachment C).

25. Lots 7 – 9, 'The Creek Cluster', lines the lower tail of Pongs Creek before it reaches Lot 1. These lots are bound by the creek and will be heavily vegetated as part of the native planting framework undertaken by the developer (refer Attachment C).

26. Lots 10 – 15, 'The Hill Cluster', is positioned on the upper slopes of the development area. Ranging from datum levels between 601 – 630 MASL. Each lot has a 'standalone feel' to it as each neighbouring lot are at varying heights either below or above one another (refer Attachment C). A minor adjustment to the datum levels of Lots 11 and 13 was proposed by the applicant, set to be raised by 750mm to an F.F.L of 604.75 (Lot 11) and F.F.L of 621.75 (Lot 13). This has been deemed to have no effect on the conclusions in this report (refer Attachment P).

27. Lot 16 (with consented building platform RM090876) is situated behind a small ridgeline aligning north-south. This Lot secludes itself from the development area with a separate access off the current right of way easement, with the building platform nestled behind a small ridge running west to east (refer Attachment C).

28. Earthworks will be required within the development area to create flat RBPs, with softened sloped curtilage areas, and gentle meandering roads to work within the existing topography and landform types. These proposed earthworks are designed to accentuate existing valley and ridge landforms to suit the proposed residential RBPs while creating separation in other clusters from neighbouring lots (refer Attachment D).

29. The main development area, which incorporates Lots 2-15, adopts an indigenous planting and ecological framework planted by the developer. The indigenous planting and the associated fencing to protect this, will enhance existing vegetation within the development area. Pongs Creek is to be fenced and protected by covenant named 'Pongs Creek Clutha Flathead Preservation Corridor'. The intention behind this covenant is to protect Pongs Creek and its margins from stock further damaging the ecology in this area, and protect the 'Nationally Critical' Clutha Flathead Galaxias which inhabits a part of Pongs Creek. This will allow the creek and its margins to naturally regenerate.

30. Across the indigenous planting framework, a variety of species with equal coverage will ensure that an alpine vegetated landscape is reinstated across the site. This framework encompasses an area of approximately 4.6ha (refer Attachment B). Future lot owners will undertake planting within their respective curtilage areas and be restricted to the plant list and specifications set out in the Design Controls (refer Attachment M). This ensures that curtilage vegetation blends successfully into the wider network both visually and ecologically. Once mature, the proposed native planting framework will also partially mitigate external views of future residential dwellings.

31. Fences are proposed for lot boundaries, the 'Pongs Creek Clutha Flathead Preservation Corridor', native planting areas, and pastoral grazing areas. Fences will follow both sides of the proposed driveways and the boundaries of each proposed lot. All fencing is in traditional 7 wire farm fence, typical of fences in this landscape. All lands outside of the planting areas and roadways will continue to be managed as a working farm controlled by condition of consent. The open space area surrounding the indigenous planting and lots outside the native planting areas is approximately 34ha in size. Stock crossings and gates will be located where they best facilitate the movement of stock across the paddocks and roads. Proposed fencing will also prevent stock from entering Pongs Creek as part of the 'Pongs Creek Clutha Flathead Preservation Corridor'.

32. The proposed development includes protection areas to enhance the natural character of site, and the ecological benefits of Pongs Creek, mentioned briefly above (refer Attachment E). The 'Pongs Creek Clutha Flathead Preservation Corridor' encompasses an approximate area of 3.7 ha, which will be fenced in order to protect Pongs Creek from grazing stock, allowing the area to naturally enhance and protect the ecological amenity. The proposed 'Landscape Protection Zone'

maintains the pastoral character of the area of land between proposed dwellings and existing dwellings on Gin and Raspberry Lane. This covenant encompasses an approximate area of 8.6ha and will prevent future subdivision in this zone.

33. Taking all of the above into account, the proposed development is intended to be an integrated development of low darkly coloured dwellings within an extensive framework of plantings. The development will not be 'suburban' in character. Rather, it will appear as a contiguous palette of dark roofs and natural wall claddings within a planting framework that is up to 2 - 2.5 metres in height. Being located on a slope ensures that views towards the site from further afield will experience a visible backdrop of planting around each lot as well as foreground planting.

34. A communal disposal field is proposed for Lots 1-15 located within the 'Landscape Protection Zone' (refer Attachment O). Wastewater infrastructure will be below ground, with a 20m^2 control shed. A 4m wide gravel access road is proposed, with space for 3m x 3m hardstand for unloading consumables. Indigenous planting has been recommended to surround the shed and unloading area to mitigate visual effects. If it is determined that the disposal field requires fencing, a traditional 7 wire farm fence will close the area (refer to the Proposed Onsite Wastewater Management System Site Assessment Report prepared by e3 Scientific). The previously consented disposal field for Lot 16 (RM090876) is to remain with minor adjustments in response to the rotation of the building platform.

35. An approximate area is shown on Attachment N for the proposed water take area and for the development for potable water storage and local treatment (refer Attachment A for location) Approximately 5x 30,000L concrete tanks will be located here and fully buried (refer to the report prepared by Holmes for further details). A 20-foot container and two 5m^2 sheds are also proposed. To mitigate any visual effects, the container and two sheds will be painted in dark recessive colours, with the container partially buried. Mounding and indigenous planting will screen the sheds and container. A 4m wide access road has been proposed, linking to the driveway of the existing dwelling. The access road will follow the contours to minimise earthworks.

36. A water reservoir for the development is proposed near the entrance to lot 16, comprised of six water tanks above ground, at approximately 30m^3 each (location indicated on Attachment A). Located in the southwest corner of the property behind a knoll, the water tanks will have no visual impact on boundaries lot 16 or any other lots and assessed to have negligible visual impact beyond the development.

37. The proposed development is set to be established in stages to alleviate impact on the surrounding residences and landscape (refer to Staging Plan prepared by Holmes). The stages are currently proposed as follows;

    i. Stage 1: Lot 1, Lot 16, Lot 13, Lot 14, Lot 15
    ii. Stage 2: Lot 7, Lot 8, Lot 9, Lot 10, Lot 11, Lot 12
    iii. Stage 3: Lot 2, Lot 3, Lot 4, Lot 5, Lot 6

LANDSCAPE ASSESSMENT

Methodology

38. The site design underwent several iterations in which possible RBP locations were assessed and analysed. Photographs were taken from adjacent areas to assess the visibility of the subject site from these locations. The potential visual effect of each building platform was assessed on site

and from further viewpoints. In general, the form and scale of lot density and layout was driven by the desire to integrate dwelling, roading, and vegetation.

39. To ensure that the design outcome is that as is intended, extensive Design Controls have been created to address the specific character of the landscape and dictate architecture and landscape matters within each lot.

Landscape Category

40. According to the QLDC Operative District Plan (ODP), the site is located within the Rural General Zone and is shown in the Planning Maps 10 and 24a. The site is located on rural land described as Outstanding Natural Landscape – District Wide (ONL-DW).

41. It is noted that this ONL landscape is transitional in character and that the relatively undeveloped rural character that currently exists across this plateau will change in the immediate future to a more developed landscape that will include the large MCSZ and works to be undertaken on the Ski Field sub zone land including potentially considerable car parking and possibly a large access gondola, should Cardrona Ski field expand to include Soho ski field.

42. The following assessment addresses the ONL-DW Assessment Matters contained within part 5.4.2.2 (2) of the QLDC ODP.

43. The following assessment also acknowledges the QLDC Proposed District Plan (PDP). The PDP locates the site on rural land described as Outstanding Natural Landscape (ONL) on planning Maps 10 and 24a. The report will also assess the proposed development using the Assessment Matters contained within part 21.21.1 Outstanding Natural Features and Outstanding Natural Landscapes (ONF and ONL)

Level of Effect

44. The following seven point scale derived from the New Zealand Institute of Landscape Architect's Best Practice Note: Landscape Assessment and Sustainable Management 10.1 is used to assess the magnitude and importance of conditions, change and effects:

Extreme
Very High
High
Moderate
Low
Very low (very low is often interpreted as less than minor)
Negligible

5.4.2.2 ASSESSMENT MATTERS: OPERATIVE DISTRICT PLAN

2) Outstanding Natural Landscape (District Wide) – Assessment Matters

These assessment matters should be read in the light of the further guiding principle that existing vegetation which:

(a) was either
- *planted after; or*
- *self-seeded and less than 1 metre in height at - 28 September 2002; and*

(b) obstructs or substantially interferes with views of the landscape (in which the proposed development is set) from roads
- shall not be considered:

(1) as beneficial under any of the following assessment matters unless the Council considers the vegetation (or some of it) is appropriate for the location in the context of the proposed development; and

(2) as part of the permitted baseline. - nor shall removal of such vegetation be considered as a positive effect of any proposal.

45. There are several existing large macrocarpa trees located between proposed Lot 11 and 13 of considerable age. These trees provide no benefit to the wider landscape and are to be removed.

a) Potential of the landscape to absorb development

In considering the potential of the landscape to absorb development both visually and ecologically, the following matters shall be taken into account consistent with retaining openness and natural character:

i) whether, and to what extent, the proposed development is visible from public places;

46. In general, the proposed development has a limited view catchment, generally confined to the upper western elevated portions of the Cardrona Valley with a minor glimpse view from the Cardrona Valley Road when travelling south, and parts of Pringles Creek Road.

(Note: Attachment F indicates locations where photographs have been taken Location photographs are shown on; ***Attachment's*** *G, H, I, J and K).*

A. PRINGLES CREEK RD VIEWS

- The proposed development is potentially most visible from Pringles Creek Rd views. The closest dwelling is approximately 390m away from Pringles Creek Rd. The proposed development will occupy a portion of that hummocky landscape within the lower elevations of a landscape that continues to rise towards Mt Cardrona in the distance (refer Attachment I). Whilst the development will be visible, it will contrast in form and colour to the existing pattern of residential development on Gin and Raspberry lane and all other residential development within the lower valley and the Cardrona Village. The combination of planting and design controls will assist in visually absorbing the built development into this landscape. Whilst it will be visible, it will be visually unique in its form. The scale of indigenous plantings proposed is unique and will aid in the absorption of future dwellings being absorbed into the landscape.

B. CARDRONA VALLEY RD VIEWS (north of village, Location G, H, I on Attachments J, and K)

- When approaching the Cardrona Village from the north, there will be limited and intermittent minor glimpse views of the proposed development, at a considerable distance. These views are illustrated on Attachments J & K in Photograph locations H & I. From both of those viewpoints, development on the MCSZ will occupy the immediate foreground. At no point from these Cardrona Valley Road views will all dwellings on this site be visible. In general

the bulk of the lower lots will be either screened by development within the MCSZ or by foreground landform.

- In general, the proposed development occupies a minor part of a wide panoramic vista which extends to the ridgetops on both sides of the Cardrona Valley in these views. Those views extend from approximately 2 kilometres at point G on Attachment F up to 4.5km on point I on the same Attachment. From those distances, dwellings will be barely discernible and the development will be perceived as a minor dark pattern extending slightly above development in the MCSZ in the foreground. These dwellings will occupy a small window of view that is largely dominated by the foreground landscape, topography, vegetation, farm land, and the wider context of the valley. As part of the proposed development, future dwellings will be recessive in colour, texture, materiality as outlined within the design controls (refer Attachment M), and blend into the proposed planting scheme (refer Attachment B).

C. MEG HUT TRACK VIEWS

- The view from the Meg Hut Track is extensive, looking west across a wide open plateau with the ski-field access road climbing to Mt Cardrona (refer Attachment K, Location J). From this view, the existing dwellings along Gin and Raspberry Lane are minor dots within a full high country panorama. The most visible change to this landscape will be the development of the MCSZ which, at full development, still occupies a relatively small portion of that vista.

- The proposed development will be potentially visible for approximately 535m of the Meg Hut Track (refer Attachment F). Development of the site will be intermittently visible from the track and, given the distance (approximately 2.3 km), relatively difficult to discern.

- The neighbouring MCSZ is highly visible and encompasses a portion of the western plateau (refer Attachment K). Existing residential dwellings on Gin and Raspberry Lane are also visible from this location. Taking into account the recessive nature of the proposed development and the relatively small scale of dwelling footprint compared to planting, future dwellings within the proposed development area will be will be difficult to perceive.

- Along the same 535m stretch, the visibility of future dwellings in proposed lots 4, 6, and 10-16 will be intermittent and difficult to perceive due to the foreground vegetation from the Meg Hut Track to the site, the surrounding topographical setting, the direction and orientation of the track, and the distance to the development area being approximately 2.3km.

- Overall, all future dwellings will have very low to negligible adverse effects when viewed from the Meg Hut Track predominantly due to the approximate distances to the proposed lots, and the scale of planting in conjunction with visually recessive structure, In short, the proposed development will occupy a small elevated portion at the southern end of the western plateau mountain ranges, just south of existing dwellings and the MCSZ.

D. MT CARDRONA SPECIAL ZONE VIEWS

The proposed development will be visible as a distant backdrop from dwellings, roads, and reserves within the MCSZ. These views will be experienced within an urban context and, whilst the proposed development will be visible, it will be at a distance of approximately 450m between

the southern boundary of the MCSZ and approximately 900m from the centre of the MCSZ. All views from the zone are panoramic with the proposed development occupying a minor part of that panorama.

In summary the visibility of the proposed development from public places is relatively low.

ii) whether the proposed development is likely to be visually prominent to the extent that it dominates or detracts from views otherwise characterised by natural landscapes;

47. At the date of this report, the landscape on the upper terrace area west of the Cardrona Village is relatively natural in character. Aside from the small pattern of dwellings on Gin and Raspberry Lane, the overall landscape has an overriding high level of naturalness. This will change in part with the development of the MCSZ however, both that and the proposed development are still reasonably hidden visually from the principal public viewpoints being Cardrona Village and the Cardrona Valley Road. Those views will still be overwhelmingly natural in character, given the relative lack of visibility. The development will be able to be seen however, as described above, in the intermittent locations where it can be seen from, those views contains the MCSZ which is neither visually prominent nor does it detract from the scale and naturalness of those panoramic views.

48. From the short portion of Pringles Creek Rd that the proposed development is potentially visible from, the development will change that viewing experience from a pure natural and pastoral view to a view that is still widely rural in character, albeit, with the proposed development rising to the south from Pringles Creek. Whilst it may distract from a natural view, the immediate Pringles Creek corridor will not be altered and will be enhanced by the removal of stock, enabling a natural succession of indigenous revegetation to occur. In short, the wider visual corridor of Pringles Creek will lose some rural character but that will be offset by the positive effects of protection and enhancement. Given the relatively small scale of the development within the wider landscape it will not dominate, nor detract form that view.

iii) whether any mitigation or earthworks and/or planting associated with the proposed development will detract from existing natural patterns and processes within the site and surrounding landscape or otherwise adversely effect the natural landscape character;

49. Reasonably substantial earthworks will be required in the construction of the development. Like any development, those earthworks will have a temporary adverse effect, of reasonable significance. However, on completion and establishment, those earthworks will not be visible and no steep cuts, grades or batters are proposed within the development which would be recognisable and remain after establishment. The significant proposed indigenous planting replicates the colour and texture of the original planting cove, is contour responsive and will sit comfortably within this landscape. Whilst that planting will provide some screening of the lower elevations of dwellings, it purpose is not to screen but to enclose and to that end will be perceived as a comfortable part of the surrounding landscape character.

50. To that end, the shaping of the proposed planting and earthworks will not detract from existing natural patterns and processes within the site and surrounding landscape and will not adversely affect the natural landscape character.

iv) whether, with respect to subdivision, any new boundaries are likely to give rise to planting, fencing or other land use patterns which appear unrelated to the natural line and form of the landscape; wherever possible with allowance for practical considerations, boundaries should reflect underlying natural patterns such as topographical boundaries;

51. The new lot boundaries formed by the proposed development will not be distinguishable in the development and will be visually 'lost' within the proposed indigenous planting framework for the majority of the lots which, as previously mentioned, follows the natural undulation of the landscape. Planting by future owners are restricted to the same plant species and are to be planted within their respective curtilage areas. Planting is to be mixed in order to be visually consistent with the surrounding planting framework. Where lot boundaries are positioned outside of the indigenous planting framework (Lots 1, and 16) those boundaries have been kept off ridgelines, and follow the natural topography and landscape patterns to minimise potential adverse effects.

v) whether the site includes any indigenous ecosystems, wildlife habitats, wetlands, significant geological or geomorphologic features or is otherwise an integral part of the same;

52. Pongs Creek dissects the site, flowing from west to east. The creek is home to the endangered Clutha Flathead Galaxias which is classified as 'Nationally Critical', sharing the same threat level as the kākāpō. The development proposes a protection zone for Pongs Creek spanning the length of the creek as it passes through the subject site. The appropriately named 'Pongs Creek Clutha Flathead Preservation Corridor' will be fenced off from stock, allowing the area to naturally enhance.

vi) whether and to what extent the proposed activity will have an adverse effect on any of the ecosystems or features identified in (v);

53. The proposed development will not adversely affect the ecology and biodiversity within Pong's Creek, as the methods within the proposed development provides an opportunity for the existing ecology to enhance naturally with the formation of the 'Pongs Creek Clutha Flathead Preservation Corridor'. The methods include, fencing the entirety of the corridor to protect the creek from stock, planting undertaken by the developer on the eastern side right up to the edge of the corridor – providing the potential for species to self-seed within the corridor, the retention of a culvert that restricts trout access – protecting the Clutha Flathead population, and proposed staging of the project (refer to Staging Plan prepared by Holmes) – reducing the impact of the future development on the area overall.

vii) whether the proposed activity introduces exotic species with the potential to spread and naturalise.

54. The existing macrocarpa trees located between proposed Lots 13 and Lots 11 are understood to be the only exotic tree species on site. These are to be removed as part of the proposed development as they have no ecological or amenity value. No exotic species are specified on the proposed planting list, and thus the proposed development will not give rise to exotic species being introduced by the developer to spread and naturalise across the landscape.

b) Effects on openness of landscape.

In considering the adverse effects of the proposed development on the openness of the landscape, the following matters shall be taken into account:

i) whether and the extent to which the proposed development will be within a broadly visible expanse of open landscape when viewed from any public road or public place and in the case of proposed development in the vicinity of unformed legal roads, the Council shall also consider present use and the practicalities and likelihood of potential use of unformed legal roads for vehicular and/or pedestrian, equestrian and other means of access; and

55. In regards to the potential adverse effects on the openness of the landscape, the proposed development is located within a broadly visible expanse of open landscape when viewed from the Meg Hut Track, but will occupy a minor elevated portion of the southern end of the western plateau, a plateau that extends north from the site over existing residential development and the MCSZ.

56. The proposed development will have very low to negligible visibility when viewed from the northern end of Cardrona Valley Road, (Location H, refer Attachment J). The minor portion of the proposed development that may be viewed from the northern end of Cardrona Valley Rd (location H), will appear within a small valley glimpse view. Any potential adverse effect on the openness of the wider landscape from this location will be very low to negligible.

57. When viewed from the Meg Hut Track, the proposed development is at an approximate distance of 2.3km (Location I, refer Attachment K). From this location, the future dwellings will be perceived as being located within the proposed planting framework. Although the appearance of a development will be broadly visible, the future buildings themselves will be difficult to discern due to the distance, the level of residential density at the southern end of the western plateau, the proposed design controls, and the proposed planting framework.

58. From the Meg Hut track, the proposed development occupies a small part of the vista and will not be visually dominant, and only be intermittently visible due to the surrounding topographical setting, foreground vegetation, and the surrounding mountain ranges, which largely dominates the view. The proposed development is located 250m south of the MCSZ. Upon completion of the development within the MCSZ, this development will change the openness of the landscape of the western plateau overall, to which the proposed development will be only a minor addition to that change. Considering the level of existing shrubland in the area, the potential of the landscape to absorb the proposed development, and the MCSZ (upon completion) changing the level of openness of the western plateau, the adverse effects for this proposed development on such openness of the landscape will be low.

ii) whether, and the extent to which, the proposed development is likely to adversely affect open space values with respect to the site and surrounding landscape;

59. The development occupies approximately 12ha of the sites overall 54ha size. The development will affect the degree of openness of the current site, changing that landscape in part from an open grassland to a combination of grassland, indigenous vegetation and dwellings. Given the location of the site, those views potentially most affected are those of the residents of Gin and Raspberry Lane. However, whilst the openness of the landscape will be modified, the proposed development will occupy a minor part of the southern end of the western plateau. The MCSZ occupies a larger portion on the western plateau and that degree of modification will be significantly larger (refer Attachment L). Taking this into account, the proposed development will have moderate to low adverse effects on the existing open space values as the open space values surrounding this development are still largely maintained.

iii) whether the proposed development is defined by natural elements such as topography and/or vegetation which may contain any adverse effects associated with the development.

60. The layout of the proposed development is contour responsive and is defined by natural valleys, hummocky terrain, and minor ridges across the site which have determined the placement of the roads, planting and proposed RBPs. Proposed earthworks are sympathetic to these site characteristics and orientate the proposed roadways to 'run with' the natural topography. The proposed vegetation largely extends the pattern of existing vegetation found on the lower elevations, blending with the proposed vegetation and will not have an adverse effect on the natural ecology and landform in the area. Rather, it will enhance ecological values and minimise

any potential adverse effects. The proposed fencing surrounding Pong's Creek allows the existing vegetation within the creek margins to naturally regenerate by preventing stock from entering the area and damaging the ecology any further.

61. Overall, whilst the open space values will change, that change is of a low degree. This ensures that the development blends into the surrounding natural character of the western plateau, taking the MCSZ into consideration and surrounding Cardrona area.

c) Cumulative Effects on Landscape Values.

In considering whether there are likely to be any adverse cumulative effects as a result of the proposed development, the following matters shall be taken into account:

i) whether, and to what extent, the proposed development will result in the introduction of elements which are inconsistent with the natural character of the site and surrounding landscape;

62. The proposed development is unique in its organic layout, separate in character from other developments in the immediate vicinity and that of the Cardrona Village residential areas. The site itself does not contain any dwellings. The wider surrounding landscape however does include existing and extensive proposed residential development aside from the existing dwelling on the title which is visually and physically separated from the proposed development. In the context of the site itself the introduction of dwellings would be inconsistent with the natural character. However this assessment cannot be undertaken in isolation. The proposed development will occupy 12 ha (refer Attachment C) of the 54 ha subject site. To that end, the proposed development will introduce elements that are inconsistent with the natural character of the immediate site, however, within the context of the wider surrounding landscape this development is a low density bookend development with high landscape values.

ii) whether the elements identified in (i) above will further compromise the existing natural character of the landscape either visually or ecologically by exacerbating existing and potential adverse effects;

63. The proposed development represents an opportunity for the introduction of substantial ecological value and will change the existing natural character but does not compromise the existing character of the landscape. The proposed development has low visibility from surrounding public roads and places. Ecologically, the development proposes a number of methods in order to enhance ecology in Pong's Creek, and across the development site. The proposed planting framework bordering Pong's Creek will serve to enhance current ecologies throughout the creek including the benefits of the proposed 'Pongs Creek Clutha Flathead Preservation Corridor'. The same planting framework incorporating indigenous species, is consistent throughout the development area, enhancing the ecological and landscape amenity values across the site.

iii) whether existing development and/or land use represents a threshold with respect to the site's ability to absorb further change;

64. The proposed development sits at an appropriate elevation, within the lower flanks of a dominant ONL background. Further development, at a different density and possibly without the same ecological values and located at a higher elevation or west/east of this site, may impart an unacceptable level of adverse effect on the wider ONL. To that end, the proposed development, whilst being considered to be appropriate in scale, form, and character to its site, represents a threshold for development. Possibly 2-4 more dwellings may be accommodated within the immediate landscape (subject to similar controls). However further development above that threshold may adversely affect the wider landscape values.

iv) where development has occurred or there is potential for development to occur (i.e. existing resource consent or zoning), whether further development is likely to lead to further degradation of natural values or inappropriate domestication of the landscape or feature.

65. The proposed development has carefully considered both the existing residential development in the vicinity of Gin and Raspberry Lane and the MCSZ to the north. Further development, above and beyond that proposed may lead to further degradation of natural values or inappropriate domestication of the landscape if designed or located inappropriately. That would be assessed at the time of any future consent application.

66. Overall, the potential adverse cumulative effects of the proposed development is considered to be low to negligible. This assessment has been based on the following;

    i. The number of neighbouring dwellings (Five lots on Gin and Raspberry Lane, Four lots on Pringles Creek Rd) in relation to the scale of the proposed development (16 lots).
    ii. The MCSZ and its relative scale of development upon completion
    iii. The substantial retention of pastoral grazing and surrounding open landscape.
    iv. The proposed native revegetation of the landscape.
    v. The proposed covenants; 'Pongs Creek Clutha Flathead Preservation Corridor' and the 'Landscape Protection Zone'.
    vi. The locations of the proposed RBPs, roading and infrastructure within the natural topography.
    vii. The proposed Design Controls to dictate architectural finishes, colours, and materiality of future dwellings which strengthens the overall vision for the area.

d) Positive Effects

In considering whether there are any positive effects associated with the proposed development the following matters shall be taken into account:

i) *whether the proposed activity will protect, maintain or enhance any of the ecosystems or features identified in (a)(v) above;*

67. As mentioned previously, the Clutha Flathead Galaxias are present in Pongs Creek and they have a 'Nationally Critical' threat level. With the proposed fencing of Pongs Creek, and the 'Pongs Creek Clutha Flathead Preservation Corridor' covenant, this ensures that the habitat is protected from stock, and allows the creek corridor to regenerate naturally. The current ecology across the site will be enhanced by the proposed indigenous planting, revegetating the landscape with species that would have been present prior to pastoralism.

ii) *whether the proposed activity provides for the retention and/or reestablishment of native vegetation and their appropriate management;*

68. The proposed development provides the opportunity to revegetate a substantial area of the landscape and to blend this in with existing ecologies within and surrounding Pongs Creek and the wider alpine environment. The proposed Design Controls (refer Attachment M) list appropriate activities, fencing, and planting specifications for curtilage areas. These controls determine the activities, and planting within each lot's curtilage area, to blend into the native planting framework for consistency across the development, re-establishing native vegetation across the otherwise pastoral landscape.

iii) *whether the proposed development provides an opportunity to protect open space from further development which is inconsistent with preserving a natural open landscape;*

69. The proposed 'Landscape Protection Zone', and 'Pongs Creek Clutha Flathead Preservation Corridor' will protect future development from occurring in the specified areas (refer Attachment E). This preserves the natural landscape from further development in this area, while the proposed development overall provides for substantial open pasture surrounding the development area to preserve the natural open landscape across the subject site and the wider surrounds.

iv) *whether the proposed development provides an opportunity to remedy or mitigate existing and potential (i.e. structures or development anticipated by existing resource consents) adverse effects by modifying, including mitigation, or removing existing structures or developments; and/or surrendering any existing resource consents;*

70. As mentioned, the development proposes minor adjustments to the previously consented RBP [RM090876]. The proposed changes to this RBP remedy potential adverse effects on the landscape in respect to earthworks, visibility, and the topographical setting at this location. A summary is as follows:

- The RBP remains as 1000m^2
- The RBP has been rotated approximately 90° clock-wise to orientate the RBP 'along' the slope, rather than against the slope, reducing cut/fill.
- The proposed driveway is orientated to 'run with' the topography, reducing earthwork cut/fill.
- As a result of the above, the RBP has been lowered approximately 2m from an F.F.L of 667.00 to 665.00, further reducing the potential visibility of a future dwelling
- The ridgeline that the RBP is located behind is maintained and more effective from a visibility standpoint.
- Removal of proposed planting as this planting is now unnecessary from a visibility standpoint (see above regarding level of RBP).

v) *the ability to take esplanade reserves to protect the natural character and nature conservation values around the margins of any lake, river, wetland or stream within the subject site;*

71. Although the width of Pongs and Pringles Creek don't qualify them for esplanade reserves, the proposed Pongs Creek Clutha Flathead Preservation Corridor will enable the protection of the creek and in particular the declining Clutha Flathead Galaxias, a Nationally Critical endangered galaxiids. The corridor will be fully fenced to prevent stock from roaming in this area, which will enable the ecology to naturally regenerate.

vi) *the use of restrictive covenants, easements, consent notices or other legal instruments otherwise necessary to realise those positive effects referred to in (i) – (v) above and/or to ensure that the potential for future effects, particularly cumulative effects, are avoided.*

72. The development proposes two covenants, these are:

i. Pongs Creek Clutha Flathead Corridor – which prevents stock from degrading Pongs Creek further, allowing the area to naturally recover and blend into the proposed native framework, restoring native ecologies to the area, and protecting the declining Clutha Flathead Galaxias (refer Attachment E).

ii. Landscape Protection Zone - which prevents further subdivision of open land between the residential dwellings located on Gin and Raspberry Lane, and the proposed

development, maintaining the openness of rural character to the area to avoid over domestication (refer Attachment E).

73. Overall, the proposed development has a significant level of positive effects.

ASSESSMENT MATTERS: PROPOSED DISTRICT PLAN

STAGE 2: CHAPTER 21 RURAL (21.7) (as notified)

Assessment Matter	Landscape Assessment
21.21.1.2 Existing vegetation that:	
a. was either planted after, or, self-seeded and less than 1 metre in height at 28 September 2002; and,	
b. obstructs or substantially interferes with views of the proposed development from roads or other public places, shall not be considered: *i. as beneficial under any of the following assessment matters unless the Council considers the vegetation (or some of it) is appropriate for the location in the context of the proposed development; and* *ii. as part of the permitted baseline.*	No existing trees or vegetation are to be utilised for mitigation / screening purposes. Existing trees are in fact to be removed.
21.21.1.3 Effects on Landscape Quality and Character *In considering whether the proposed development will maintain or enhance the quality and character of Outstanding Natural Features and Landscapes, the Council shall be satisfied of the extent to which the proposed development will affect landscape quality and character, taking into account the following elements:*	
a. Physical attributes: *i) Geological, topographical, geographic elements in the context of whether these formative processes have a profound influence on landscape character;* *ii) Vegetation (exotic and indigenous);* *iii) The presence of waterbodies including lakes, rivers, streams, wetlands.*	The proposed development is located within existing topography and responds to that topography. The proposed planting extends and accentuates the remnant indigenous species that exist on site and includes species that that would have covered the majority of this area prior to pastoralism. The proposed development also acknowledges the importance of Pongs Creek for enhancement opportunities protects. By forming the 'Pongs Creek Clutha Flathead Preservation Corridor', and undertaking riparian planting and fencing to prevent stock entering the creek margins. These proposals will enhance the physical attributes of the site. Overall the adverse effects on the landscape quality and character will be low to negligible.

b. Visual attributes: *i) Legibility or expressiveness – how obviously the feature or landscape demonstrates its formative processes;* *ii) Aesthetic values including memorability and naturalness;* *iii) Transient values including values at certain times of the day or year;* *iv) Human influence and management – settlements, land management patterns, buildings, roads.*	The proposed development occupies a small area on the southern end of the greater western plateau on rising land that extends to Mt Cardrona and the adjacent ranges. The surrounding ONL has similar attributes to the subject site with shrubland vegetation scattered across hummocky landforms. The development overall has low visibility by being nestled into valley forms, and when viewed from a distance, occupies a small portion of the wider ONL within those view frames. The proposed development will only be discernible within a significantly wider contiguous landscape from limited viewpoints most of which are at a distance. Given the relatively small scale of the proposal, the wider transient values will not be affected. Any adverse effects on transient values will be restricted to the immediate site only. The level of human influence / settlements / management patterns on the wider landscape is influenced by both existing residential patterns and the 480 dwellings / golf course etc. to the north of the site being part of the MCSZ. These patterns, at completion will modify the existing settlement patterns to a semi–urban alpine village form, with the proposed development occupying a small area in comparison to the built and consented development. To that end, the wider landscape values will remain intact.
c. Appreciation and cultural attributes: *i) Whether the elements identified in (a) and (b) are shared and recognised;* *ii) Cultural and spiritual values for tangata whenua;* *iii) Historical and heritage associations.* *The Council acknowledges that Tangata Whenua beliefs and values for a specific location may not be known without input from iwi.*	Two historic water race passes through the site, The Cardrona Company Race, and Littles Water Race. These are significantly damaged due to past and current pastoral activity. There are also eroded and poorly defined alluvial gold mining features in the landscape either side of Pongs Creek (refer to the Archaeological Assessment from Origin). Some of these features are located in the 'Landscape Protection Zone'. The proposed development does not impact these historic races in an adverse way. There are no areas throughout the subject site that hold cultural and spiritual values for tangata whenua. There are no wahi tapu mapping notation over the site.
d. In the context of (a) to (c) above, the degree to which the proposed development will affect the existing landscape quality and character, including whether the proposed development accords with or degrades landscape quality and character, and to what degree.	The proposed development will change the landscape character of the immediate site from rolling pastoral land to a developed rural residential enclave. However, the landscape values of that 'enclave' will be enhanced by way of the significant indigenous planting and that planting that 'wraps' and contains the dwellings, forming a contiguous pallete of design controlled dwellings within the indigenous plantings. To that end, the scale of plantings will enhance landscape quality and character Overall the effect on the existing landscape quality and character is considered to be low to moderate within the site and low in the wider site.

e. any proposed new boundaries will not give rise to artificial or unnatural lines (such as planting and fence lines) or otherwise degrade the landscape character.	The new lot boundaries formed by the proposed development will not be distinguishable in the development and will be visually 'lost' within the proposed indigenous planting framework for the majority of the lots which, follow the natural undulations of the landscape. Planting from future owners are restricted to the same plant species and are to be planted within their respective curtilage areas. Planting is to be mixed in order to be visually consistent with the surrounding planting framework. Where lot boundaries are positioned outside of the indigenous planting framework (Lots 1, and 16) those boundaries have been kept off ridgelines, and follow the natural topography and landscape patterns to minimise potential adverse effects.
21.7.1.4 Effects on Visual Amenity *In considering whether the potential visibility of the proposed development will maintain and enhance visual amenity, values the Council shall be satisfied that:*	
a. the extent to which the proposed development will not be visible or will be reasonably difficult to see when viewed from public roads and other public places. In the case of proposed development in the vicinity of unformed legal roads, the Council shall also consider present use and the practicalities and likelihood of potential use of unformed legal roads for vehicular and/or pedestrian, cycling, equestrian and other means of access;	Covered in previous discussions in this report. *(Note: Attachment F indicates locations where photographs have been taken Location photographs are shown on;* ***Attachment's G, H, I, J and K).*** PRINGLES CREEK RD VIEWS • The proposed development is potentially most visible from Pringles Creek Rd views. The closest dwelling is approximately 390m away from Pringles Creek Rd. The proposed development will occupy a portion of that hummocky landscape within the lower elevations of a landscape that continues to rise towards Mt Cardrona in the distance (refer Attachment I). Whilst the development will be visible, it will contrast in form and colour to the existing pattern of residential development on Gin and Raspberry Lane and all other residential development within the lower valley and the Cardrona Village. The combination of planting and design controls will assist in visually absorbing the development into this landscape. Whilst it will be visible, it will be visually unique in its form. The scale of indigenous plantings proposed is unique and will aid in the absorption of future dwellings being absorbed into the landscape. CARDRONA VALLEY RD VIEWS (north of village, Location G, H, I on Attachments J, and K) • When approaching the Cardrona Village from the north, there will be limited and intermittent minor glimpse views of the proposed development, at considerable distance. These views are described on Attachments J & K in Photograph locations H & I. From both of those viewpoints future development of the MCSZ occupies the immediate foreground. At no point from these Cardrona Valley Road views will all dwellings on this site be visible. In general the bulk of the lower lots will be either

	screened by development within the MCSZ or by landform. • In general, the proposed development occupies a minor part of a wide panoramic vista which extends to the ridgetops on both sides of the Cardrona Valley in these views. Those views extend from approximately 2 kilometres at point G on Attachment F up to 4.5km on point I on the same Attachment. From those distances, dwellings will be barely discernible and the development will be perceived as a minor dark pattern extending slightly above the MCSZ in the foreground. These dwellings will occupy a small window of view that is largely dominated by the foreground landscape, topography, vegetation, farm land, and the wider context of the valley. As part of the proposed development, future dwellings will be recessive in colour, texture, materiality as outlined within the design controls (refer Attachment M), and blend into the proposed planting scheme (refer Attachment B). MEG HUT TRACK VIEWS • The view from the Meg Hut Track is extensive, looking west across a wide open plateau with the ski-field access road climbing to Mt Cardrona (refer Attachment K, Location J). From this view, the existing dwellings along Gin and Raspberry Lane are minor dots within a full high country panorama. The most visible change to this landscape will be the development of the MCSZ which, at full development, still occupies a relatively small portion of that vista. • The proposed development will be potentially visible for approximately 535m of the Meg Hut Track (refer Attachment F). Development of the site will be intermittently visible from the track and, given the distance (approximately 2.3 km), relatively difficult to discern. • The neighbouring MCSZ is highly visible and encompasses a large portion of the western plateau (refer Attachment K). Existing residential dwellings on Gin and Raspberry Lane are also visible from this location. Taking into account the recessive nature of the development and the relatively small scale of dwelling footprint compared to planting, future dwellings within the proposed development area will be will be difficult to perceive. • Along the same 535m stretch, the visibility of future dwellings in proposed lots 4, 6, and 10-16 will be intermittent and difficult to perceive due to the foreground vegetation from the Meg Hut Track to the site, the surrounding topographical setting, the direction and orientation of the track, and the distance to the development area being approximately 2.3km.

	• Overall, all future dwellings will have very low to negligible adverse effects when viewed from the Meg Hut Track predominantly due to the approximate distances to the proposed lots, and the scale of planting in conjunction with visually recessive structure. In short, the proposed development will occupy a small elevated portion at the southern end of the western plateau mountain ranges, just south of existing dwellings and the MCSZ. MT CARDRONA SPECIAL ZONE VIEWS • The proposed development will be visible as a distant backdrop from dwellings, roads, and reserves within the MCSZ. These views will be experienced within an urban context and, whilst the proposed development will be visible, it will be at a distance of approximately 450m between the southern boundary of the MCSZ and approximately 900m from the centre of the MCSZ. All views from the zone are panoramic with the proposed development occupying a minor part of that panorama. In summary the visibility of the proposed development from public places is relatively low.
b. the proposed development will not be visually prominent such that it detracts from public or private views of and within Outstanding Natural Features and Landscapes;	The proposed development will be visually absorbed into the landscape and does not detract from views within the surrounding ONL landscape. The development will not be visually prominent. This is covered in previous visibility discussions in this report.
c. the proposal will be appropriately screened or hidden from view by elements that are in keeping with the character of the landscape;	This proposed planting is keeping with the character of the site and surrounding ONL as described previously in this report. Dwellings will be partially screened from local views along Gin and Raspberry Lane and Pringles Creek Rd and fully screened from middle ground and distant views by consented (zoned) development and existing geomorphological features and topography.
d. the proposed development will not reduce the visual amenity values of the wider landscape (not just the immediate landscape);	Refer to previous discussions in this report in regards to limited visibility and existing but undeveloped zoned land immediately north of the proposed development.
e. structures will not be located where they will break the line and form of any ridges, hills and slopes;	No structures will break the line and form of any ridges, hills and slopes.
f. any roads, access, lighting, earthworks and landscaping will not reduce the visual amenity of the landscape.	Refer to previous discussion in this report in regards to the form and character of the development. Within the proposed design controls, lighting is restricted to down lighting only to preserve the night sky with no street lighting being proposed also. Landscaping / planting will be visually consistent with the indigenous planting framework undertaken by the

	developer, as such, the landscape section within the design controls dictates what activities and landscaping can occur. This is restricted to curtilage areas only to ensure that there is no reduction of visual amenity of the landscape.
21.7.1.5 Design and density of Development *In considering the appropriateness of the design and density of the proposed development, whether and to what extent:*	
a. opportunity has been taken to aggregate built development to utilise common access ways including roads, pedestrian linkages, services and open space (i.e. open space held in one title whether jointly or otherwise);	The proposed development utilises a single existing right of way easement to access the main development area. Lot 16 also uses this right of way easement before entering the site via the proposed driveway. The surrounding pastoral land is to be held in one title under the existing dwelling.
b. there is merit in clustering the proposed building(s) or building platform(s) within areas that are least sensitive to change;	The proposed development clusters lots and their RBPs in response to the natural topography of the site. Lots 2 – 6, 'The Valley Cluster', is the eastern cluster of residential lots in the development area. These lots have been positioned behind a small eastern ridge nestled into a small valley (refer Attachment C). Lots 7 – 9, 'The Creek Cluster', lines the lower tail of Pongs Creek before it reaches Lot 1. These lots are bound by Pongs Creek and will be heavily vegetated to encourage the existing ecology to grow throughout the development area (refer Attachment C). Lots 10 – 15, 'The Hill Cluster', is positioned on the upper slopes of the development area. Ranging from datum levels between 601 – 630 MASL. Each lot has a 'standalone feel' to it as each neighbouring lot are at varying heights either below or above one another (refer Attachment C).
c. development, including access, is located within the parts of the site where it would be least visible from public and private locations;	The proposed development is located within the upper western plateau area, generally screened by way of landform from wider public views. Although it will be visible from restricted locations, those views are glimpse views only, aside from the Meg Track view which is at distance and already contains, the Cardrona Village, exiting residential development on the upper plateau, and the 480 lot MCSZ future development.
d. development, including access, is located in the parts of the site where it has the least impact on landscape character.	Refer previous discussion in this report.
21.7.1.6 Cumulative effects of subdivision and development on the landscape *Taking into account whether and to what extent existing, consented or permitted development (including unimplemented but existing resource consent or zoning) may already have degraded:*	
a. the landscape quality or character; or,	Refer previous discussion in this report.

b. the visual amenity values of the landscape.	Refer previous discussion in this report.
The Council shall be satisfied the proposed development, in combination with these factors will not further adversely affect the landscape quality, character, or visual amenity values.	In considering the above, and the reasons given throughout this report, the proposed development will not further adversely affect the landscape quality, character, or visual amenity values of the immediate and wider landscape.

CONCLUSION

74. Taking all the above into account, it is acknowledged that the development proposed in this application is being located on rural land in an ONL landscape and the threshold for the protection of landscape values is high. The principal attributes in favour of this development, in this landscape, include the following:

    - The development is innovative, in its form, design controls and scale of proposed planting.

    - There is substantial existing and proposed (zoned) residential development in the landscape to the immediate south and north of the site. Whilst this does not negate all potential levels of adverse effect it does influence and modifies the natural values of the surrounding landscape, enabling the extension of well-designed built form to be undertaken without decreasing landscape values.

    - The development will be reasonably difficult to see. From the principle viewpoints, being the Cardona Valley Road and the Cardrona Village, viewers will be largely unaware of its existence. From The Meg Hut Track the development will be visible however the effects will be low for the reasons in this report.

Otago Regional Council

Our Reference: Consent No. RM20.203.05

WATER PERMIT

Pursuant to Section 104B of the Resource Management Act 1991, the Otago Regional Council grants consent to:

Name: Charles Layton Roberts, Christine Jennifer Roberts and Jo-anne Leslie Johns being Trustees of the Roberts Family Trust

Address: 10 Curtis Road, Cardrona

Water permit to temporarily divert flows from Pongs Creek for the purpose of a culvert installation

For a term expiring 29 June 2027

Location of consent activity: Cardrona Valley, approximately 65 metres west of the intersection of Curtis Road and Pringles Creek Road

Legal description of consent location: Lot 1 DP 433836, Lot 6 DP 344432 & Lot 1 DP 425263

Map Reference: Culvert A at NZTM 2000: E 1284473 N 5023230
Culvert B at NZTM 2000: E1284315 N 5023117
Site 1: NZTM 2000: E 1284473 N 5023230
Site 2: NZTM 2000: E1284044 N 5023109

Conditions

Specific

1. The temporary damming and diversion of Pongs and Pringles Creeks activity must be carried out in accordance with the plans and all information submitted with the application, detailed below, and all referenced by the Consent Authority as consent number RM20.203.
    a) Application form, and assessment of environmental effects dated 25 June 2020.
    b) Curtis Road Cardrona Ecological Assessment provided with application, E3 Scientific, reversion 1.1, 14/02/2019.
    c) Scheme Plans provided with the application, C Hughes and Associates, Revision C, December 2019.
    d) Infrastructure Report McDougall's Block provided with the application, Holmes Consulting LP, Version 5, 04 March 2020
    e) McDougall's Block Proposed Onsite Wastewater Management System Site Assessment Report, E3 Scientific, Version C, 15 January 2020.
    f) Geotechnical Report for Resource Consent provided with application, GeoSolve Ltd, Rev 3, January 2020
    g) Response to further information request dated 16 May 2021, 23 June 2021, 14 September 2021, 28 September 2021, 19 October 2021, 13 January 2022, 23 March 2022. 28 April 2022 and 11 May 2022.

2. The damming and diversion structure must be constructed and maintained in accordance with consented drawings/plans/reports referenced in Condition 1 and the dimensions and standards in Appendix 1.

3. This consent must be exercised in conjunction with RM20.203.04.

4. Fish passage from below the Pongs Creek culverts must not be provided for when undertaking the diversions in order to ensure predatory fish cannot reach Clutha flathead galaxiids habitat.

5. The Creeks must not be dammed more than 5 metres upstream or downstream of the culverts.

6. The damming and diversion must not last longer than 3 weeks, and only in order to complete the culvert extension works.

7. All access to the damming and diversion structure must be fenced off from stock.

General

8. The dam and diversion structure, spillway and associated structures must be operated and maintained to ensure that, at all times, they are structurally sound, pose no undue risk to human life, property, or the natural environment, and are able to perform satisfactorily to their approved design standard.

9. The damming and diversion of water must not cause flooding, erosion, land instability, sedimentation or property damage of any other person's property.

10. The Consent Holder must immediately notify the Consent Authority if the Consent Holder has reasonable grounds for considering that the dam or diversion structures is, or has become, dangerous and/or unsafe.

Review

11. The Consent Authority may, in accordance with Sections 128 and 129 of the Resource Management Act 1991, serve notice on the Consent Holder of its intention to review the conditions of this consent during the period of three months either side of the date of granting of this consent each year, or within two months of any enforcement action taken by the Consent Authority in relation to the exercise of this consent, for the purpose of:
    a) Determining whether the conditions of this consent are adequate to deal with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage, or which becomes evident after the date of commencement of the consent; and
    b) Ensuring the conditions of this consent are consistent with any National Environmental Standards, relevant regional plans, and/or the Otago Regional Policy Statement.

Notes To Consent Holder

1. *The Consent Holder must ensure that any contractors engaged to undertake work authorised by this consent abide by the conditions of this consent. A copy of this consent must be present on site at all times while the work is being undertaken.*

2. *Under section 125 of the Resource Management Act 1991, this consent lapses 5 years after the date of commencement of the consent unless:*
    a) The consent is given effect to; or
    b) The Consent Authority extends the period after which the consent lapses.

3. *The Consent Holder will be required to pay the Consent Authority an administration and monitoring charge to recover the actual and reasonable costs incurred to ensure ongoing compliance with the conditions attached to this consent, collected in accordance with Section 36 of the Resource Management Act 1991.*

4. *Section 126 of the Resource Management Act 1991 provides that the Consent Authority may cancel this consent by written notice served on the Consent Holder if the consent has been exercised in the past but has not been exercised during the preceding five years.*

Issued at Dunedin this 29th day of June 2022

Joanna Gilroy
Manager Consents

Appendix 1: Water Diversion Methodology (Source: Further Information Response dated 23 June 2021 (Point 4))

The following procedure outlines culvert installation in terms of ESC:

1. *Check all erosion and sediment controls and make repairs necessary.*
2. *Install perimeter controls – silt fences and diversion drains/bunds, including a 300mm diameter Siltsoxx or equivalent across the main stream, below the works area. The ecologist will then inspect the works area and observe Steps 3-5*
3. *Install a temporary bund across the water course or inside the culvert at the upgradient end of the works, to capture and temporarily store any runoff flowing down the culvert while step 4 is undertaken. This shall make use of the existing embankment or form a new temporary embankment if the inlet headwall is being upgraded. This will remain until all civil works are complete or there is a lined and perched passage through the works area. Steps 3 and 4 will only be done during fine weather, ideally after several days without rain, and should be completed within one week. A bund will be installed at an appropriate location comprising compacted and lined bund, driven sheet pile or similar. Outflow will be by at least two 150mm diameter SN16 pipes installed through the bund at the base (1) and mid-way height (1) to provide further contingency, should these works continue beyond one day or an unexpected heavy rainfall event occur. These pipes will normally be capped and above the potential flood height to prevent fish passage (very important in Pongs Creek). At night time or following heavy rainfall, they shall be connected to 150mm diameter non-perforated draincoil (discharge above flood height and secured), which will be run through the works area to discharge to the natural stream channel below the lower Siltsoxx. In Pongs Creek both the permanent and temporary flow must be perched or prevent fish passage. If gravity flow is not possible, stream flows may be pumped through the works area and include a fine mesh inlet/outlet to prevent fish passage.*
4. *Undertake required works within the bunded area to the relevant engineering specification, clearing the works area of any accumulated silt/sediment on completion of the works (manual removal).*
5. *Grass, hydroseed or mulch where applicable. The use of biodegradable geotextile soil blanket may be required for the stream reinstatement.*
6. *Remove the Siltsoxx temporary bunds at the upper and lower ends of the works.*

11 July 2022

Roberts Family Trust

C/- Maestro Projects Limited
PO Box 1625
Queenstown, 9348

Attention: Leon West

Dear Leon

Roberts, Curtis Road Subdivision
Transport Assessment

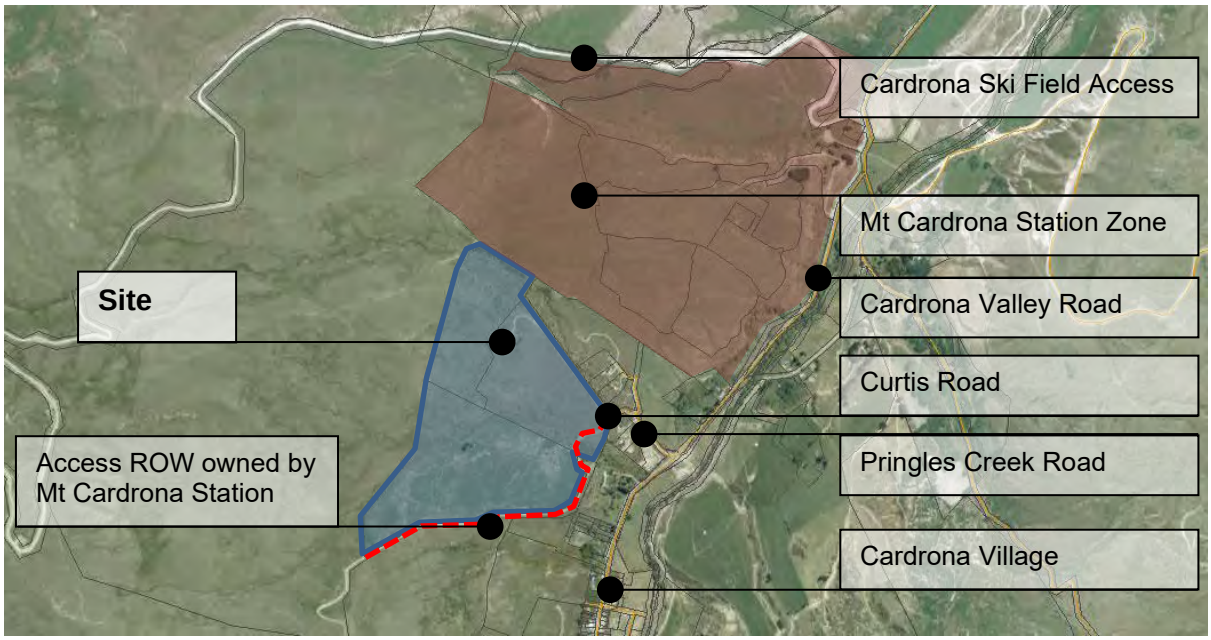
The purpose of this letter is to provide a transport assessment for a proposed subdivision at Curtis Road, Cardrona. This assessment focuses on access from the local road network and the onsite road network serving the proposed rural residential lots.

1 Introduction

1.1 Site Location

The proposed subdivision is at Lot 1 DP433836, Lot 6 DP 344432 & Lot 1 DP425263. For access the proposed subdivision relies on a Right of Way over land to the south which is owned by Mt Cardrona Station. The following Figure 1 shows the site.

Figure 1: Site, base aerial from QLDC WebMaps



PO Box 1383 | Queenstown | 9348
jason@bartlettconsulting.co.nz | 027 555 8824 | 03 442 3103

1.2 Site Use and Zoning

The site and the surrounding land is used for pastural farming and is in the Rural zone within the QLDC Proposed District Plan (**PDP**).

To the south west of the site is Cardrona Village. Land immediately to the north of the site has been subdivided to create a number of rural residential lots. Further to the North is the Mt Cardrona Station Zone which is land zoned to facilitate the development of a large alpine village which is likely to include a mixture of residential, visitor accommodation and other tourist activities.

1.3 Existing Transport Network

The site is accessed via Curtis Road, a narrow (one lane, 3m carriageway) local road. Curtis Road terminates at the site entrance although various Right of Way (ROW) agreements provide access through the site in particular pedestrian access between Mt Cardrona Station zone and Cardrona Village as well as vehicle access between Curtis Road and the land to the south (Mt Cardrona Station).

Curtis Road currently serves the existing onsite dwelling (Lot 6 DP 344432) and a consented onsite building platform (Lot 1 DP 425263, RM090876) which is accessed via the Right of Way (ROW) over the land to the south owned by others Mt Cardrona Station. Based on the QLDC Land Development and Subdivision Code of Practice the existing formation of Curtis Road would be capable of serving up to 6 residential dwellings as a lane[1].

Curtis Road is accessed from Pringles Creek Road. Pringles Creek Road serves a number of existing rural residential lots with approved dwellings or building platforms. The existing road appears to serve approximately 13 existing and potential residential dwellings. The legal road reserve for Pringles Creek Road extends to the Mt Cardrona Station Zone. This zone facilitates the development of a large alpine village. It is possible that Pringles Creek Road could be used to access a significant portion of this future development. Pringles Creek Road is a two lane road which generally has a sealed movement lane of 5.5m with shoulders. Based on the QLDC Land Development and Subdivision Code of Practice the movement lane would be capable of serving up to 150 residential dwellings[2] or approximately 1000vpd as a local road. The combination of the relatively narrow two-lane carriageway along with the horizontal and vertical alignment suggest that Pringles Creek Road would have an operating speed of approximately 40km/hr which is less than the 80km/hr speed limit.

Pringles Creek Road is accessed from Cardrona Valley which is an arterial road within the Council's road hierarchy providing a major transport link between Queenstown and Wanaka. At the intersection of Pringles Creek Road and Cardrona Valley Road the posted speed limit is 80km/hr which applies to Pringles Creek Road and Curtis Road.

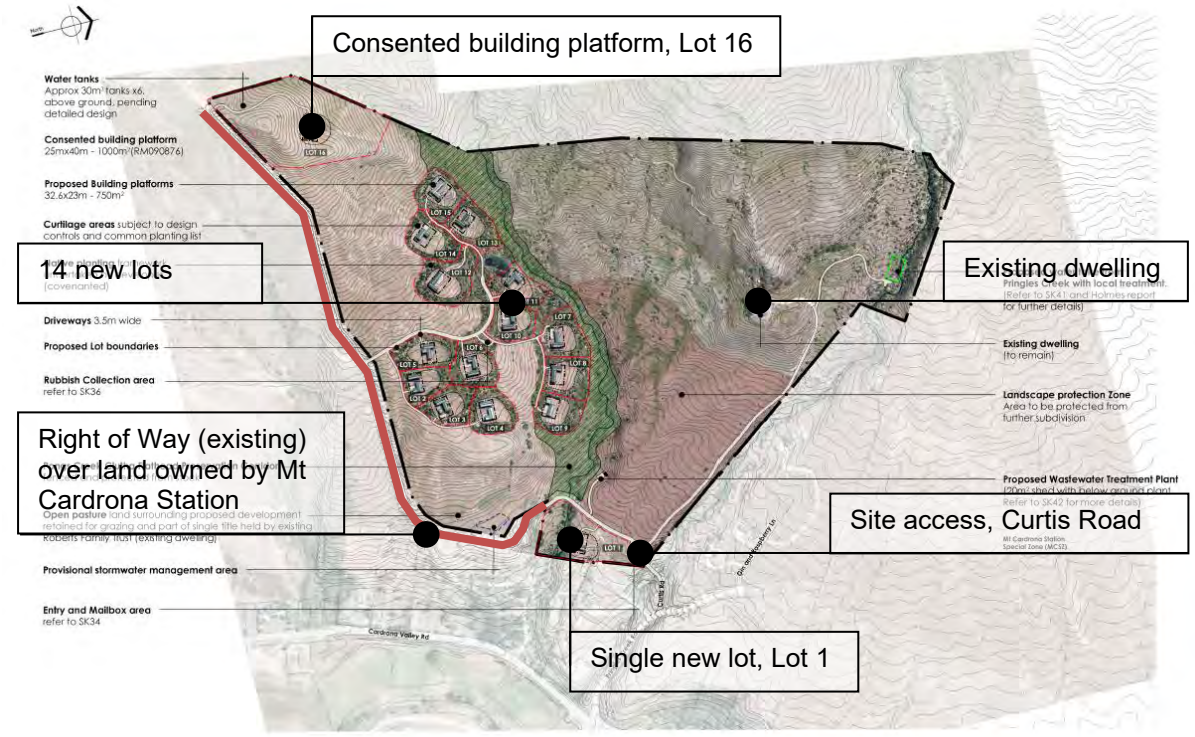
[1] Based on QLDC Land Development and Subdivision Code of Practice, Table 3.3 – Road Design Standards, reference road type Figure E1, rural live and play lane.
[2] Based on QLDC Land Development and Subdivision Code of Practice, Table 3.3 – Road Design Standards, reference road type Figure E3, rural live and play local road.

2 Proposed Development

It is proposed to subdivide the site to include 16 rural residential lots to allow for a total development of 17 rural residential dwellings. This is a net increase of 15 residential dwelling over what is currently consented for the site.

As a subdivision within the Rural zone it is anticipated that each lot will support a single dwelling as a compliant development. Figure 1 below shows the masterplan layout, other development information provided for review is listed in Appendix A.

Figure 1 –Proposed Subdivision Masterplan, from Baxter Design dated 6 January 2020.



It is possible that the proposed development will be undertaken in stages.

2.1 Traffic Generation

The proposed development will allow for a further 15 residential lots onsite which will increase the traffic flow on Curtis Road and Pringles Creek Road. The potential traffic flow increase will be approximately 152 vehicles per day (vpd) or 21 vehicles per hour (vph) during the peak period[3]. This is in additional to the potential traffic generation from the existing onsite dwelling and consented building platform.

At full development it is possible that the total traffic flow of Curtis Road would be approximately 172vpd with a peak period traffic flow of 24vph.

[3] Based on NZTA Research Report 453 (RR453) Trips and parking related to land use, Table 7.4 Summary of design trip rates and parking demand in NZ in 2010. Using data for a Dwelling (rural) with a design traffic generation of 1.4vph/unit in the peak period and 10.1vpd/unit daily.

2.2 Site Access

The site will be accessed via Curtis Road. It is expected to extend Curtis Road to the south through the site and then continue in westerly direction utilising an existing ROW over land owned by Mt Cardrona Station. It is understood that the Curtis Road extension (onsite) does not align with all existing ROW easements.

The site access and existing Curtis Road would be upgraded to serve all 17 onsite residential lots. It is noted that Curtis Road also serves the pastural land to the south of the site.

The proposed development will increase the number of dwellings to be served by Curtis Road to more than 6 residential dwellings (rural residential lots). To facilitate the full development Curtis Road and the access would be upgraded to a road type capable of serving the 17 possible dwellings (lots) onsite. Based on the QLDC Land Development and Subdivision Code of Practice the existing Curtis Road and site access should be upgraded to, as a minimum, a Figure E2 type road[4]. This road type is capable of serving up to 20 dwellings (lots).

The existing intersection of Curtis Road with Pringles Creek Road is formed as private access. The upgrade of Curtis Road will require that this intersection is upgraded to accommodate the potential traffic increase. To meet the current design guidance the intersection would include the installation of appropriate signs and markings (refer MOTSAM[5]) as well as creating an intersection layout to meet the minimum requirements of Austroads guidance. Based on Austroads guidance the intersection design should include:

- A rural basic left (BAL) turn treatment[6] which includes minor widening to accommodate a left turning design vehicle (8m medium rigid truck) to Curtis Road, and
- A rural basic right (BAR) turn treatment[7] which includes minor widening opposite Curtis Road to allow a vehicle to pass a stationary vehicle waiting on the centreline to turn right.

These turn treatments result in an intersection layout similar to the access requirements outlined in the Proposed QLDC District Plan, Section 29.14.9, Diagram 9 – Access Design.

2.3 Proposed Road Network

It is proposed to develop a road network to serve the proposed onsite development, the proposed road network is discussed in the Holmes Consulting Infrastructure Report (refer Appendix A). This will include a road link to the south/east of the site within a ROW owned by others. The road network is based on the requirements of the QLDC Land Development and Subdivision Code of Practice[8] and will remain in private/shared ownership. The road network will be managed in a similar manner as the other onsite infrastructure (water supply, sewerage etc.).

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[4] Based on QLDC Land Development and Subdivision Code of Practice, Table 3.3 – Road Design Standards, rural live and play local road, Figure E2.
[5] Refer NZTA Manual for Traffic Signs and Markings (MOTSAM), it is noted that some aspects of New Zealand road signs and markings is also covered under the NZTA Traffic Control Devices Manual (TCD Manual).
[6] Refer Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections, Section 8.2.1 Rural Basic Left-turn Treatment (BAL).
[7] Refer Austroads Guide to Road Design Part 4: Intersections and Crossings – General, Appendix A, Section A.16.5 Rural Right Turns – Undivided Roads.
[8] Refer QLDC Land Development and Subdivision Code of Practice, Table 3.3 – Road Design Standards. Based on specific rural live and play local road types, Figure E1 & E2.

Curtis Road extension, minimum Figure E2 road type serving less than 20 dwellings. The extension of Curtis Road will serve all 17 onsite residential lots/dwellings and adjacent pastural land. The extension of Curtis road will extend to the south through the site adjacent to proposed Lot 1. This road would then utilise an existing ROW adjacent to the site (land owned by Mt Cardrona Station) extending to the south and west. This road formation will end at an intersection with Road 1 an onsite lane to 14 proposed onsite lots (Lots 2 – 15). Beyond this intersection the extension of Curtis Road will be formed as a driveway within the existing ROW servicing a single residential lot (Lot 16). Entry signage and mailboxes and area for turning is to be provided onsite, accessed immediately after the existing (public) section of Curtis Road.

Lane (Road 1), Figure E2 road type. This road will provide access to the main residential cluster of 14 residential lots (Lots 2 – 15). Road 1 will provide access to smaller lanes (Roads 2 & 3) as well as providing access to individual lots. Road 1 will provide access to the communal rubbish collection area which is located at the intersection of Roads 1 & 3. As such Road 1 and the rubbish collection area will be designed to accommodate an 8m medium rigid truck as the design vehicle.

Minor lanes, there are a number of minor lanes providing access to groups of residential lots. These roads will all be Figure E1 type roads each providing access to less than 6 residential lots including:

- Road 2, access to Lots 2, 3 & 4,
- Road 3, access to Lot 7 and Road 4,
- Road 4, access to Lots 8 & 9, and
- Road 1 extension, access to Lots 12, 13, 14 & 15.

Driveways, there are a number of driveways that serve specific residential lots. These driveways will serve a maximum of two residential lots and will be generally similar to a Figure E1 road type. These driveways, along with any departures include:

- Lot 10 & 11, shared driveway from Road 1 to serve two proposed lots,
- Lot 16 (existing building platform) this is an existing driveway utilising the ROW over Mt Cardrona Station land (Curtis Road extension). This is an existing access/track that will be retained with an extension (onsite) to from the driveway to the (consented) building platform. This driveway will meet the minimum requirements of a Figure E1 type road except the gradient will remain unchanged and the road surface will remain unsealed (gravel).
- Existing dwelling, the existing driveway will remain unchanged with an unsealed (gravel) surface.

The new road network to be formed within the rural environment will not have street lighting or pedestrian facilities (footpaths). These elements are not always considered necessary in a rural environment. It is noted that demand for pedestrian activity in this rural environment at night (during the hours of darkness) will be unlikely.

2.4 Onsite Parking

It is expected that any development within the proposed residential lots would be compliant with the minimum parking requirements of the PDP.

It is not anticipated to provide any specific car parking within the proposed road network although it is noted that an area is provided for turning and parking whilst collecting (or delivering) mail at the mailbox area.

3 District Plan Requirements

The QLDC Proposed District Plan Transport Chapter (Chapter 29) includes access provisions and rules to manage potential transport effects. An assessment of the proposed onsite activity against the PDP access site standards (Sections 29.5.13 to 29.5.23) has been undertaken, this assessment is provided in Appendix B. A number of breaches of the PDP rules have been identified. these are:

- 29.5.13 Access and Road Design – The proposed access roads and the extension of Curtis Road, will serve more than 12 residential units. It is likely that these roads will remain in private/shared ownership and include utilising an existing Right of Way over land owned by Mt Cardrona Station.
- 29.5.17 Minimum Sight Distances from Vehicle Access on all Roads other than State Highways – The proposed residential lot accesses are expected to have 115m sight distance based on the 80km/hr speed limit. The access roads will have target operating speeds below the 80km/hr speed limit allowing reduced visibility sight distances at the access to onsite residential lots.

Although technically not a breach of the site standard it is noted that the proposed development will include off-site works to upgrade Curtis Road and its intersection with Pringles Creek Road. The design of this intersection upgrade is based on Austroads design guidance. The proposed works will result in an intersection layout similar to a Diagram 9[9] type intersection layout. Based on the likely total traffic flows (development traffic greater than 100vpd) the PDP would require a Diagram 10[10] layout for a vehicle crossing.

Appropriate consent conditions are suggested to manage the breaches of the transport rules during the design stage.

4 Transport Effects

4.1 Off-Site Transport Effects

The effects of the proposed residential subdivision are likely to be a result of additional traffic within the local road network. This effect will be noticeable on the existing section of Curtis Road which has an existing formation which is appropriate for up to 6 residential dwellings based on the QLDC Code of Practice. Curtis Road currently serves a single developed residential dwelling, a consented building platform and pastural farming activities.

To manage these off-site transport effects it is proposed to upgrade Curtis Road by widened to a two lane road. This will allow Curtis Road to accommodate the traffic generated by the proposed subdivision and adjacent pastural farming. Curtis Road has an 80km/hr speed limit resulting from the posted speed limit of Cardrona Valley Road. The design alignment of Curtis Road suggests that Curtis Road and the proposed extension may have an operating speed of up to 70km/hr in places. This conflicts with the suggested road design of Figure E2 (up to 20 dwellings) which has a target operating speed of only 30km/hr. It is therefore recommended that the upgrade of Curtis Road include a formed carriageway width which is appropriate for a higher operating speed, ie. a carriageway width of a Figure E3 type road including; 5.5m movement lane with total shoulder 1.0m, sealed shoulder 0.5m each side. This overall carriageway width will allow for a target operating speed up to 70km/hr and create a road formation for Curtis Road which is inline with the QLDC Land Development and Subdivision

[9] Refer Proposed QLDC District Plan, Section 29.14.9, Diagram 9 – Access Design.
[10] Refer Proposed QLDC District Plan, Section 29.14.10, Diagram 10 – Access Design.

Code of Practice. It is noted that portions of the extension of Curtis Road, within a ROW over land owned by others (Mt Cardrona Station) to the south and at the Pringles Creek crossing will have the maximum 16% gradient of the Figure E2 road type. This gradient is appropriate for a Figure E2 road type but greater than the 12.5% maximum for a Figure E3 road type. Given that the minimum road type anticipated is Figure E2 the 16% maximum gradient is appropriate and acceptable.

The increased traffic at the intersection with Pringles Creek Road will require that this intersection is upgraded. Austroads guidance suggests that the intersection would require basic turn treatments which results in an intersection layout similar to the Proposed QLDC District Plan, Section 29.14.9, Diagram 9 – Access Design.

The existing Curtis Road formation is capable of serving up to 6 residential dwellings (rural residential lots). If the development is staged, when the development increases the number of potential dwellings to be served by Curtis Road to more than 6, the existing legal road and the intersection with Pringles Creek Road will need to be upgraded to manage these off-site transport effects. The following consent condition is suggested.

> *That prior to any onsite construction which requires Curtis Road to serve more than 6 potential residential dwellings the existing Curtis Road and its intersection with Pringles Creek Road are to be upgraded. The design of these upgrade works, within the local road network, are to be provided to QLDC for review and approval. The design shall include:*
>
> - *The upgrade of the existing Curtis Road is to meet the minimum requirements of QLDC Land Development and Subdivision Code of Practice Figure E2 type road with total shoulder width of 1.0m (sealed shoulder 0.5m) each side and a target operating speed of 70km/hr. The required carriageway width and target operating speed are based on a Figure E3 road type.*
> - *The upgrade of the existing T-intersection of Curtis Road with Pringles Creek Road is to be based on design guidance from Austroads Guide to Road Design, Part 4: Intersections and Crossings General and Part 4A: Unsignalised and Signalised Intersections. Unless determined otherwise the intersection design is to be based on a 50km operating speed and include a rural basic left (BAL) turn treatment and a rural basic right (BAR) turn treatment.*
> - *Provide signage and road markings to meet the minimum requirements of NZTA Manual of Traffic Signs and Markings (MOTSAM) and the NZTA Traffic Control Devices (TCD) Manual. Unless determined otherwise the intersection design shall include a priority control (Give way or Stop as appropriate).*

It is considered that this consent condition will allow for an appropriate upgrade to the local road network to accommodate the proposed subdivision and manage potential transport effects to a point which is considered acceptable.

It is noted that if this intersection was to be treated as a vehicle crossing the Proposed QLDC District Plan would require a greater extent of road widening on Pringles Creek Road. The Proposed QLDC District Plan bases the access design on[11]:

[11] Refer Proposed QLDC District Plan, Section 29.5.16, Design of Vehicle Crossing.

- Type of traffic using the access, there will be rubbish collection, recycle collection as well as home deliveries. There will be more than 1 heavy vehicle movements per week using Curtis Road.
- Volume of traffic using the accessway, the total volume of traffic from 18 potential residential lots (dwellings) is likely to be approximately 172[12] vehicles per day. There will be 100+ vehicles using Curtis Road.
- Volume of traffic using road, Pringle Creek Road at the Curtis Road intersection serves 5 potential rural dwellings generating a traffic flow of only 51vpd approximately.

Based on the Proposed QLDC District Plan this would suggest that the intersection, if considered as a vehicle crossing, would require a layout based on the Diagram 10 access type.

The proposed design is similar to Diagram 9 access type and reflects current Austroads guidance which considers both traffic and safety requirements. In this location there will be minimal pedestrian or cycle traffic, it is considered that the intersection upgrade based on current Austroads guidance considers both the traffic capacity requirements with an acceptable level of road safety for the expected usage.

The current design of Pringles Creek Road and its intersection with Cardrona Valley Road includes shoulder widening opposite Pringles Creek Road. QLDC have proposed changes to the existing intersection to include a stop control to manage reduced sight distances on the intersection approach. The proposed stop control has not yet been installed. This existing intersection is appropriate and will have sufficient capacity to accommodate the additional 15 potential residential lots enabled by the proposed subdivision.

The QLDC street lighting strategy, Southern Light, allows for flag lighting at rural intersections. The need for flag lighting is based on any identified safety concerns. There are no night-time safety concerns at the intersections of; Cardrona Valley Road with Pringles Creek Road, or Pringles Creek Road with Curtis Road. Additional traffic as a result of the proposed subdivision is unlikely to create or noticeably exacerbate safety concerns. It is therefore considered that flag lighting at these intersections is not necessary.

4.2 Onsite Road Network

The masterplan provides an onsite road network provided by the designers. The plans provide a structure and context for the provision of an internal transport network although detail of this network has not yet been fully developed. It is expected that the onsite road network can be designed in accordance with the QLDC Land Development and Subdivision Code of Practice. The following Table 1 provides an overview of the proposed internal road network with comments regarding with its compliance with the QLDC Code of Practice and the District Plan.

[12] Based on NZTA Research Report 453 (RR453) Trips and parking related to land use, Table 7.4 Summary of design trip rates and parking demand in NZ in 2010. Using data for a Dwelling (rural) with a daily design traffic generation of 10.1vpd/unit.

Table 1 – Road Network, Compliance with QLDC District Plan and Code of Practice

Subdivision Road	Requirement	General Provision/Departures
Curtis Road extension Provides access to all 17 onsite residential lots (dwellings). Provides a link between the local road network and the intersection with Road 1.	Figure E2 road type Lane, serves up to 20 dwellings.	Increased carriageway width, 5.5m movement lane width with total shoulder width of 1.0m (sealed should 0.5m) each side, akin to Figure E3 road type. Increased target operating speed of 70km/hr, akin to Figure E3 road type. Road is to remain in private/shared ownership passing through the site and utilising an existing ROW over land owned by others. Minimum Legal width as Right of Way to 9m. This width is to include movement lane and associated road infrastructure. An appropriate agreement is provided for the ongoing management and maintenance for the road.
Lane (Road 1) Provide access to the residential cluster of 14 residential lots, Lots 2 – 15.	Figure E2 road type Lane, serves up to 20 dwellings.	Road is to remain in private/shared ownership. Legal width as Right of Way to be 9m minimum. Width is to include movement lane and associated road infrastructure. An appropriate agreement is provided for the ongoing management and maintenance for the road.
Minor Lanes Provide access to multiple residential lots: • Road 2 to Lots 2, 3 & 4, • Road 3 to Lot 7 and Road 4, • Road 4 to Lots 8 & 9, and • Road 1 extension to Lots 12, 13, 14 & 15.	Figure E1 road type Lane, serves up to 6 dwellings.	Road is to remain in private/shared ownership. Legal width as Right of Way to be 6m minimum. Width is to include movement lane and associated road infrastructure. An appropriate agreement is provided for the ongoing management and maintenance for the road.
Driveways • Lot 10 & 11 from Road 1, • Lot 16 (existing building platform) as the extension of Curtis Road beyond Road 1, and • Existing dwelling.	Figure E1 road type Lane, serves up to 6 dwellings.	These driveways will remain in private ownership. Legal width is to include movement lane and associated road infrastructure with minimum legal width to be 4.0m. An appropriate agreement is provided for the ongoing management and maintenance for the road. The driveways to Lots 16 (extension of Curtis Road), and the existing dwelling will remain unsealed.

As a rural subdivision street lighting is not proposed within any of the proposed road network. Under the QLDC street lighting strategy, Southern Light, street lighting is only required in the rural environment when deemed necessary by Council. There may be environmental concerns if street lighting is to be provided in this rural location. The proposed development is remote from pedestrian routes and is unlikely to have any pedestrian (or cycle) traffic at

night (during hours of darkness). It is considered that street lighting is not required to protect vulnerable road users at night.

I understand that the ROW easements over part of the existing lot 6 DP 344432 (marked Z) do not follow the exact route of the proposed road network. This does not present any transport concerns if the existing right of way easements remain in place, although it is recommended that any transport infrastructure is designed to accommodate the traffic/use anticipated by both the existing legal ROW agreements and the proposed new ROW corridor.

To manage the provision of the proposed road network the following consent condition is suggested.

> *That prior to any onsite construction which requires Curtis Road to serve more than 6 potential residential dwellings. The design of the proposed road network is to be provided to QLDC for review and approval. The road network is to be design in accordance with QLDC Land Development and Subdivision Code of Practice. The design shall include:*
>
> - *The design of the Curtis Road extension providing access to the 18 onsite residential dwellings. This road shall be designed is to meet the minimum requirements of QLDC Land Development and Subdivision Code of Practice Figure E2 type road with total shoulder width of 1.0m (sealed shoulder 0.5m) each side and a target operating speed of 70km/hr. The required carriageway width and target operating speed are based on a Figure E3 road type. The road design is to identify the overall legal width of the road Right of Way and is to provide an area for turning and mailboxes near to the site entrance.*
> - *The design of Road 1 serving Lots 2-15. This road shall be designed in accordance with a Figure E2 type road from the QLDC Land Development and Subdivision Code of Practice. The road design is to identify the overall legal width of the road Right of Way with a minimum width of 9m. This road design is to include an area and turning facility for refuse collection which is to be based on the manoeuvring of an 8m medium rigid truck as the design vehicle.*
> - *The design of Roads 2, 3, 4 and 1 extension (serving Lots 12, 13, 14 & 15 only). This road shall be designed in accordance with a Figure E1 type road from the QLDC Land Development and Subdivision Code of Practice. The road design is to identify the overall legal width of the road Right of Way with a minimum width of 6.0m.*
> - *The design of the driveway to Lot 16. This driveway design is to provide details of the proposed unsealed road carriageway and shall have a minimum legal width of 4.0m with passing opportunities provided at a minimum spacing of 100m.*
> - *The proposed agreement for the ongoing management and maintenance of any roads in private/shared ownership. This agreement may form part of an overall management and maintenance agreement for all community infrastructure.*

It is considered that this consent condition will allow for an appropriate onsite road network for the proposed subdivision and manage potential transport effects to a point which is considered acceptable.

4.3 Property Access

The proposed development will form vehicle crossings to individual residential lots accessed from the Curtis Road extension and Road 1. These accesses will not meet the minimum visibility requirements of the QLDC District Plan and will breach the site standard. This is a result of the road design which limits forward visibility through alignment to achieve a lower target operating speed of 30km/hr or 20km/hr. To achieve appropriate sight distance at lot accesses it is recommended that sight distance is based LTSA (now NZTA) Guide to visibility at driveways (RTS 6). This document bases the minimum sight distance to any access on the operating speed of the adjacent (frontage) road. The sight distance required is approximately equivalent to the Austroads desirable minimum Stopping Sight Distance (SSD)[13] on the frontage road based on the assessed operating speed of that road. The sight line (approaching drivers' line of sight) shall be measured along the centre of the approaching lane as per RTS 6 refer Figure 1.

It is recommended that given the reduced operating speed of the development roads that visibility sight distances is managed to maintain a safe driving environment at the property accesses, the following consent condition is suggested.

> *That prior to any onsite construction the designs for residential lot accesses is to be provided to QLDC for review and approval. The visibility sight distance at each property access shall be based on LTSA (now NZTA) Guide to visibility at driveways (RTS 6). The minimum sight distance to any access is to be equivalent to the Austroads Stopping Sight Distance (SSD) on the frontage road based on the assessed operating speed of that road.*

An operating speed and sight distance assessment can be undertaken for accesses during the design stage which allows consideration of the frontage roads horizontal and vertical alignments. This consent condition will mean that each residential lot will have an access with acceptable sight distance based on the designed road environment including the operating speed.

5 Summary

It is proposed to undertake a rural residential subdivision of Lot 1 DP433836, Lot 6 DP 344432 & Lot 1 DP425263 which will create a total of 17 rural residential lots at the site. This is a net increase of 15 potential residential dwellings at the site.

The site is accessed from Curtis Road which is a local road within the local road network, it is proposed to extend Curtis Road onto the site. It is noted that the existing formation of Curtis Road, and its intersection with Pringles Creek Road, is capable of serving up to 6 residential dwellings. At the time that the proposed subdivision will create more than 6 potential residential dwellings Curtis Road and its intersection with Pringles Creek Road will need to be upgraded.

To serve the full subdivision of up to 17 residential lots/dwellings Curtis Road is to be extended in a southerly direction through the site and then will continue in a generally westerly direction within an existing Right of Way over land owned by others (Mt Cardrona Station). A new access road (Road 1) would serve the main cluster of residential lots to be created within the site. It is expected that the proposed road network can be designed and constructed to meet the requirements of the QLDC Land Development and Subdivision Code of Practice, current

[13] Refer Austroads Guide to Road Design Part 3: Geometric Design, Section 5.3 Stopping Sight Distance (SSD).

Austroads Guidance and the QLDC Proposed District Plan. Consent conditions are suggested to manage the design of the proposed road network. This includes any minor departures from either the QLDC Land Development and Subdivision Code of Practice and/or the PDP. This will include the upgrade of the existing Curtis Road and its intersection with Pringles Creek Road.

As a private road network an appropriate management and maintenance agreement will be required. This is likely to be part of an overall agreement for the management and maintenance of community infrastructure including water supply, wastewater collection, treatment and disposal. A consent condition is suggested to manage the provision of an appropriate management and maintenance agreement.

I consider that with the suggested consent conditions the proposed subdivision can be appropriately designed and constructed. I consider that the subdivision will have minimal transport effects on the surrounding transport network and any adverse transport effects will be minimised to a point which is acceptable.

Should you require any further information please contact me.

Yours sincerely,

Jason Bartlett
CEng MICE, MEngNZ
Transport Engineer

Appendix A Development Drawings

The following development drawings have been reviewed when undertaking this assessment:

- Baxter Design drawing 2738-SK41, Concept Masterplan, dated 31 March 2022, and
- Infrastructure Report – McDougall's Block, Holmes Consulting, version 6, dated 16 May 2022.

Appendix B QLDC Proposed District Plan, Compliance Assessment

The table provided below outlines the proposed development's compliance against the Access standards (Sections 29.5.13 to 29.5.23) of the Transportation Site Standards for the rural zone, under the Proposed QLDC District Plan (refer Chapter 29, Transport, Table 29.3 – Decision Version).

Table – Proposed QLDC District Plan Assessment

Rule	Requirement	Provided	Compliance
29.5.13	Access and Road Design Access shall be in accordance with QLDC Code of Practice. No private access shall serve a site with the potential to accommodate more than 12 units.	The onsite accesses are to be constructed to meet the minimum requirements of the QLDC Code of Practice. The accesses are to remain in private/shared ownership and serve up to 17 possible residential dwellings at the site with links to adjacent land which may be developed in the future.	No Access roads to remain in private/shared ownership.
29.5.14	Width and Design of Vehicle Crossings – Urban Zones	Not Urban Zone, Refer 29.5.16.	N/A
29.5.15	Width and Design of Vehicle Crossings – Other Zones Access to residential units to be Diagram 8. Access to subdivision requires design based on Diagram 10.	Each residential access serving up to 3 residential units will comply with Diagram 8. The subdivision access is provided by the extension of Curtis Road into the site. The upgrade of Curtis Road includes works at the intersection with Pringles Creek Road. It is recommended that the intersection layout is upgraded as per Austroads guidance which would result in an intersection layout similar to a Diagram 9.	Yes Note, works to upgrade of Curtis Road intersection with Pringles Creek Road. These are to be undertake through a consent condition based on Austroads guidance.
29.5.16	Maximum Gradient for Vehicle Access Maximum Access gradient is 1 in 6 and meets appropriate breakover angles.	The maximum gradient of vehicle crossings will not be greater than 1 in 6 (16.7%). All roads will have a maximum gradient of 16%	Yes

Rule	Requirement	Provided	Compliance
29.5.17	Minimum Sight Distances from Vehicle Access on all Roads other than State Highways Minimum sight distance of 115m for residential for the existing 80km/hr speed limit.	It is likely that the residential lots will not achieve the minimum visibility sight distance requirements as the accesses are from roads which, by design, will have an operating speed less than the 80km/hr speed limit. The subdivision access is formed as an extension of Curtis Road where sight distance is not considered.	No Consent condition suggested for residential lots.
29.5.18	Minimum Sight Distances from Vehicle Access onto State Highways	Not state highway access.	N/A
29.5.19	Maximum Number of Vehicle Crossings The frontage length of residential lots is likely to allow 2 vehicle crossings.	Each residential lot is to have a single vehicle crossing. The subdivision has a single vehicle crossing as the extension of Curtis Road.	Yes
29.5.20	Minimum Distance Between Vehicle Crossings onto State Highways	Not state highway accesses.	N/A
29.5.21	Minimum Distances of Vehicle Crossings from Intersections Requires a minimum separation distance of 25m.	Subdivision vehicle crossing or residential lot vehicle crossings are not within 25m of an intersection.	Yes
29.5.22	Minimum distances of Vehicle Crossings from Intersections onto State Highways	Not state highway accesses.	N/A
29.5.23	Service Stations	Not a service station.	N/A

Otago Regional Council

Our Reference: Consent No. RM20.203.02

LAND USE CONSENT

Pursuant to Section 104C of the Resource Management Act 1991, the Otago Regional Council grants consent to:

Name: Charles Layton Roberts, Christine Jennifer Roberts and Jo-anne Leslie Johns being Trustees of the Roberts Family Trust

Address: 10 Curtis Road, Cardrona

To undertake bulk earthworks for a residential development. For the purpose of the construction of a residential development.

For a term expiring 29 June 2027

Location of consent activity: Cardrona Valley, approximately 65 metres west of the intersection of Curtis Road and Pringles Creek Road

Legal description of consent location: Lot 6 DP 344432, Lot 1 DP 425263, Lot 2 DP 512956

Map Reference (mid-point): NZTM 2000 E 1284044 N 5023109

Conditions

Specific

1. This consent authorises the use of land for residential earthworks within the area of land shown on Appendix 1.

2. The use of land for earthworks for residential development activity must be carried out in accordance with the plans and all information submitted with the application, detailed below, and all referenced by the Consent Authority as consent number RM20.203:
   a) Application form, and assessment of environmental effects dated 25 June 2020;
   b) Curtis Road Cardrona Ecological Assessment provided with application, E3 Scientific, reversion 1.1, 14/02/2019;
   c) Scheme Plans provided with the application, C Hughes and Associates, Revision C, December 2019;
   d) Infrastructure Report McDougall's Block provided with the application, Holmes Consulting LP, Version 5, 04 March 2020;
   e) McDougall's Block Proposed Onsite Wastewater Management System Site Assessment Report, E3 Scientific, Version C, 15 January 2020;
   f) Geotechnical Report for Resource Consent provided with application, GeoSolve Ltd, Rev 3, January 2020; and
   g) Response to further information request dated 16 May 2021, 23 June 2021, 14 September 2021, 28 September 2021, 19 October 2021, 13 January 2022, 23 March 2022. 28 April 2022 and 11 May 2022.

If there are any inconsistencies between the above information and the conditions of this consent, the conditions of this consent will prevail.

3. The works authorised by this consent must only be exercised in conjunction with Discharge Permit RM20.203.03.

4. Prior to commencing any work on site, the Consent Holder must ensure that all staff (including all sub-contractors) involved in, or supervising, works onsite have attended an Environmental Site Induction. A record of attendance must be maintained and made available upon request.

5. Prior to the commencement of earthworks activity, all required erosion and sediment control measures on the subject site must be constructed in accordance with the information contained and approved in the approved Erosion and Sediment Control Management Plan required by condition 10.

6. The operational effectiveness and efficiency of all erosion and sediment control measures specifically required by the Erosion and Sediment Control Plan in Condition 10 must be maintained throughout each stage of earthworks activity to which the controls relate, or until the site is permanently stabilised against erosion. A record of any maintenance work must be kept and be supplied to the Consent Authority on request.

Performance Monitoring

7. The Consent Holder must notify the Consent Authority in writing of the commencement date of residential earthworks of each stage no less than 10 working days prior to the commencement of works. The prestart notification must include the following information:
    a) The start date of works.
    b) Photographs of the area/s where work is to be undertaken - Photographs must be in colour and no smaller than 200 x 150 millimetres in size and be in JPEG form.
    c) Advise the Environmental Representative for the works programme and provide contact details to the Consent Authority.

8. a) The Consent Holder must notify the Consent Authority in writing no less than 10 working days following the completion of residential earthworks of each stage, and must provide photographs of the area/s where work has been undertaken and where work has been taken within 50 metres of a waterbody, a photograph showing the land between the nearest part of the earthworks to the waterbody and the waterbody.
    b) b) Photographs must be in colour and be no smaller than 200 x 150 millimetres in size and be in JPEG form, and to the satisfaction of the Consent Authority.

9. At least 15 working days prior to the first exercise of this consent, the Consent Holder must submit an Environmental management Plan (EMP) for review and acceptance by the Consent Authority. This document must be prepared by a Suitably Qualified and Experienced Person. The EMP must be based on the draft ESCP dated 3 September 2021 submitted as part of the Further Info Response (S92(1)) dated 14 September 2021, and must address the following (as a minimum):
    a) Administrative Requirements
        i. Weekly site inspections
        ii. Monthly environmental reporting
        iii. Independent audit by Suitably Qualified and Experienced Person

iv. Notification and management of environmental incidents
v. Records and registers
vi. Environmental roles and responsibilities of personnel (including nomination of Principal Contractor)
vii. Site induction

b) Operational Requirements
i. Erosion and sedimentation, including an Erosion and Sediment Control Plan to be prepared by a Suitably Qualified and Experienced Person
ii. Sampling locations
iii. Water quality
iv. Dust
v. Cultural heritage
vi. Noise
vii. Indigenous vegetation clearance
viii. Chemical and fuel management
ix. Waste management

Works must not commence until the Consent Authority has confirmed in writing that the EMP has been accepted.

10. Prior to the commencement of earthwork activity on the subject site, a final Erosion and Sediment Control Plan (ESCP) must be prepared and submitted to the Consent Authority for acceptance. The ESCP must contain sufficient detail to address the following matters:
    a) Specific erosion and sediment control works (locations, dimensions, capacity etc), including as a minimum all roading and utilities earthworks.
    b) Identify all waterbodies within 100 metres of the earthworks area;
    c) Supporting calculations and design drawings;
    d) Catchment boundaries and contour information;
    e) Details of construction methods;
    f) Timing and duration of construction and operation of control works;
    g) Processes in place if unexpected contaminated land is encountered;
    h) Measures to avoid silt and/or sediment tracking onto roads and then to water for the duration of the earthworks, including but not limited to:
        i. Providing stabilised entry and exit point(s) for vehicles;
        ii. Provide wheel wash facilities; and
        iii. Clean road surfaces using street-sweepers immediately where sediment has been tracked onto the road.
    i) Details relating to the management of exposed areas; and
    j) Monitoring and maintenance requirements including at a minimum:
        i. If a heavy rainfall event is forecast, undertake pre-event inspections and any maintenance that is required and postpone work as required.

    Any updated versions of the ESCP must be submitted to the Consent Authority immediately for review and acceptance. Works must not commence until the Consent Authority has provided their acceptance of the ESCP in writing, and all works must be undertaken in accordance with the most current ESCP accepted by the Consent Authority.

11. Within 10 working days following installation of the specific erosion and sediment control works referred to in condition 10, and prior to the commencement of earthworks activity on the subject site, a suitably qualified professional must provide written certification that the erosion and sediment control measures have been constructed and completed in accordance with the erosion and sediment control plan required by condition 10 to the Consent Authority. Certification of the sediment and erosion control structure(s) should contain sufficient details to address the following matters:

a) Details on the contributing catchment area;
b) Dimensions and shape of structure;
c) Position of inlets/outlets; and
d) Details regarding the stabilisation of the structure

12. The Consent Holder must maintain a record of any air quality and sediment discharge complaints received in relation to the exercise of this consent. The register must include, but not be limited to:
    a) The date, time, location and nature of the complaint;
    b) The name, phone number, and address of the complainant, unless the complainant elects not to supply this information;
    c) action taken by Consent Holder to remedy the situation and any policies or methods put in place to avoid or mitigate the problem occurring again.

    A record of the complaints must be submitted to the Consent Authority by 31 October each year and made available for inspection at other times upon request.

General

13. Prior to commencement of the works described in condition 2 of this consent the Consent Holder must ensure that all personnel working on the site are made aware of, and have access at all times to:
    a) The contents of this document;
    b) The final erosion and sediment control plan as required by condition 10; The Environmental Management Plan as required by condition 9;

    Copies of these documents must be present on-site at all time while the work authorised by this consent is being undertaken.

14. In order to prevent site access points from becoming sediment sources that lead to sediment laden water entering waterways from the road, the Consent Holder must ensure that all ingress and egress points to the site are Stabilised Construction Entrances. All construction traffic must be limited to these entrances only.

15. For the duration of all earthworks activities:
    a) All machinery must be clean, free of contaminants and in good repair, prior to entering the site;
    b) No construction materials may be left in a position where they could be carried away by storms, floods, waves or other natural events;
    c) The Consent Holder must take all practicable measures to prevent spills of hazardous substances being discharged into water or onto land in a manner that may enter water. Such measures may include, but not be limited to;
    i. all practicable measures must be undertaken to prevent oil and fuel leaks from vehicles and machinery;
    ii. fuel storage tanks and machinery must be maintained at all times to prevent leakage of oil and other contaminants;
    iii. no refuelling of machinery or equipment must occur in Pringles or Pongs Creeks;
    iv. there must be no storage of fuel within 20 metres of in Pringles or Pongs Creeks;
    v. a spill kit, that is capable of absorbing the quantity of oil and petroleum products that may leak or be spilt must be kept on-site at all times.
    d) The Consent Holder must inform the Consent Authority immediately and no later than 24 hours of an oil spill and must provide the following information;

i. the date, time, location and estimated volume of the spill;
ii. the cause of the spill;
iii. clean up procedures undertaken;
iv. details of the steps taken to control and remediate the effects of the spill on the receiving environment;
v. as assessment of any potential effects of the spill; and
vi. measures to be undertaken to prevent a recurrence.

e) Within 10 working days following the completion of earthworks on the subject site all areas of exposed soil must be permanently stabilised against erosion.

f) All machinery, fencing, signs, chemicals, rubbish, debris and other materials must be removed upon completion of the works within 10 days.

16. Earthworks on the site must be staged in accordance with the application documents such that no more than one stage, as detailed in the draft ESCP dated 3 September 2021 submitted as part of the Further Info Response (S92(1) dated 14 September 2021 is disturbed at any one time, and must be sequenced to minimise the discharge of sediments to surface water in accordance with the Erosion and Sediment Control Plan required by Condition 10.

17. All machinery associated with the earthworks activity must be operated in a way, which ensures that spillages of hazardous substances such as fuel, oil, grout, concrete products and any other contaminants are prevented.

18. All earthworks must be managed to ensure that they do not lead to any uncontrolled instability or collapse either affecting the site or adversely affecting any neighbouring properties. In the event that such collapse or instability does occur, it must immediately be rectified.

19. During earthwork activities, the ingress and accumulation of surface run off water and/or perched groundwater must be minimised by:
    a) Maintaining a waterproof cover over any excavation trenche sand pits or constructing cut-off drains to contain runoff within excavations outside of working hours.
    b) All seepages, spring flows or under-runners encountered during earthworks must be inspected by a geotechnical engineer or engineering geologist.
    c) Diversion of surface water flow around the work areas; and
    d) Regular disposal of the water, if ponding occurs within the excavation.

Note: When undertaking diversion or takes of groundwater additional resource consents will be required if not meeting relevant permitted activity rules of the Regional Plan: Water for Otago, namely at the time of granting of this consent these are 12.3.2.2, 12.2.2.1, 12.2.2.2, 12.2.2.5, 12.2.2.6.

20. a) This consent does not authorise work on a contaminated site.
    b) If unexpected contamination is discovered, the consent holder must cease all earthworks in the area of the contamination immediately and notify the consent authority. Works in the area affected by contamination can only recommence once any required consents are obtained.

21. The works authorised under this consent must be managed such that they do not create or contribute to:
    a) the erosion of the bed or bank of any natural wetland; or
    b) a change in the points at which water flows into or out of any natural

wetland; or

c) a constriction on the flow of water within, into, or out of any natural wetland; or

d) the flooding or overland flow of water within, or flowing into or out of, any natural wetland.

22. In the event that an unidentified archaeological site is located during works, the following will apply;

a) Work must cease immediately at that place and within 20 metres around the site.

b) All machinery must be shut down, the area must be secured, and the Heritage New Zealand Pouhere Taonga Regional Archaeologist and the Consent Authority must be notified.

c) If the site is of Maori origin, the Consent Holder must also notify the appropriate iwi groups or kaitiaki representative of the discovery and ensure site access to enable appropriate cultural procedures and tikanga to be undertaken, as long as all statutory requirements under legislation are met (Heritage New Zealand Pouhere Taonga Act 2014, Protected Objects Act 1975).

d) If human remains (koiwi tangata) are uncovered the Consent Holder must advise the Heritage New Zealand Pouhere Taonga Regional Archaeologist, NZ Police, the Consent Authority and the appropriate iwi groups or kaitiaki representative and the above process under (c) will apply. Remains are not to be disturbed or moved until such time as iwi and Heritage New Zealand Pouhere Taonga have responded.

e) Works affecting the archaeological site and any human remains (koiwi tangata) must not resume until Heritage New Zealand Pouhere Taonga gives written approval for work to continue. Further assessment by an archaeologist may be required.

f) Where iwi so request, any information recorded as the result of the find such as a description of location and content, must be provided for their records.

Review

23. The Consent Authority may, in accordance with Sections 128 and 129 of the Resource Management Act 1991, serve notice on the Consent Holder of its intention to review the conditions of this consent during the period of three months either side of the date of granting of this consent each year, or within two months of any enforcement action taken by the Consent Authority in relation to the exercise of this consent, [insert if required- or on receiving monitoring results], for the purpose of:

a) Determining whether the conditions of this consent are adequate to deal with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage, or which becomes evident after the date of commencement of the consent;

b) Ensuring the conditions of this consent are consistent with any National Environmental Standards, relevant regional plans, and/or the Otago Regional Policy Statement;

c) Reviewing the frequency of monitoring or reporting required under this consent; or

d) Amending the monitoring programme set out in accordance with Conditions 9 and 10.

Notes to the Consent Holder

1. *Under the Heritage New Zealand Pouhere Taonga Act 2014 an archaeological site is defined as any place in New Zealand that was associated with human activity that occurred before 1900 and provides or may provide, through investigation by archaeological methods, evidence relating to the history of New Zealand (see Section 6). For pre-contact Maori sites this evidence may be in the form of Taonga (artefacts) such as toki (adzes) or flake tools as well as bones, shells, charcoal, stones etc. In later sites of European/Chinese origin, artefacts such as bottle glass, crockery etc. may be found, or evidence of old foundations, wells, drains or similar structures. Pre-1900 buildings are also considered archaeological sites. Burials/koiwi tangata may be found from any historic period. Archaeological sites are legally protected under Sections 42(1) & (2) of the Heritage New Zealand Pouhere Taonga Act 2014. It is an offence under Section 87 of the Heritage New Zealand Pouhere Taonga Act 2014 to modify or destroy an archaeological site without an Authority from Heritage New Zealand Pouhere Taonga irrespective of whether the works are permitted, or a consent has been issued under the Resource Management Act 1993 or Building Act 1991.*

2. *If you require a replacement consent upon the expiry date of this consent, any new application should be lodged at least 6 months prior to the expiry date of this consent. Applying at least 6 months before the expiry date may enable you to continue to exercise this consent under section 124 of the Resource Management Act 1991 until a decision is made on the replacement application (and any appeals are determined).*

3. *The Consent Holder is responsible for obtaining all other necessary consents, permits, and licences, including those under the Building Act 2004, the Biosecurity Act 1993, the Conservation Act 1987, and the Heritage New Zealand Pouhere Taonga Act 2014. This consent does not remove the need to comply with all other applicable Acts (including the Property Law Act 2007 and the Health and Safety at Work Act 2015), regulations, relevant Bylaws, and rules of law. This consent does not constitute building consent approval. Please check whether a building consent is required under the Building Act 2004.*

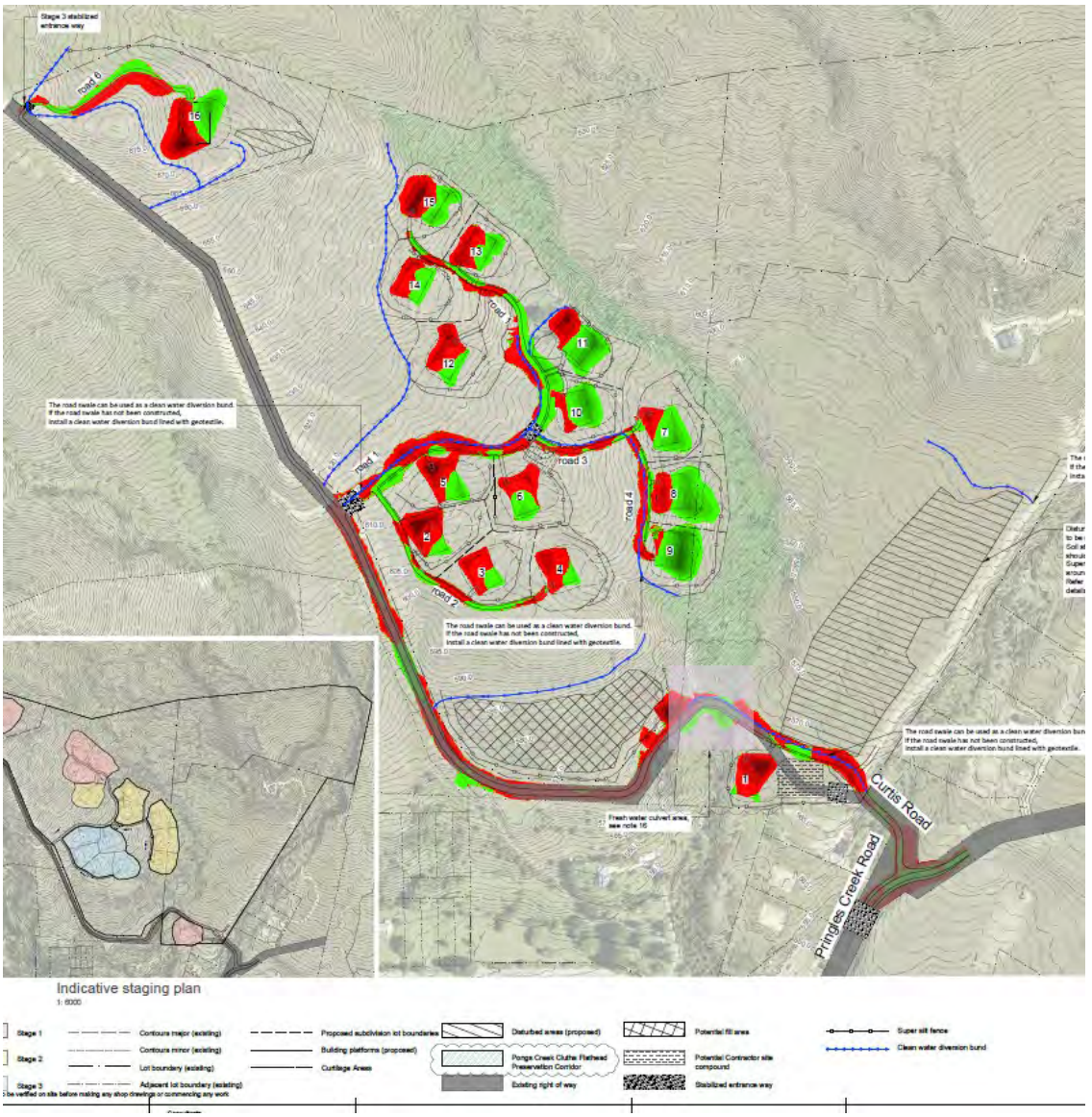
4. *Where information is required to be provided to the Consent Authority in Conditions 7-12, this must be provided in writing to compliance@orc.govt.nz. The email heading must reference RM20.203.02 and the condition*/s the information relates to

5. *Additional consent(s) may be required if material other than cleanfill is proposed to be used on site.*

6. *Where maintenance work is required to ensure the effectiveness of these erosion and sediment control measures, the record should include the date, time and details on the nature of any maintenance. The site manager (or equivalent) will need to ensure regular inspections of these measures, and particularly within 24 hours after any rainstorm event. Where it is identified that erosion and sediment control measure have become ineffective and maintenance is required, the consent authority should be contacted.*

Issued at Dunedin this 29th day of June 2022

Joanna Gilroy
Manager Consents



Appendix 1: Extent of Earthworks shown in red and green for cut/fill and in accordance with the key below image (Source: draft ESCP dated 3 September 2021 submitted as part of the Further Info Response (S92(1) dated 14 September 2021)

Otago Regional Council

Our Reference: Consent No. RM20.203.04

LAND USE CONSENT

Pursuant to Section 104B of the Resource Management Act 1991, the Otago Regional Council grants consent to:

Name: Charles Layton Roberts, Christine Jennifer Roberts and Jo-anne Leslie Johns being Trustees of the Roberts Family Trust

Address: 10 Curtis Road, Cardrona

To disturb and extend a culvert in Pringles Creek and Pongs Creek for the purpose of extending vehicle crossings to a residential development.

For a term expiring 29 June 2027

Location of consent activity: Cardrona Valley, approximately 65 metres west of the intersection of Curtis Road and Pringles Creek Road

Legal description of consent location: Lot 1 DP 433836, Lot 6 DP 344432 & Lot 1 DP 425263

Map Reference: Culvert A at NZTM 2000: E 1284473 N 5023230
Culvert B at NZTM 2000: E1284315 N 5023117

Conditions

Specific

1. The culvert extensions and associated bed disturbance works and the bed disturbance for creating the water damming and diversion for Water Permit RM20.203.05 activity must be carried out in accordance with the plans and all information submitted with the application, detailed below, and all referenced by the Consent Authority as consent number RM20.203:

   a) Application form, and assessment of environmental effects dated 25 June 2020.
   b) Curtis Road Cardrona Ecological Assessment provided with application, E3 Scientific, reversion 1.1, 14/02/2019.
   c) Scheme Plans provided with the application, C Hughes and Associates, Revision C, December 2019.
   d) Infrastructure Report McDougall's Block provided with the application, Holmes Consulting LP, Version 5, 04 March 2020
   e) McDougall's Block Proposed Onsite Wastewater Management System Site Assessment Report, E3 Scientific, Version C, 15 January 2020.
   f) Geotechnical Report for Resource Consent provided with application, GeoSolve Ltd, Rev 3, January 2020
   g) Response to further information request dated 16 May 2021, 23 June 2021, 14 September 2021, 28 September 2021, 19 October 2021, 13 January 2022, 23 March 2022, 28 April 2022 and 11 May 2022.
   h) Further Information Response S92(1) dated 26 May 2021, 23 June 2021, Response 14 Sep 21

2. The consent authorises the extension of two culverts as detailed below:

a) Extension of culvert A located in Pringles Creek at NZTM 2000: E 1284473 N 5023230; and
b) Extension of culvert B located in Pongs Creek at NZTM 2000: E1284315 N 5023117Ongoing use of all culverts specified in condition above.

3. The extension to culvert A must be constructed as detailed below:

a) Culvert will comprise a corrugated iron barrel;
b) Culvert length will be 15 metres;
c) Culvert diameter will be 1.2 metres and no less than the existing culvert;
d) Culvert will be placed parallel with the river; and
e) Culvert will be placed to ensure no undercut/erosion

4. The extension to Culvert b must be constructed as detailed below:
a) Culvert will comprise a corrugated iron barrel;
b) Culvert length will be approximately 20 metres;
c) Culvert diameter will be 0.6 metres and no less than the existing culvert;
d) Culvert will be placed parallel with the river;
e) Culvert will be placed to ensure no undercut/erosion;
f) Placement of a boulder directly below the outfall to prevent a pooling environment which would favour trout to access the culvert; and
g) the minimum height between the culvert outfall and placed boulder below the outfall must be no less than the existing outfall and existing boulder.

5. Works authorised under this consent for the Culvert B (Pongs Creek) placement must not be undertaken between the months of 1 August – 15 November to avoid the disturbance of fish species, in particular Clutha flathead galaxias spawning and juvenile rearing life stages.

6. A suitably qualified freshwater ecologist with expertise in fish passage and construction must be present for all bed disturbance works within Pringles and Pongs Creeks. The purpose of freshwater ecologist presence is for implementing the following objectives/activities:
a) Depending on the clarity of the water, the Consent Holder must fish, or flush out of the dammed stretch of the Creeks any aquatic fauna prior to dewatering. Any species caught must be recorded and relocated to an appropriate nearby habitat. The Consent Holder must submit the record to the Consent Authority no later than 10 days after the completion of the dewatering;
b) To ensure the perched Culvert B maintains a barrier to fish movement post culvert extension; and
c) Minimising construction related effects on the watercourses.

7. The Consent Holder must complete all in-stream works for each culvert within 3 weeks from when the earthworks first start.

8. When undertaking works within the bed of Pongs and Pringles Creeks the Consent Holder must:
a) Undertake works, as far as practicable, when flows in the river are low or nil;
b) Undertake works with the minimum practicable time in the wet bed;
c) Ensure that any reinstatement of works after floods are, as far as practicable, on the recession of the flood, while the river flow is still naturally turbid;
d) Ensure the silt fence at the downstream end of the work site is effective in not allowing silt/sediment to seep through it for the duration of works,

including by inspecting it after any rainfall event;

e) Ensure that sediment losses to natural water are avoided where practicable and that silt control measures detailed in the Further Information Response dated 23 June 2021 (Point 4) and attached as Appendix 1 are in place;

f) Ensure that all disturbed vegetation, soil or other material is deposited, stockpiled or contained to prevent the movement of the material so that it does not result in:
   i. the diversion, damming or blockage of any river of stream, other than provided for in Water Permit RM20.203.05;
   ii. the passage of fish being impeded;
   iii. the destruction of any significant habitat in a water body;
   iv. flooding or erosion.

g) Ensure that consented structures in the bed or banks of the river are stabilised and/or armoured to prevent scouring and erosion;

h) Ensure that the installation of in-river structures and associated river disturbances are implemented under the supervision of persons with appropriate experience in the supervision of in-river civil engineering construction works;

i) Ensure that fuel storage tanks and machinery stored in the construction area are maintained at all times to prevent leakage of oil and other contaminants into the river. No refuelling of machinery must occur within the river. In the event of contamination, the consent holder must undertake remedial action immediately and notify the Consent Authority within 5 working days; and

j) Ensure that any damage to the riverbanks be reinstated to a quality at least equivalent to that prior to works commencing within one month of completion of the works.

9. The consent holder must undertake routine monitoring and maintenance of the culvert once placed, as detailed below:

   a) Visually inspect Culvert B monthly for one year following the culvert extension to ensure the exclusion of fish passage has not been reduced since the culvert was extended;

   b) In addition to clause (a), visually inspect Culvert B within 5 days following high flow events, or events that may otherwise affect culvert's stability and exclusion of fish passage; and

   c) If any of the visual inspections in clause (a) or (b) identified that exclusion of fish passage has been reduced, or the culvert damaged, undertake maintenance works as soon as practicable to remedy the issues identified.

10. The consent holder must maintain a record of:

   a) All placement, alteration, extension and reconstruction works, including when the works commence, how long they take, and when the works are completed;

   b) Details of all monitoring and maintenance works undertaken in accordance with condition 9, including evidence of any maintenance works undertaken;

   c) Details demonstrating compliance with the remaining conditions of consent.

   If requested, provide this record to the Consent Authority within 10 working days of the date of request.

11. Within 10 working days following the completion of earthworks on the subject

site all areas of exposed soil will be permanently stabilised against erosion.

12. The works authorised by this consent must only be exercised in conjunction with Water Permit RM20.203.05.

Performance Monitoring

13. Prior to the commencement of earthwork activity on the subject site, an Erosion and Sediment Control Plan (ESCP) must be prepared and submitted to the Consent Authority for certification. The ESCP may be incorporated into the ESCP required by Condition 10 of Land Use Consent RM20.203.02 and must contain sufficient detail to address the following matters:
    a) Specific erosion and sediment control works (locations, dimensions, capacity etc);
    b) Supporting calculations and design drawings;
    c) Catchment boundaries and contour information;
    d) Details of construction methods;
    e) Timing and duration of construction and operation of control works;
    f) Details relating to the management of exposed areas; and
    g) Monitoring and maintenance requirements.

14. a) Within 10 working days following installation of the specific erosion and sediment control works referred to in condition 13, and prior to the commencement of earthworks activity on the subject site, a suitably qualified professional must provide written certification that the erosion and sediment control measures have been constructed and completed in accordance with the erosion and sediment control plan in condition 11 to the Consent Authority.
    b) The operational effectiveness and efficiency of all erosion and sediment control measures must be maintained throughout the duration/each stage of earthwork activity, or until the site is permanently stabilised against erosion.

15. a) The Consent Holder must notify the Consent Authority in writing of the commencement date of each culvert extension, and provide photographs of the area/s where work is to be undertaken and for Culvert B, showing the measurement between the boulder below the outfall and the outfall no less than 10 working days prior to the commencement of works.

    b) Photographs must be in colour and no smaller than 200 x 150 millimetres in size and be in JPEG form.

16. a) The Consent Holder must notify the Consent Authority in writing of the completion of each culvert extension no less than 10 working days following the completion of works, and must provide photographs of the area/s where work has been undertaken including both ends of the culvert, viewed upstream and downstream, and for Culvert B, showing the measurement between the boulder below the outfall and the outfall and a photograph of the boulder once placed while the flows of Pongs Creek are being diverted in accordance with Water Permit RM20.203.05.
    b) Photographs must be in colour and be no smaller than 200 x 150 millimetres in size and be in JPEG form.

17. Within 20 working days of the completion of the activity, the Consent Holder must collect and provide the Consent Authority in writing the following information:

a) the culvert's asset identification number, if known:
b) whether the culvert's ownership is—
    i. held by the Crown (for example, the Department of Conservation), a regional council, a territorial authority, the New Zealand Transport Agency, or KiwiRail Holdings Limited; or
    ii. held publicly by another person or organisation; or
    iii. held privately; or
    iv. unknown.
c) the geographical co-ordinates of the culvert;
d) the number of barrels that make up the culvert;
e) the culvert's shape;
f) the culvert's length;
g) the culvert's diameter or its width and height;
h) the height of the drop (if any) from the culvert's outlet;
i) the length of the undercut or erosion (if any) from the culvert's outlet;
j) the material from which the culvert is made;
k) the mean depth of the water through the culvert;
l) the mean water velocity in the culvert;
m) whether there are low-velocity zones downstream of the culvert;
n) the type of bed substrate that is in most of the culvert;
o) whether there are any remediation features (for example, baffles or spat rope) in the culvert;
p) whether the culvert has wetted margins;
q) the slope of the culvert;
r) the alignment of the culvert;
s) the number of wingwalls or screens on the culvert;
t) the flow of the river or connected area (whether none, low, normal, or high);
u) whether the water is tidal at the structure's location;
v) at the structure's location;
    i. the width of the river or connected area at the water's surface; and
    ii. the width of the bed of the river or connected area.
w) whether there are improvements to the structure to mitigate any effects the structure may have on the passage of fish;
x) whether the structure protects particular species, or prevents access by particular species to protect other species; and
y) the likelihood that the structure will impede the passage of fish.

18. The Consent Holder must maintain a record of any sediment discharge complaints. The register must include, but not be limited to:

    a) The date, time, location and nature of the complaint;

    b) The name, phone number, and address of the complainant, unless the complainant elects not to supply this information;

    c) action taken by Consent Holder to remedy the situation and any policies or methods put in place to avoid or mitigate the problem occurring again.

A record of the complaints must be submitted to the Consent Authority with the notification required by Condition 15 and made available for inspection at other times upon request

General

19. Prior to the commencement of the works described in condition 1 of this consent the Consent Holder must ensure that all personnel working on the site are made aware of, and have access at all times to:

a) The contents of this document; and

b) The erosion and sediment control plan required by Condition 13.

Copies of these documents must be present on-site at all time while the work authorised by this consent is being undertaken.

20. The Consent Holder must ensure that all practical measures are taken to prevent cement and cement products, from entering flowing water. This must include:

a) Avoiding flowing water coming into contact with the concrete until the concrete is firmly set.

b) Using boxing or other similar devices to contain wet cement during construction of the structure.

c) If any concrete is spilled beyond the boxing, pouring of concrete must stop immediately and all concrete must be removed from the watercourse.

d) No equipment used in the pouring of concrete may be washed out on-site.

21. The consent holder must take all reasonable precautions to minimise the spread of pest plants and aquatic weeds. In particular, the consent holder must:

a) Water blast all machinery to remove any visible dirt and/or vegetation prior to being brought on-site to reduce the potential for pest species being introduced to the bed of the watercourse. Machinery and equipment that has worked in watercourses must, prior to entering the site, also be cleaned with suitable chemicals or agents to kill didymo;

b) Avoid working in areas where aquatic weeds such as *Lagarosiphon major* are known to be present (for information, contact the Consent Authority's Biosecurity Team); and

c) To avoid the spread of the *Didymosphenia geminata* or any other pest plant, not use machinery in the berm or bed of the river that has been used in any area where the pest plant(s) are known to be present in the previous 20 working days, unless the machinery has been thoroughly cleansed with a decontamination solution (for information on decontamination contact the Consent Authority's Biosecurity Team);

d) Remove any vegetation caught on the machinery at the completion of works; and

e) Prior to leaving the site, water blast all machinery following the completion of works to reduce the potential for pest species being spread from the bed of the watercourse.

22. The Consent Holder must ensure that the works and associated discharge authorised by this consent does not cause any flooding, erosion, scouring, land instability or property damage.

23. All machinery; temporary fencing and signs; chemicals; rubbish, debris and other materials must be removed upon completion of the works.

24. In the event that an unidentified archaeological site is located during works, the following will apply;

    a) Work must cease immediately at that place and within 20 metres around the site.

    b) All machinery must be shut down, the area must be secured, and the Heritage New Zealand Pouhere Taonga Regional Archaeologist and the Consent Authority must be notified.

    c) If the site is of Maori origin, the Consent Holder must also notify the appropriate iwi groups or kaitiaki representative of the discovery and ensure site access to enable appropriate cultural procedures and tikanga to be undertaken, as long as all statutory requirements under legislation are met (Heritage New Zealand Pouhere Taonga Act 2014, Protected Objects Act 1975).

    d) If human remains (koiwi tangata) are uncovered the Consent Holder must advise the Heritage New Zealand Pouhere Taonga Regional Archaeologist, NZ Police, the Consent Authority and the appropriate iwi groups or kaitiaki representative and the above process under (c) will apply. Remains are not to be disturbed or moved until such time as iwi and Heritage New Zealand Pouhere Taonga have responded.

    e) Works affecting the archaeological site and any human remains (koiwi tangata) must not resume until Heritage New Zealand Pouhere Taonga gives written approval for work to continue. Further assessment by an archaeologist may be required.

    f) Where iwi so request, any information recorded as the result of the find such as a description of location and content, must be provided for their records.

25. Under section 125 of the Resource Management Act 1991, this consent lapses two years after the date of commencement of the consent unless:

    a) The consent is given effect to; or

    b) The Consent Authority extends the period after which the consent lapses.

Review

26. The Consent Authority may, in accordance with Sections 128 and 129 of the Resource Management Act 1991, serve notice on the Consent Holder of its intention to review the conditions of this consent during the period of three months either side of the date of granting of this consent each year, or within two months of any enforcement action taken by the Consent Authority in relation to the exercise of this consent, for the purpose of:

    (a) Determining whether the conditions of this consent are adequate to deal with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage, or which becomes evident after the date of commencement of the consent;

    (b) Ensuring the conditions of this consent are consistent with any National Environmental Standards, relevant regional plans, and/or the Otago Regional

Policy Statement;

(c) Reviewing the frequency of monitoring or reporting required under this consent;

(d) Amending the monitoring programme set out in accordance with Condition 13.

Notes To Consent Holder

1. *Under the Heritage New Zealand Pouhere Taonga Act 2014 an archaeological site is defined as any place in New Zealand that was associated with human activity that occurred before 1900 and provides or may provide, through investigation by archaeological methods, evidence relating to the history of New Zealand (see Section 6). For pre-contact Maori sites this evidence may be in the form of Taonga (artefacts) such as toki (adzes) or flake tools as well as bones, shells, charcoal, stones etc. In later sites of European/Chinese origin, artefacts such as bottle glass, crockery etc. may be found, or evidence of old foundations, wells, drains or similar structures. Pre-1900 buildings are also considered archaeological sites. Burials/koiwi tangata may be found from any historic period. Archaeological sites are legally protected under Sections 42(1) & (2) of the Heritage New Zealand Pouhere Taonga Act 2014. It is an offence under Section 87 of the Heritage New Zealand Pouhere Taonga Act 2014 to modify or destroy an archaeological site without an Authority from Heritage New Zealand Pouhere Taonga irrespective of whether the works are permitted, or a consent has been issued under the Resource Management Act 1993 or Building Act 1991.*

2. *Section 126 of the Resource Management Act 1991 provides that the Consent Authority may cancel this consent by written notice served on the Consent Holder if the consent has been exercised in the past but has not been exercised during the preceding five years.*

3. *If you require a replacement consent upon the expiry date of this consent, any new application should be lodged at least 6 months prior to the expiry date of this consent. Applying at least 6 months before the expiry date may enable you to continue to exercise this consent under section 124 of the Resource Management Act 1991 until a decision is made on the replacement application (and any appeals are determined).*

4. *The Consent Holder is responsible for obtaining all other necessary consents, permits, and licences, including those under the Building Act 2004, the Biosecurity Act 1993, the Conservation Act 1987, and the Heritage New Zealand Pouhere Taonga Act 2014. This consent does not remove the need to comply with all other applicable Acts (including the Property Law Act 2007 and the Health and Safety at Work Act 2015), regulations, relevant Bylaws, and rules of law. This consent does not constitute building consent approval. Please check whether a building consent is required under the Building Act 2004.*

5. *Where information is required to be provided to the Consent Authority in conditions 13-18 this is be provided in writing to compliance@orc.govt.nz and the email heading is to reference RM20.203.04 and the condition/s the information relates to.*

6. *The Consent Holder will be required to pay the Consent Authority an administration and monitoring charge to recover the actual and reasonable costs incurred to ensure ongoing compliance with the conditions attached to this consent, collected in accordance with Section 36 of the Resource Management Act 1991.*

Issued at Dunedin this 29th day of June 2022

Joanna Gilroy
Manager Consents

Appendix 1: Draft Erosion and Sediment Control Plan (Source: Further Information Response dated 23 June 2021 (Point 4))

The following procedure outlines culvert installation in terms of ESC:

1. *Check all erosion and sediment controls and make repairs necessary.*
2. *Install perimeter controls – silt fences and diversion drains/bunds, including a 300mm diameter Siltsoxx or equivalent across the main stream, below the works area. The ecologist will then inspect the works area and observe Steps 3-5*
3. *Install a temporary bund across the water course or inside the culvert at the upgradient end of the works, to capture and temporarily store any runoff flowing down the culvert while step 4 is undertaken. This shall make use of the existing embankment or form a new temporary embankment if the inlet headwall is being upgraded. This will remain until all civil works are complete or there is a lined and perched passage through the works area. Steps 3 and 4 will only be done during fine weather, ideally after several days without rain, and should be completed within one week. A bund will be installed at an appropriate location comprising compacted and lined bund, driven sheet pile or similar. Outflow will be by at least two 150mm diameter SN16 pipes installed through the bund at the base (1) and mid-way height (1) to provide further contingency, should these works continue beyond one day or an unexpected heavy rainfall event occur. These pipes will normally be capped and above the potential flood height to prevent fish passage (very important in Pongs Creek). At night time or following heavy rainfall, they shall be connected to 150mm diameter non-perforated draincoil (discharge above flood height and secured), which will be run through the works area to discharge to the natural stream channel below the lower Siltsoxx. In Pongs Creek both the permanent and temporary flow must be perched or prevent fish passage. If gravity flow is not possible, stream flows may be pumped through the works area and include a fine mesh inlet/outlet to prevent fish passage.*
4. *Undertake required works within the bunded area to the relevant engineering specification, clearing the works area of any accumulated silt/sediment on completion of the works (manual removal).*
5. *Grass, hydroseed or mulch where applicable. The use of biodegradable geotextile soil blanket may be required for the stream reinstatement.*
6. *Remove the Siltsoxx temporary bunds at the upper and lower ends of the works.*

Our Reference: Consent No. RM20.203.01

DISCHARGE PERMIT

Pursuant to Section 104B of the Resource Management Act 1991, the Otago Regional Council grants consent to:

Name: Charles Layton Roberts, Christine Jennifer Roberts and Jo-anne Leslie Johns being Trustees of the Roberts Family Trust

Address: 10 Curtis Road, Cardrona

To discharge treated wastewater to land for the purpose of disposal of wastewater from 16 residential dwellings

For a term expiring 29 June 2037

Location of consent activity: Cardrona Valley, approximately 65 metres west of the intersection of Curtis Road and Pringles Creek Road

Legal description of consent location: Lot 6 Deposited Plan 344432 and Lot 1 Deposited Plan 425263

Map Reference:

	NZTM2000	NZTM2000
N corner	1284233	5023475
E corner	1284412	5023222
S corner	1284331	5023147
W corner	1284182	5023421

Conditions

Specific

1. The discharge of treated domestic wastewater from 16 residential dwellings to land activity must be carried out in accordance with the plans and all information submitted with the application, detailed below, and all referenced by the Consent Authority as consent number RM20.203:
   a) Application form, and assessment of environmental effects dated 25 June 2020;
   b) Curtis Road Cardrona Ecological Assessment provided with application, E3 Scientific, reversion 1.1, 14/02/2019;
   c) Scheme Plans provided with the application, C Hughes and Associates, Revision C, December 2019;
   Infrastructure Report McDougall's Block provided with the application, Holmes Consulting LP, Version 5, 04 March 2020;
   d) McDougall's Block Proposed Onsite Wastewater;
   e) Management System Site Assessment Report, E3 Scientific, Version C, 15 January 2020;
   f) Geotechnical Report for Resource Consent provided with application, GeoSolve Ltd, Rev 3, January 2020; and
   g) Response to further information request dated 16 May 2021, 23 June

2021, 14 September 2021, 28 September 2021, 19 October 2021, 13 January 2022, 23 March 2022. 28 April 2022 and 11 May 2022.

If there are any inconsistencies between the above information and the conditions of this consent, the conditions of this consent will prevail.

2. This resource consent authorises the discharge of tertiary treated domestic wastewater at a rate of up to 22.4 cubic metres per day onto the area shown in Appendix 1, attached to this consent. The discharge must be managed so that:
   a) The disposal field is no less than 22,400 square metres in area; and
   b) The rate of application does not exceed 1 millimetre per day in any part of the disposal area.

3. The key components of the wastewater treatment and land disposal system must be consistent with those described in the application and must comprise at least the following minimum, or additional, components, dimensions and standards:

   a) Wastewater treatment system A:

      i. One (1) fully sealed 3,800 L primary treatment/holding tank located on each residential lot connected to this treatment system A to filter out solids;
      ii. Influent meter to Adventex AX100's;
      iii. Stage 1 comprising two Advantex AX100, one 22,500 L pre-anoxic tank, one 22,500 L recirculation tank, one 22,500L post-anoxic tank;
      iv. Stage 2 comprising one Advantex AX100, one 22,500 L pre-anoxic tank, and one 22,500 L recirculation tank;
      v. 22,500L final wastewater holding tank/chamber;
      vi. Ultra-violet light disinfection system, capable of 3 log reduction E. Coli;
      vii. wastewater discharge meter;
      viii. an audio/visual alarm system;
      ix. emergency storage volume, equivalent to 24 hours peak flow volume, above the high water alarm levels, within the wastewater treatment system; and

   b) Wastewater treatment system for lot 1 located as shown in Appendix 3:

      i. A system which achieves secondary effluent requirements as per the AS/NZS 1547:2012; and
      ii. Ultra-violet light disinfection system;

   c) The Consent Holder is not required to install wastewater system under condition 3 b) if wastewater from Lot 1 is treated by treatment system A. The Consent Holder must notify the Consent Authority if wastewater from Lot 1 is treated by treatment system A within 30 days of connecting to that system.

   d) The Wastewater land disposal system for Wastewater treatment system A and Wastewater treatment system for lot 1:

      i. at least 1,400 square metres of driplines as described in ii. below for each of the 16 residential dwellings of land disposal area at

the location described above and as shown on Appendix 1;

ii. Land disposal of wastewater via low pressure effluent distribution driplines buried at 0.3 and 0.15 metres below ground level within a minimum depth of 150 millimetres of good quality topsoil, rich in humus. The 0.3 metre deep driplines must be utilised in April-October inclusive;

iii. the disposal area must be located in accordance with the approved plans, and must be:

1. a minimum distance of 5 metres from roadside drains;
2. a minimum distance of 30 metres from surface water bodies;
3. a minimum distance of 20 metres from subsurface and stormwater drains other than the cutoff drains as shown in Appendix 2; and
4. a minimum distance of 5 metres from property boundaries;
5. a minimum distance of 50 metres from any bore (except monitoring bores).

e) Cut off drains located as generally shown on the map in Appendix 1 must be constructed with the dimensions in Appendix 2. The downslope drain must be constructed so that it collects any surface breakout or runoff of water/wastewater from the disposal field and returns it to the wastewater treatment plant by gravity.

4. The Consent Holder must manage the ryegrass cover overtop the entire surface area of the disposal field at all times as follows:

a) Cut and carry management must be undertaken by the Consent Holder.

b) If additional irrigation is required in order to maintain ryegrass cover over Spring, Summer and Winter:

i. the additional Irrigation must commence when the soil moisture content is below 50% of the maximum plant available water capacity in the disposal field as measured from the soil moisture content measuring sites required by Condition 13 and the maximum plant available water capacity as set by Condition 17 or 18.; and

ii. the additional irrigation must cease when the soil moisture content is above 80% of the maximum plant available water capacity in the disposal field, as measured from the soil moisture content measuring sites required by Condition 14 and the maximum plant available water capacity as set by Condition 17 or 18.

c) The Consent Holder must record the start time, date and duration of all irrigation of water which occurs over the disposal field, and the maximum plant available water capacity recorded at these times. The Consent Holder must provide this record to the Consent Authority on request.

5. (a) The quality of treated wastewater excluding from Wastewater treatment system A immediately before it is discharged to the land disposal system must not exceed the 90%ile values specified below:

i. Less than 20 milligrams per litre of 5 -day Biochemical Oxygen Demand (BOD_5);

ii. Less than 20 milligrams per litre of Total Suspended Solids (TSS);

iii. Less than 20 milligrams per litre of Total Nitrogen (TN);

iv. Less than 1,000 *Escherichia coli* colony forming units per 100 millilitres of effluent; and

v. Less than 15 milligrams per litre of Total Phosphorus (TP)

(b) The quality of treated wastewater from Lot 1 immediately before it is discharged to the land disposal system must not exceed the 90%ile values specified below:

i. Less than 20 milligrams per litre of 5-day Biochemical Oxygen Demand (BOD_5), with no sample greater than 30 mg/L.

ii. Less than 30 milligrams per lite of Total Suspended Solids (TSS), with no sample greater than 45 mg/L

6. Prior to any discharge of wastewater to the wastewater land disposal field the Consent Holder must install 3 groundwater monitoring wells at the following locations (NZTM 2000):

a) BH1: E1284299 N 5023189

b) BH2: E 1284382 N 5023184

c) BH3: E 1284198, N5023440

The monitoring wells must be constructed in late summer or autumn to ensure the screened interval covers the seasonal variation in the groundwater table. The boreholes must be surveyed to allow for accurate water levelling.

7. Prior to commissioning the treatment and land disposal system, the land disposal area must be marked out by any means that ensures the extent is identifiable on the ground surface and must remain marked out for the duration of the consent. The land disposal areas must not be used:

a) For roading whether sealed or unsealed;

b) As a hardstanding area;

c) For erecting buildings or any non-effluent systems structures;

d) For activities that require intensively managed grass surfaces (e.g. grass tennis courts or bowling greens or golf tees and greens);

e) For grazing stock; and

f) No vehicle must park or drive over the disposal field except for cut and carry operations.

Performance Monitoring

8. Prior to commencement of the discharge of wastewater from each of the 16 lots to the wastewater land disposal system, the Consent Holder must supply the Consent Authority with any schematics, plans, and manufacturer or

supplier producer statements for the installed wastewater treatment system(s) and a Producer Statement, Code Compliance Certificate or Certificate of Acceptance, certifying that the treatment and disposal systems have been installed in accordance with condition 3.

9. a) For the purposes of obtaining baseline surface water quality data, the Consent Holder must carry out water quality monitoring at the following sites prior to the commencement of the discharge of wastewater to the wastewater land disposal field of more than 2,000 L per day (week average).

b) The Consent Holder must install and survey water level stages at each sample point to allow for the accurate collection of surface water level elevations.

c) The sampling must occur as outlined in the below table:

Site name	Easting (NZTM 2000)	Northing (NZTM 2000)	Frequency
PO1 (Upstream)	1283566	5023132	A minimum of two samples to be taken, spaced at least 6 months apart and when the Cardrona River at Mount Barker flow monitoring site is below median flow: https://www.orc.govt.nz/managing-our-environment/water/water-monitoring-and-alerts/upper-clutha/cardrona-river-at-mount-barker
PO2	1283566	5023132	
PO3	1284318	5023130	
PO4 (Downstream)	1284576	5022999	
PR1 (Upstream)	1284124	5023685	
PR2	1284466	5023239	
PR3 (Downstream)	1284636	5023055	

d) The water quality samples taken under condition 9(b) must be analysed for :

i. BOD (cBOD5)

ii. Total Nitrogen (calculated from NNN and TKN)

iii. Ammoniacal Nitrogen

iv. Total Phosphorus

v. Dissolved Reactive Phosphorus

vi. Bacteria E. coli (cfu/100ml)

vii. Chloride

viii. Dissolved Oxygen (field)

ix. Temperature (field)

x. pH (field)

xi. Conductivity (field)

xii. ORP (field)

xiii. Periphyton (% cover and chlorophyll *a*)

xiv. MCI

xv. QMCI

xvi. EPT (Abundance and Richness)

e) The results of all samples taken in accordance with Condition 9 must be collated into a document and are also to be used to update the final limits as required by Condition 10.

f) The final limits must be set by a Suitably Qualified and certification Freshwater Scientist and provided to the Consent Authority for certification prior to the commencement of the discharge of wastewater to the disposal field of more than 2,000 L per day (week average).

g) The document must be forwarded to the Consent Authority at least 30 days prior to the commencement of the discharge of wastewater to the disposal field of more than 2,000 L per day (week average). The discharge of wastewater to the disposal field of more than 2,000 L per day (week average) must not begin until the Consent Holder has received confirmation in writing from the Consent Authority that the limits in Condition 10 have been certified.

10. (a) For the purposes of monitoring the effects of the discharge, the Consent Holder must carry out water quality monitoring at the following sites:

Site name	**Easting nM (NZTM 2000**	**Northing**	**Frequency**
PO1 (Upstream)	1283566	5023132	bi-annual after the commencement of the discharge of wastewater to the disposal field of more than 2,000 L per day (week average) during summer and winter except for macroinvertebrate and macrophyte (MCI, QMCI, EPT) samples which are required annually in spring or summer. If a sample is not compliant with the limits then additional quarterly monitoring must occur after the discharge is resumed or after the non-compliant sample if the
PO2	1283566	5023132	
PO3	1284318	5023130	
PO4 (Downstream)	1284576	5022999	
PR1 (Upstream)	1284124	5023685	
PR2	1284466	5023239	
PR3 (Downstream)	1284636	5023055	

			discharge was not ceased under Condition 9 until an entire year of data is compliant with all water quality standards.

b) The results of all samples taken in accordance with condition 9(a) at the downstream sites must be compared to the upstream sites. On those occasions where the upstream samples do not meet the Limit/trigger value in Condition 9 including the limits set using the limit setting methods, then the limits will be set as no greater than 10% of the upstream samples.

c) Should the downstream sites exceed the following limits in Table 1:

i. an assessment must be undertaken by a suitably qualified and experienced professional to determine whether the exceedance(s) of the limits set in condition 10 and condition 15 are attributable to the discharge, and identify any potential adverse effects on surface water quality associated with the exceedances. This may require further sampling, including a follow-up sample within one week. The report must identify any immediate or longer-term remedial action that will be implemented. The Consent Holder must notify the Consent Authority within 2 working days of the exceedance being identified and must provide a copy of the assessment within 10 working days.

ii. If the suitably qualified and experienced professional attributes the exceedances to a discharge under this consent, then the discharge to land must cease immediately. When the discharge is ceased and at the Consent Holder's cost, wastewater must be disposed off-site at a facility suitably authorised to receive the wastewater.

Table 1 – Limit Setting Process

Parameter	**Limit/trigger value**		**Limit Setting Methods**
	PO4	PR3	
Nitrate-Nitrite-Nitrogen	The results of baseline quality sampling completed under Condition 9 will be used to assign a NPS-FM Numeric Attribute Band. The compliance limit may be from either the NPS-FM attribute band or the ANZG (2018), depending on which is more conservative in relation to the baseline conditions.		
Ammoniacal Nitrogen	The results of baseline quality sampling completed under Condition 9 will be used to assign an NPS-FM Numeric Attribute Band. The compliance limit may be from either the NPS-FM attribute band or the ANZG (2018), depending on which is more conservative in relation to the baseline conditions.		
TN (mg/L)	0.238	0.085	ANZG (2018)
Dissolved phosphorus (DRP mg/l)	The results of baseline quality sampling completed under Condition 9 will be used to assign a NPS-FM Numeric Attribute Band. The compliance limit may be from either the NPS-FM attribute band or the ANZG (2018),		

	depending on which is more conservative in relation to the baseline conditions.		
TP (mg/L)	0.016	0.017	ANZG (2018) DGV
Bacteria E. coli (cfu/100ml)	The results of baseline quality sampling completed under Condition 9 will be used to assign a NPS-FM Numeric Attribute Band. The compliance limit must be from the NPS-FM attribute band.		
Turbidity NTU	2.4	4.6	ANZG (2018) DGV
DO (% and/or mg/L)	Proposed limit will be set from baseline quality sampling completed under Condition 9.		
pH	7.35 - 7.8	7.39 - 7.8	ANZG (2018) DGV
Periphyton (% cover)	This assessment will be carried out in accordance with the NPS-FM which states that a visual assessment of periphyton can be undertaken at sites such as this and assessment methodology will be in accordance with the Stream Periphyton Monitoring Manual (Biggs & Kilroy, 2000). The results of baseline quality sampling completed under Condition 9 will be used to assign an NPS-FM Numeric Attribute Band. The compliance limit must be from the NPS-FM attribute band.		
Periphyton (mg chl-a/m2)	The results of baseline quality sampling completed under Condition 9 will be used to assign an NPS-FM Numeric Attribute Band. The compliance limit must be from the NPS-FM attribute band.		
QMCI	The results of baseline quality sampling completed under Condition 9 will be used to assign an NPS-FM Numeric Attribute Band. The compliance limit must be from the NPS-FM attribute band.		
MCI	The results of baseline quality sampling completed under Condition 9 will be used to assign Pongs and Pringles Creek to an NPS-FM Numeric Attribute Band. The compliance limit must be from the NPS-FM attribute band.		
EPT Abundance	Proposed limit will be set from baseline quality sampling completed under Condition 9.		
EPT Richness	Proposed limit will be set from baseline quality sampling completed under Condition 9.		

11. a) Within 10 working days of when the discharge is ceased under Condition 10, the Consent Holder must provide the Consent Authority with confirmation that the remedial actions set out in the report prepared in accordance with Condition 10 will be undertaken provided they are within scope of the consent.

b) Two surface water and groundwater samples must occur in accordance with condition 10 and 14 within two months of resumption of the discharge. The two sampling events must be at least 4 weeks apart. If one or more

sampling events do not confirm the discharge is compliant with the limits in Condition 9, and the exceedance can be directly related to the discharge based on sampling results under Condition 14 for the same parameter then the consent holder must follow the management process outlined in condition 10.

12. Prior to the commencement of the discharge of wastewater to the disposal field of more than 2,000 L per day (week average) representative samples must be taken from the groundwater monitoring wells required in accordance with Condition 5 twice and not within 48 hours of the monitoring wells being constructed:

    a) The last sample must occur at least one month before commencement of the discharge of wastewater to the disposal field of more than 2,000 L per day (week average).

    b) The samples must be timed at least one month apart and occur when the Cardrona River at Mount Barker flow recording station is below median flow.

    c) The taking of samples must be overseen by a suitably qualified professional.

    d) The pre-commissioning samples must coincide with baseline surface water quality sampling events required by Condition 9. All samples must be collected in accordance with the AS/NZS 5667.11:1998, with groundwater levels in the wells recorded at the time of sampling.

    e) All groundwater samples must be analysed for the following parameters:

Parameter
BOD (cBOD5)
Chloride concentration
Electrical conductivity
Escherichia coli (*E.coli*)
Total Nitrogen (calculated from NNN and TKN)
Total ammoniacal nitrogen (NH_3)
Dissolved reactive phosphorous (DRP)
Dissolved Oxygen
Temperature
pH
Oxidation Reduction Potential

13. a) The Consent Holder must collate the results of all samples taken in accordance with condition 14 into a document which uses the results to propose groundwater quality limits in BH1 and BH2 for the parameters in the table below and supply this to the Consent Authority in a Monitoring Plan for confirmation at least 60 days prior to the commissioning of the wastewater land disposal system.

    b) The limits must be included in a Groundwater Monitoring Plan and must be proposed for the below parameters. The discharge must comply with these limits at all times. No changes may be made to the limits in the monitoring plan once developed. The monitoring plan and limits must be completed and

proposed by a suitably qualified and experienced groundwater scientist:

Parameter
BOD (cBOD5)
Chloride concentration
Electrical conductivity
Escherichia coli (*E.coli*)
Total Nitrogen (calculated from NNN and TKN)
Nitrate-nitrite-nitrogen
Ammoniacal nitrogen (NH_3)
Dissolved reactive phosphorous (DRP)
Dissolved Oxygen
pH

14. a) After the commencement of the discharge of wastewater to the disposal field of more than 2,000 L per day (week average), samples must be taken from the groundwater monitoring wells required in accordance with condition 5. bi-annually in summer and winter and be overseen by a suitably qualified professional

    b) The samples must coincide with all surface water quality sampling events required by Condition 10. All samples must be collected in accordance with AS/NZS 5667.11:1998, with groundwater levels in the wells recorded at the time of sampling.

    c) All groundwater samples must be analysed for the following parameters:

Parameter
BOD (cBOD5)
Chloride concentration
Electrical conductivity
Escherichia coli (*E.coli*)
Total Nitrogen (calculated from NNN and TKN)
Nitrate-nitrite-nitrogen
Ammoniacal nitrogen (NH3)
Dissolved reactive phosphorous (DRP)
Dissolved Oxygen
pH

    The results of all samples must be compared to the upgradient site and the groundwater quality limits set under condition 13.

15. After the construction of the cut-off drains described in Condition 3 (c) v. but prior to the commencement of the discharge of wastewater to the disposal field of more than 2,000 L per day (week average), the Consent Holder must submit to the consent authority ≥7 sites in representative parts of the disposal field for the purpose of testing soil moisture content for Condition 18. The locations must be to the satisfaction of the Consent Authority.

16. a) Prior to the commissioning of the treatment and disposal system, a discharge

flow meter with an accuracy range of +/- 5% and datalogger must be installed to record the wastewater volume discharged.

b) The flow meter and datalogger must record wastewater volumes discharged when the discharge is occurring.

c) The Consent Holder must provide records from the datalogger to the Consent Authority at annual intervals by 31 July each year and at any time upon request. Data must be provided electronically giving the date, time and flow rates in no more than 15-minute increments of water and the datalogger downloaded annually and sent to Council by 31 July each year.

17. The Consent Holder must provide written verification to the Consent Authority that the discharge flow meter has been verified as accurate by a suitably qualified person by 31 July of the first year of the exercise of this consent and then at yearly (ultrasonic meters only)/five-yearly (other meters) intervals thereafter.

18. a) Prior to the commencement of the discharge of wastewater to the disposal field of more than 2,000 Litres per day (week average) and following a rainfall event >20 millimetres in 24 hours at the subject site the Consent Holder must test the % soil moisture (% of total soil volume) at each monitoring site established under Condition 14 averaged for the depths of 0-200 mm below ground level (bgl), 200-400 mm bgl, and 400-600 mm bgl for a duration of four days.

    b) The Consent Holder must plot the soil moisture content results to determine when gravimetric drainage has completed, and field capacity is reached, with the observed % soil moisture at this point used to verify the estimated maximum plant available water capacity of the disposal field from S-Map Online by Manaaki Whenua.

    c) The consent Holder must submit a report including the results of the soil moisture testing including the weather leading up to and during the test and the estimated maximum plant available water capacity to the Consent Authority at least 10 days before commencement of the discharge of wastewater to the disposal field of more than 2,000 L per day (week average) for acceptance. This maximum plant available water capacity set under this condition must be utilised to inform when to irrigate the disposal field under Condition 3. c) iv.

19. a) For the purpose of re-validating the maximum plant available water capacity set under Condition 18, the Consent Holder must reassess this once every ten years following the commencement of the discharge of wastewater to the disposal field of more than 2,000 L per day (week average). The reassessment must occur immediately following a >20 millimetre in 24 hours rainfall event at the subject site.

    b) The Consent Holder must test the % soil moisture (% of total soil volume) at each site established under Condition 14 averaged for the depths of 0-200 millimetres (mm) below ground level (bgl), 200-400 mm bgl, and 400-600 mm bgl for a duration of four days.

    c) The Consent Holder must plot the soil moisture content results to determine when gravimetric drainage has completed, and field capacity is reached, with the observed % soil moisture at this point used to verify the estimated maximum plant available water capacity of the disposal field from S-Map Online by Manaaki Whenua.

d) The consent Holder must submit a report including the results of the soil moisture testing including the weather leading up to and during the test and the estimated maximum plant available water capacity to the Consent Authority at least 10 days before commencement of the discharge of wastewater to the disposal field of more than 2,000 L per day (week average) for acceptance. This maximum plant available water capacity of the disposal field must be utilised to inform when to irrigate the disposal field under Condition 3. c) iv.

20. At least 10 days prior to commencement of the discharge of any wastewater to the land disposal system, the consent holder must prepare and forward to the Consent Authority an Operations and Management Manual (OMM) for the treatment and land disposal system to ensure its effective and efficient operation at all times. The system must be operated in accordance with this manual at all times, which must be updated as appropriate. The OMM must be to the satisfaction of the Consent Authority and include, as a minimum:

    a) A brief description of the treatment and disposal system, including a site plan that shows the location of all parts of the treatment and disposal system, discharge locations, sampling sites and the drainage network;

    b) Key operational matters including weekly, monthly and annual maintenance checks;

    c) Monitoring requirements and procedures;

    d) A management plan for the cut and carry operation including procedures for harvesting grass from the site and for maximising grass growth and nitrogen uptake by grass such as soil tests, supplementary nutrient additions and pest and weed control.

    e) Contingency plans in the event of system malfunctions or breakdowns (including provision for the removal and disposal of effluent by tanker truck should there be prolonged system failure);

    f) The means of receiving and dealing with any complaints;

    g) Key personnel and contact details; and

    h) Emergency contact phone numbers.

21. Prior to the commencement of the discharge of any wastewater to the land disposal system, a maintenance service contract must be forwarded to the Consent Authority, which provides for the servicing of the treatment and disposal system at least once every 12 months, by a suitably qualified person/organisation. A maintenance service contract must be maintained for the duration of the consent. Any updates must be provided to the Consent Authority. Following every service, a written report must be prepared, and a copy provided to the Consent Authority with the annual report required under Condition 22 of this consent.

22. By the 31 October each year a monitoring report must be prepared relating to the activities authorised by this consent over the preceding 12 months. This report must be prepared by a suitably qualified person and must include, but not be limited to:

    a) Maintenance service records and malfunctions or breakdowns and the corrective action taken;

b) Flow monitoring records;

c) Discharge sampling and analysis;

d) Copies of all analytical sample results collected under Conditions 9 and 13 of this consent;

e) Copies of testing done under Condition 22 of this consent;

f) For the preceeding calendar year, the dates/timing of harvests of dry matter removed from the disposal field by cut and carry operations (if any);

g) Records of irrigation done under Condition 3. c) iv.

h) Groundwater and surface water analysis including assessing the connectivity of any impacted shallow groundwater and its recharge of the surface water bodies above the culverts and identification of any effects and any mitigation measures necessary to reduce contaminants;

i) Maintenance service report and recommendations for improvements in the system;

j) A comparison of wastewater quality and quantity results from the past calendar year with the results of the previous year and identification of any trends;

k) Overview of compliance with all conditions of this consent including the OMM; and

l) A summary of any complaints received.

The report required by condition 22 must identify if there is a need to implement additional methods or improvements to the wastewater treatment and disposal system. All recommendations specified in the report and within scope of the consent must be implemented.

23. Once every:

a) year when the discharge rate is <2,500 L per day (weekly average); or

b) 6 months when the discharge rate is >2,500 L per day (weekly average) but <10,000 L per day (weekly average); or

c) 3 months when the discharge rate is >10,000 L per day (weekly average);

The consent holder must take samples of the wastewater discharge and have the samples analysed for the parameters in condition 4. All sample results must be supplied to the Consent Authority by the Consent Holder within 10 working days of the results being received by the Consent Holder.

24. An audit of the condition, operation and performance of the wastewater treatment and land disposal system must be undertaken by a suitably qualified professional every five years. The audit must include:

a) An assessment of the condition of the wastewater treatment and land disposal system.

b) An assessment of the adequacy of the system to treat and dispose the consented wastewater volume.

c) An up to date list of the components of the wastewater treatment

system and land disposal system.

d) Recommendations including timeframes for any changes, upgrades, or remedial works to the treatment and land disposal system or process.

A copy of the audit report must be provided to the Consent Authority no later than 30 working days after the assessment is undertaken.
All recommendations specified in the audit report and within scope of the consent must be implemented to ensure the efficient and safe operation of the wastewater treatment system and disposal field.

General

25. Prior to commissioning the treatment and land disposal system, the consent holder must erect public warning signs at the land disposal area to alert and deter the public from accessing the area. The signs must:

    a) Be at least 400 millimetres by 300 millimetres and have wording that can be clearly read from 3 metres away;

    b) Be written in English, Maori, Mandarin Chinese and Japanese;

    c) Provide clear identification of the location and nature of the discharge;

    d) Be erected in locations where the public are most likely to enter the land application area(s);

    e) Be maintained at all times by the Consent Holder; and

    f) State the contact details for the Consent Holder.

26. The wastewater treatment and land disposal system must be maintained in good working order at all times and in accordance with the operations and management manual as required under condition 20.

27. All discharges must comply with the certified OMM at all times. A copy of the certified OMM must be held on-site at all times.

28. The discharge of wastewater to land must not result in:

    a) Ponding of wastewater within or adjacent to the land disposal area;

    b) Channelling of wastewater that results in overland runoff of wastewater beyond the land disposal area;

    c) Surface seepage (breakout) of wastewater beyond the land disposal area;

    d) Odour emission resulting from the treatment and disposal system that is offensive or objectionable to such an extent that it has an adverse effect on the environment beyond the boundary of the property on which the consent is exercised; and

    e) Discharge of sludge or grease to land or water.

29. The Consent Authority may, in accordance with Sections 128 and 129 of the Resource Management Act 1991, serve notice on the Consent Holder of its intention to review the conditions of this consent during the period of three months either side of the date of granting of this consent each year, or within two months of any enforcement action taken by the Consent Authority in relation to the exercise of this consent, for the purpose of:

a) Determining whether the conditions of this consent are adequate to deal with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage, or which becomes evident after the date of commencement of the consent;

b) Ensuring the conditions of this consent are consistent with any National Environmental Standards, relevant regional plans, and/or the Otago Regional Policy Statement;

c) Reviewing the frequency of monitoring or reporting required under this consent;

d) Requiring the Consent Holder to adopt the best practicable option, in order to prevent or minimise any adverse effect on the environment arising as a result of the exercise of this consent.

30. Under section 125 of the Resource Management Act 1991, this consent lapses two years after the date of commencement of the consent unless:

a) The consent is given effect to; or

b) The Consent Authority extends the period after which the consent lapses.

Notes to Consent Holder

1. *Section 126 of the Resource Management Act 1991 provides that the Consent Authority may cancel this consent by written notice served on the Consent Holder if the consent has been exercised in the past but has not been exercised during the preceding five years.*
2. *If you require a replacement consent upon the expiry date of this consent, any new application should be lodged at least 6 months prior to the expiry date of this consent. Applying at least 6 months before the expiry date may enable you to continue to exercise this consent under section 124 of the Resource Management Act 1991 until a decision is made on the replacement application (and any appeals are determined).*
3. *The Consent Holder is responsible for obtaining all other necessary consents, permits, and licences, including those under the Building Act 2004, the Biosecurity Act 1993, the Conservation Act 1987, and the Heritage New Zealand Pouhere Taonga Act 2014. This consent does not remove the need to comply with all other applicable Acts (including the Property Law Act 2007 and the Health and Safety at Work Act 2015), regulations, relevant Bylaws, and rules of law. This consent does not constitute building consent approval. Please check whether a building consent is required under the Building Act 2004.*
4. *Where information is required to be provided to the Consent Authority in conditions 7-24 this is provided in writing to compliance@orc.govt.nz, and the email heading is to reference RM20.203.01 and the condition(s) the information relates to.*
5. *The Consent Holder will be required to pay the Consent Authority an administration and monitoring charge to recover the actual and reasonable costs incurred to ensure ongoing compliance with the conditions attached to this consent, collected in accordance with Section 36 of the Resource Management Act 1991.*
6. *Lot 16 of the development may have its own wastewater disposal treatment*

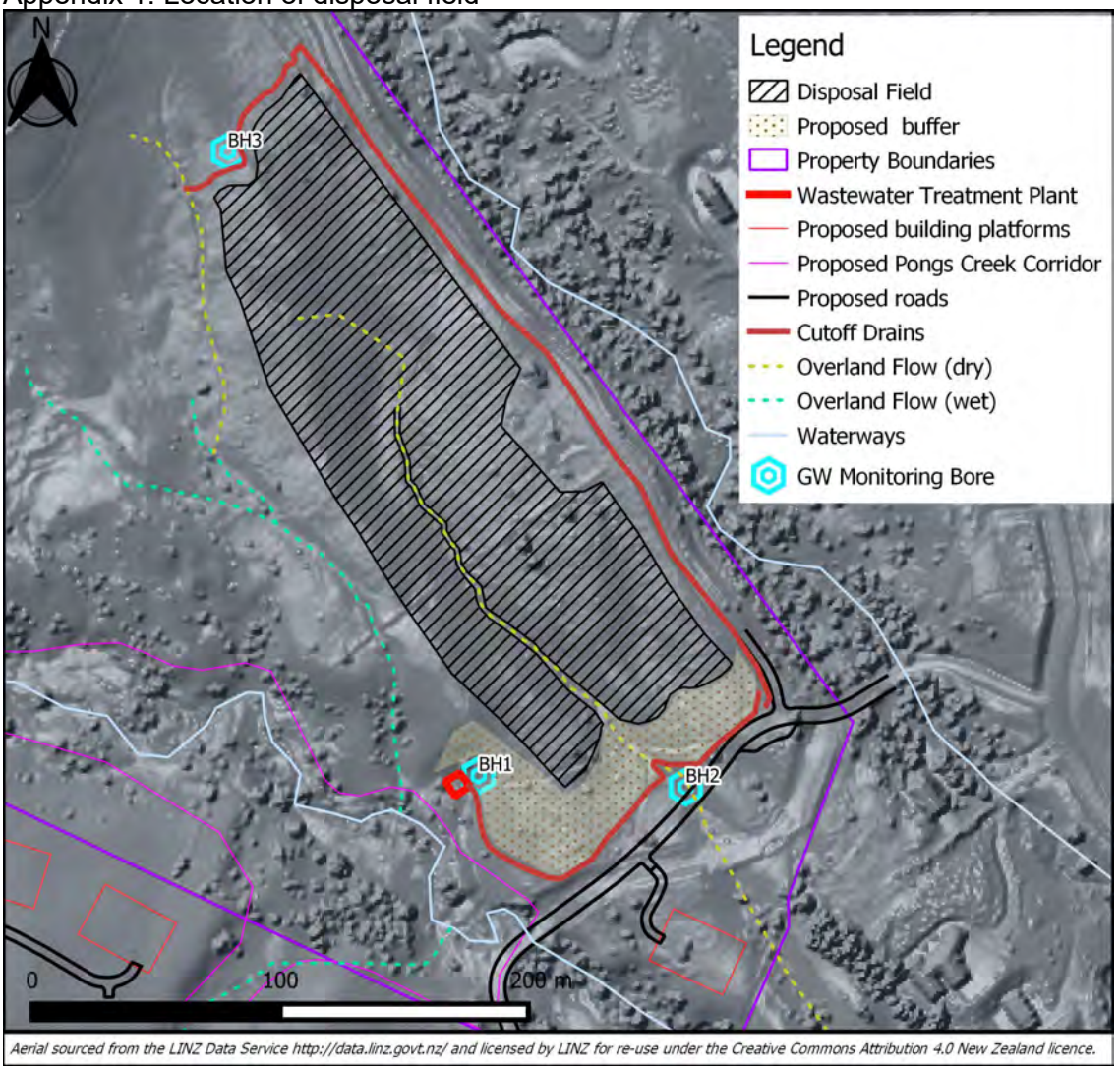
and discharge located at NZTM 2000: E1283657 N5022918; and this has been assessed in the consent application as a permitted activity.

7. *Under the Heritage New Zealand Pouhere Taonga Act 2014 an archaeological site is defined as any place in New Zealand that was associated with human activity that occurred before 1900 and provides or may provide, through investigation by archaeological methods, evidence relating to the history of New Zealand (see Section 6). For pre-contact Maori sites this evidence may be in the form of Taonga (artefacts) such as toki (adzes) or flake tools as well as bones, shells, charcoal, stones etc. In later sites of European/Chinese origin, artefacts such as bottle glass, crockery etc. may be found, or evidence of old foundations, wells, drains or similar structures. Pre-1900 buildings are also considered archaeological sites. Burials/koiwi tangata may be found from any historic period. Archaeological sites are legally protected under Sections 42(1) & (2) of the Heritage New Zealand Pouhere Taonga Act 2014. It is an offence under Section 87 of the Heritage New Zealand Pouhere Taonga Act 2014 to modify or destroy an archaeological site without an Authority from Heritage New Zealand Pouhere Taonga irrespective of whether the works are permitted, or a consent has been issued under the Resource Management Act 1993 or Building Act 1991.*

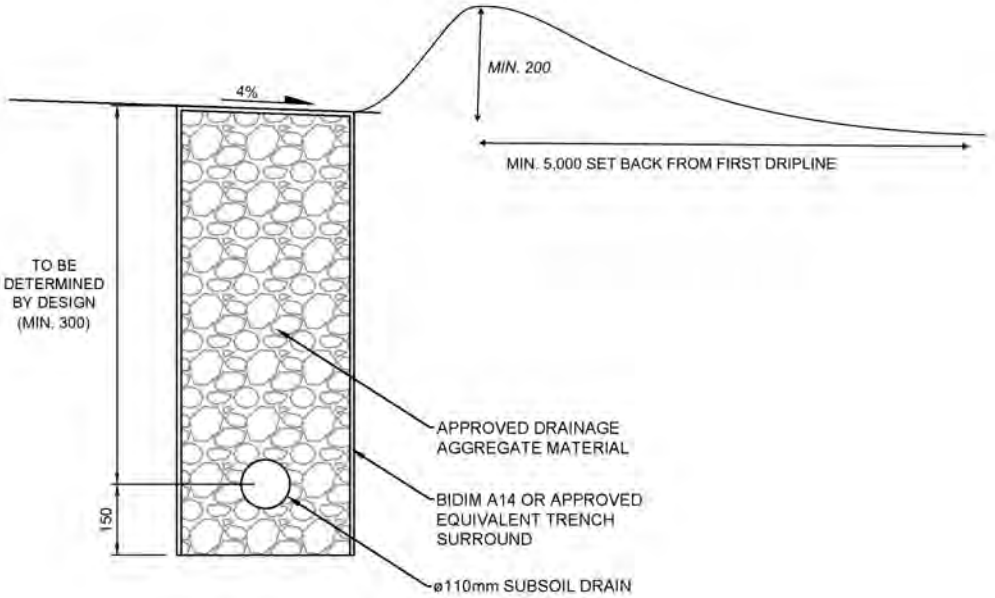
Issued at Dunedin this 29th day of June 2022

Joanna Gilroy
Manager Consents

Appendix 1: Location of disposal field

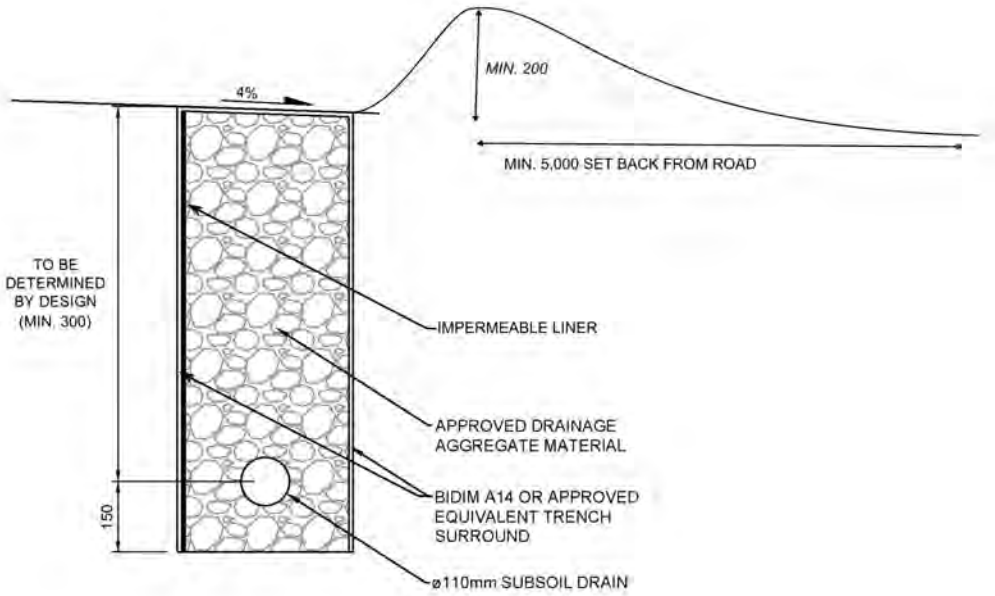


Appendix 2: Cutoff drains specifications



SURFACE AND PERCHED WATER CUTOFF SWALE - UPLSOPE

ALL DIMENSIONS ARE IN MILLIMETRES



SURFACE AND PERCHED WATER CUTOFF SWALE - DOWNSLOPE

ALL DIMENSIONS ARE IN MILLIMETRES

Appendix 3:

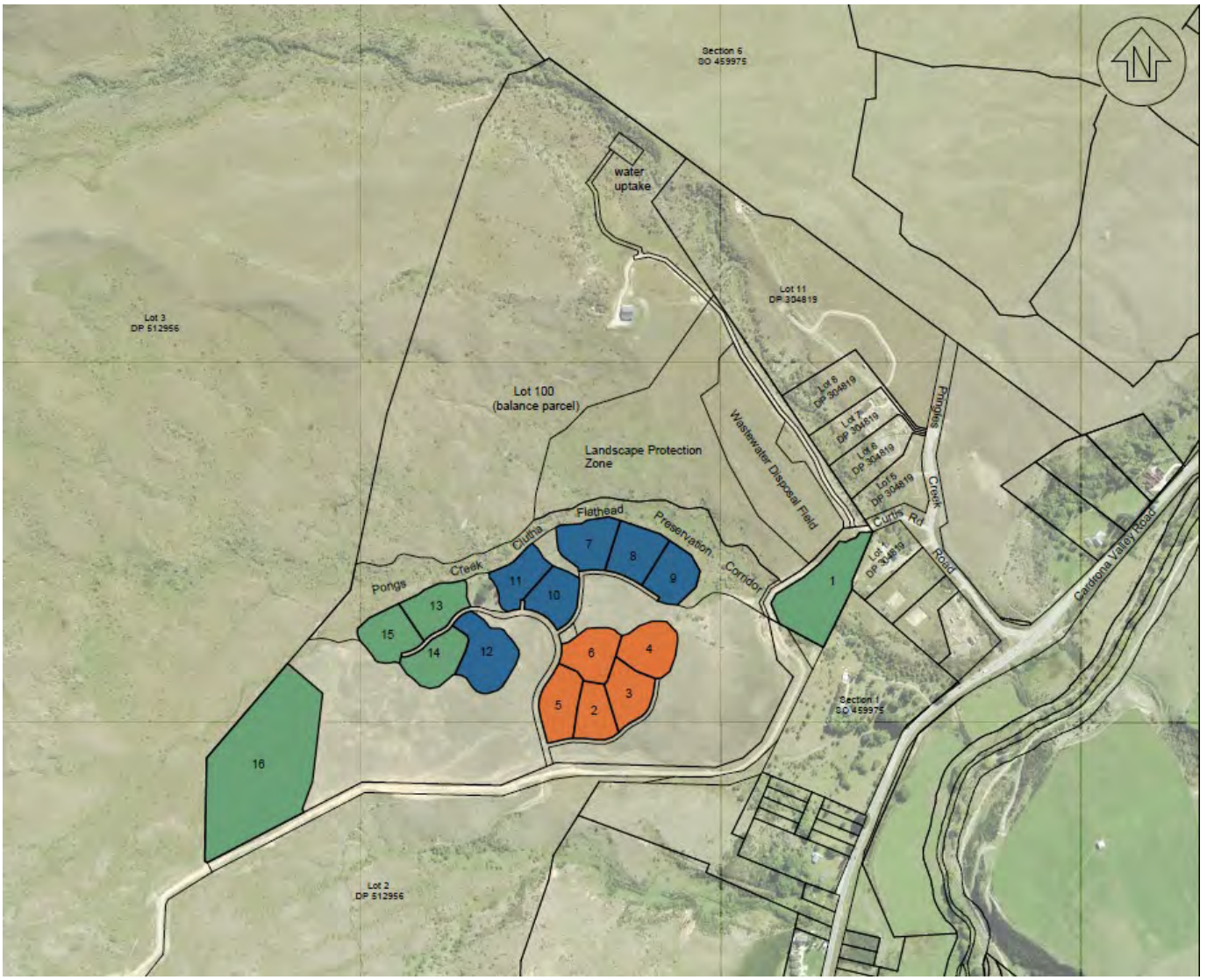


Figure 4: Scheme Plan showing location of propose Lots (Source: Scheme Plan Drawings by C Hughes & Associates Ltd provided in the Applicaion AEE)

North

Water tanks
Approx 30m³ tanks x6, above ground, pending detailed design

Consented building platform
25mx40m - 1000m²(RM090876)

Proposed Building platforms
32.6x23m - 750m²

Curtilage areas subject to design controls and common planting list

Native planting framework undertaken by developer (covenanted)

Driveways 3.5m wide

Proposed Lot boundaries

Rubbish Collection area
refer to SK36

Pongs Creek Clutha Flathead Preservation Corridor
fenced and protected from stock

Open pasture land surrounding proposed development retained for grazing and part of single title held by existing Roberts Family Trust (existing dwelling)

Provisional stormwater management area

Entry and Mailbox area
refer to SK34

LOT 16
LOT 15
LOT 13
LOT 14
LOT 12
LOT 11
LOT 7
LOT 10
LOT 6
LOT 5
LOT 8
LOT 2
LOT 3
LOT 4
LOT 9
LOT 1

Proposed water take from Pringles Creek with local treatment.
(Refer to SK41 and Holmes report for further details)

Existing dwelling
(to remain)

Landscape protection Zone
Area to be protected from further subdivision

Proposed Wastewater Treatment Plant
(20m² shed with below ground plant
Refer to SK42 for more details)

Mt Cardrona Station Special Zone (MCSZ)

Gin and Raspberry Ln
Curtis Rd
Pringles Creek Rd
Cardrona Valley Rd

baxter design

0 25 50 125m
SCALE = 1:2500 AT A1

REFERENCE : 2738-SK41 - SCALE = 1:5000 AT A3 - 31 MAR 2022
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BAXTER DESIGN
LANDSCAPE ASSESSMENT
ATTACHMENT A

MCDOUGALL'S BLOCK PROJECT | ROBERTS FAMILY TRUST
CONCEPT MASTERPLAN

North

Pongs Creek Clutha Flathead Preservation Corridor
fenced and protected from stock

Mixed native mass planting within residential lots 2-15.

Total area to be planted by developer approximately 4.6ha

All species are to be planted at 1m centres with coverage being shared equally

Curtilage areas to be planted with same species list and specifications to fit within the native planting framework

Refer to Baxter Design Design Controls Document for further details

LOT 16
LOT 15
LOT 13
LOT 14
LOT 12
LOT 11
LOT 7
LOT 10
LOT 6
LOT 5
LOT 8
LOT 2
LOT 3
LOT 4
LOT 9
LOT 1

Open Pasture
Open Pasture
Open Pasture
Open Pasture


A


B

Tree species

A - South Island Kowhai:
Sophora microphylla, 5.5% coverage, planted @ 1m centres

B - Ribbonwood:
Plagianthus regius, 5.5% coverage, planted @ 1m centres


D


C


E

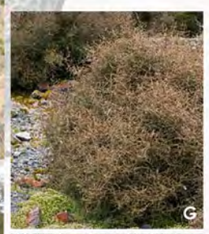
Tussock and Flax species

C - Snow Tussock:
Chionochloa rigida, 5.5% coverage, planted @ 1m centres

D - South Island Toe Toe:
Cortaderia Richardii, 5.5% coverage, planted @ 1m centres

E - Whaririki/Mountain Flax:
Phormium cookianum, 5.5% coverage, planted @ 1m centres


F


G


H


I


J


K


L


M


N


O


P


Q

Grey Shrubland species

F - Mingimingi:
Coprosma propinqua, 5.5% coverage, planted @ 1m centres

G - Needle-leaved Mountain Coprosma:
Coprosma rugosa, 5.5% coverage, planted @ 1m centres

H - NZ Coprosma:
Coprosma virescens, 5.5% coverage, planted @ 1m centres

I - Korokio:
Corokia Cotoneaster, 5.5% coverage, planted @ 1m centres

J - Matagouri:
Discaria toumatou, 5.5% coverage, planted @ 1m centres

K - Cypress Leafed Hebe:
Hebe cupressoides, 5.5% coverage, planted @ 1m centres

L - Koromiko:
Hebe salicifolia, 5.5% coverage, planted @ 1m centres

M - Tree Daisy:
Olearia odorata, 5.5% coverage, planted @ 1m centres

N - Small-leaved Tree Daisy:
Olearia lineata, 5.5% coverage, planted @ 1m centres

O - Tree Daisy:
Olearia bullata, 5.5% coverage, planted @ 1m centres

P - Hectors Tree Daisy:
Olearia hectorii, 5.5% coverage, planted @ 1m centres

Q - Mountain Cottonwood:
Ozothamnus vauvilliersii, 5.5% coverage, planted @ 1m centres

baxter design

0 25 50 125m
SCALE = 1:2500 AT A1

REFERENCE : 2738-SK25 - SCALE = 1:5000 AT A3 - 18 FEB 2020
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BAXTER DESIGN
LANDSCAPE ASSESSMENT
ATTACHMENT B

MCDOUGALL'S BLOCK PROJECT | ROBERTS FAMILY TRUST
PLANTING PALETTE

North

LOT 16
LOT 15
LOT 13
LOT 14
LOT 12
LOT 11
LOT 10
LOT 7
LOT 6
LOT 5
LOT 8
LOT 2
LOT 3
LOT 4
LOT 9
LOT 1

Gin and Raspberry Ln
Curtis Rd
Cardrona Valley Rd
Pringles Creek Rd

Lot Schedule	
Lot 1	10500 m²
Lot 2	3870 m²
Lot 3	4550 m²
Lot 4	5120 m²
Lot 5	4940 m²
Lot 6	4830 m²
Lot 7	5000 m²
Lot 8	4870 m²
Lot 9	4500 m²
Lot10	4420 m²
Lot 11	4290 m²
Lot 12	6750 m²
Lot 13	4790 m²
Lot 14	4850 m²
Lot 15	4870 m²
Lot 16*	29200 m²

*Building platform approved as per RM090876
Note: Areas rounded to the nearest 10-100m²
(Refer Scheme Plans for details)

baxter design

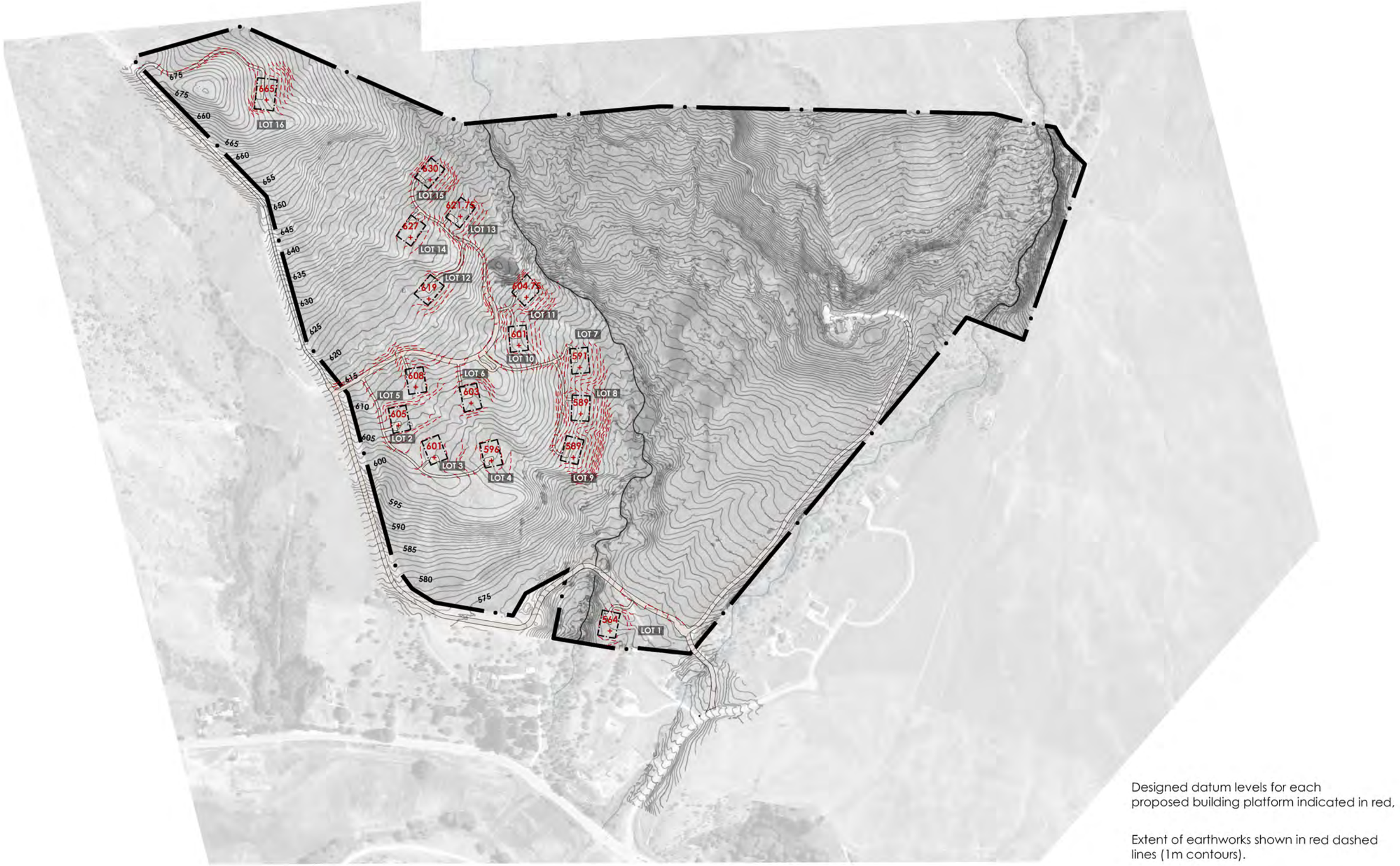
0 25 50 125m
SCALE = 1:2500 AT A1

REFERENCE : 2738-SK26 - SCALE = 1:5000 AT A3 - 18 FEB 2020
DRAFT - NOT A WORKING DRAWING - NOT FOR CONSTRUCTION

BAXTER DESIGN
LANDSCAPE ASSESSMENT
ATTACHMENT C

MCDOUGALL'S BLOCK PROJECT | ROBERTS FAMILY TRUST
LOT SCHEDULE

North



Designed datum levels for each proposed building platform indicated in red,

Extent of earthworks shown in red dashed lines (1m contours).

baxter design

0 25 50 125m
SCALE = 1:2500 AT A1

REFERENCE : 2738-SK27 - SCALE = 1:5000 AT A3 - 08 JAN 2020
DRAFT - NOT A WORKING DRAWING - NOT FOR CONSTRUCTION

BAXTER DESIGN
LANDSCAPE ASSESSMENT
ATTACHMENT D

MCDOUGALL'S BLOCK PROJECT | ROBERTS FAMILY TRUST
CONTOUR PLAN

North

LOT 16
LOT 15
LOT 13
LOT 14
LOT 12
LOT 11
LOT 10
LOT 7
LOT 6
LOT 5
LOT 8
LOT 2
LOT 3
LOT 4
LOT 9
LOT 1

Gin and Raspberry Ln
Curtis Rd
Pringles Creek Rd
Cardrona Valley Rd

Pongs Creek Clutha Flathead Preservation Corridor
Protection of Pongs Creek and the endangered Clutha Flathead Galaxias

Landscape Protection Zone
Area is protected from further subdivision

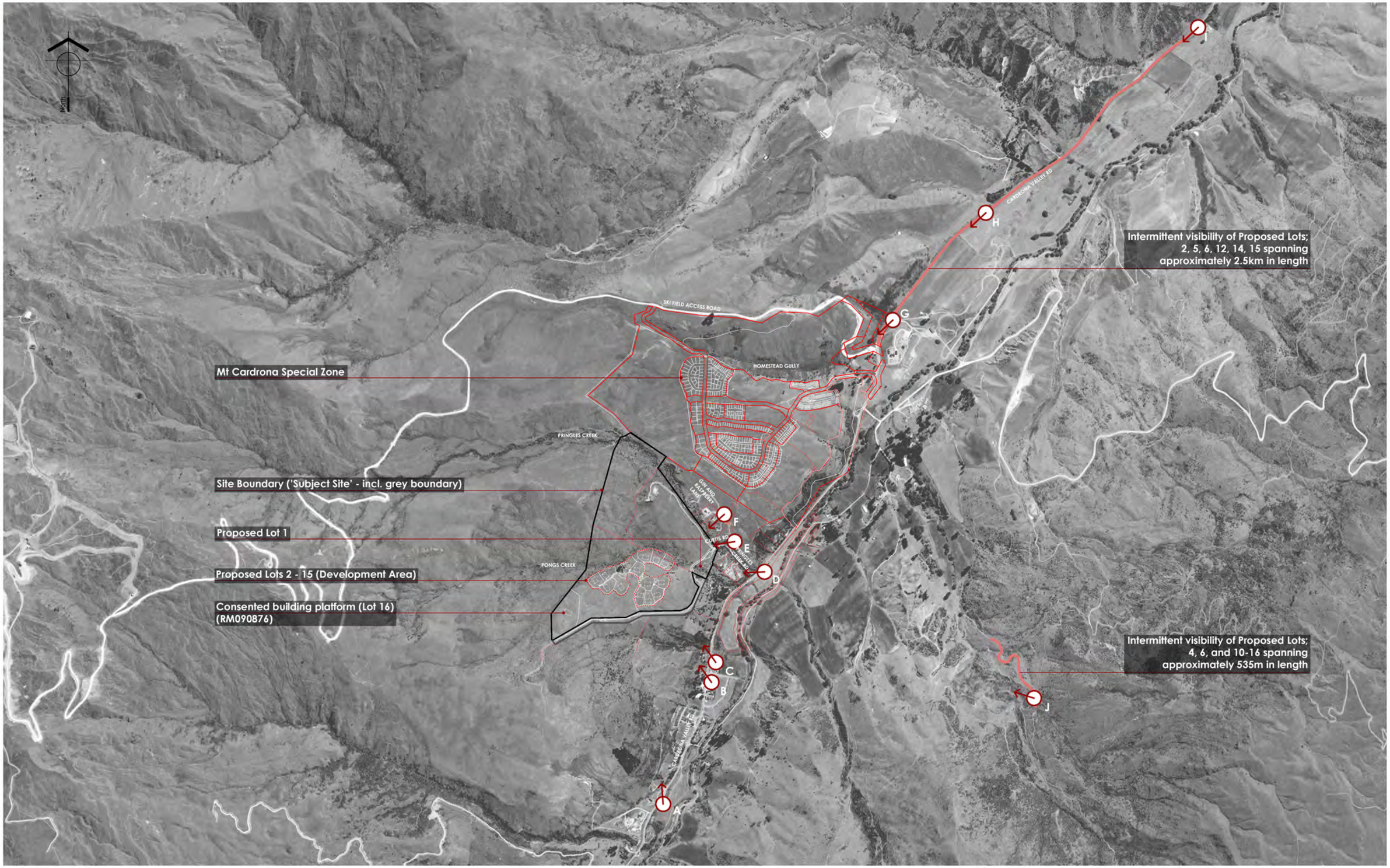
baxter design

0 25 50 125m
SCALE = 1:2500 AT A1

REFERENCE : 2738-SK28 - SCALE = 1:5000 AT A3 - 18 FEB 2020
DRAFT - NOT A WORKING DRAWING - NOT FOR CONSTRUCTION

BAXTER DESIGN
LANDSCAPE ASSESSMENT
ATTACHMENT E

MCDOUGALL'S BLOCK PROJECT | ROBERTS FAMILY TRUST
PROTECTION ZONES



baxter design

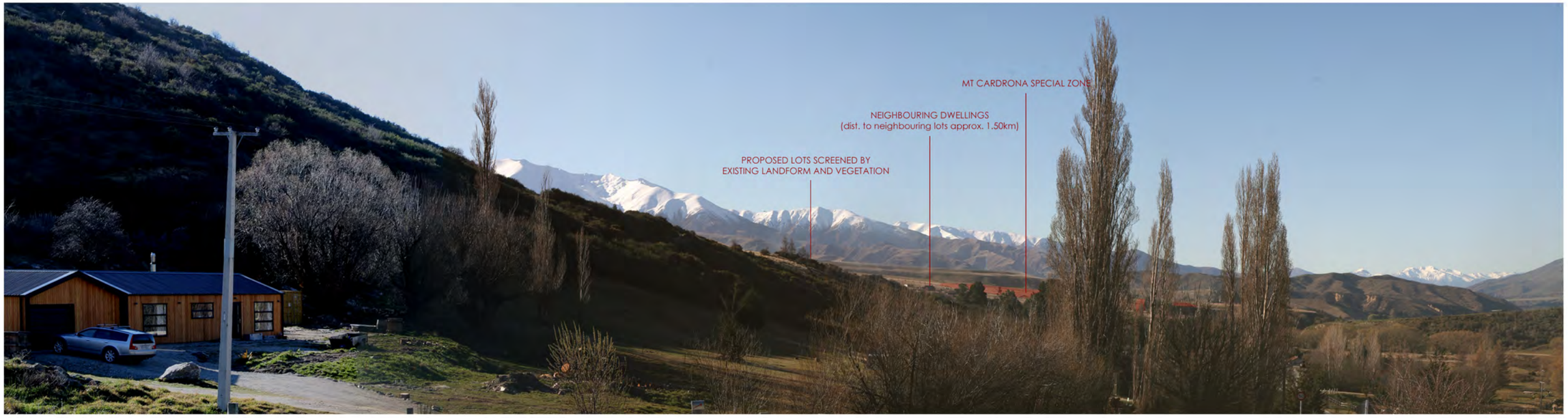
0 100 200 500m
SCALE = 1:10000 AT A1

REFERENCE : 2738-SK29 - SCALE = 1:20000 AT A3 - 08 JAN 2020
DRAFT - NOT A WORKING DRAWING - NOT FOR CONSTRUCTION

BAXTER DESIGN
LANDSCAPE ASSESSMENT
ATTACHMENT F

MCDOUGALL'S BLOCK PROJECT | ROBERTS FAMILY TRUST
LOCATION PLAN

Location A - View from Cardrona Valley Road approximately 1.5km away from Gin and Raspberry Lane residential dwellings



Location B - View from Cardrona Hotel open parking area towards the western escarpment

baxter design

REFERENCE : 2738-SK09 - SCALE = NIL - 30 SEP 2019
DRAFT - NOT A WORKING DRAWING - NOT FOR CONSTRUCTION

BAXTER DESIGN
LANDSCAPE ASSESSMENT
ATTACHMENT G

MCDOUGALL'S BLOCK PROJECT | ROBERTS FAMILY TRUST
PHOTOGRAPHIC SURROUNDING STUDY A AND B

Location C - View from the Cardrona Valley General Store towards the western escarpment

Location D - View from the corner of Pringles Creek Road and Cardrona Valley Road towards the subject site (west)

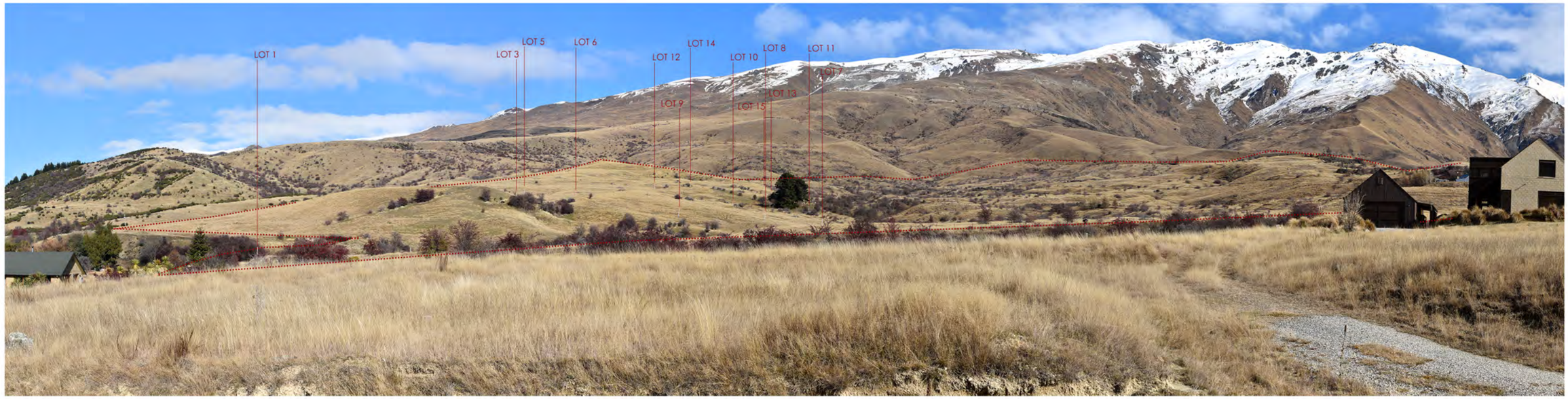
baxter design

REFERENCE : 2738-SK10 - SCALE = NIL - 20 SEP 2019
DRAFT - NOT A WORKING DRAWING - NOT FOR CONSTRUCTION

BAXTER DESIGN
LANDSCAPE ASSESSMENT
ATTACHMENT H

MCDOUGALL'S BLOCK PROJECT | ROBERTS FAMILY TRUST
PHOTOGRAPHIC SURROUNDING STUDY C AND D

Location E - View from the corner of Curtis Road and Gin and Raspberry Lane - approximately 390m to the centre of proposed Lot 9 building platform



Location F - View from Gin and Raspberry Lane - approximately 410m to the centre of proposed Lot 9 building platform

baxter design

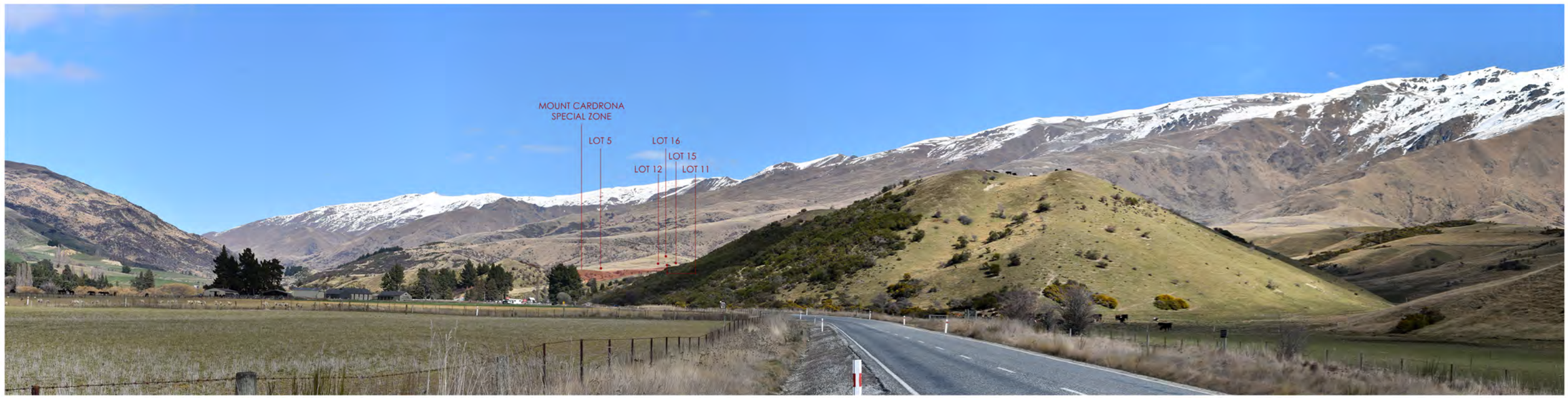
REFERENCE : 2738-SK30 - SCALE = NIL - 30 OCT 2019
DRAFT - NOT A WORKING DRAWING - NOT FOR CONSTRUCTION

BAXTER DESIGN
LANDSCAPE ASSESSMENT
ATTACHMENT I

MCDOUGALL'S BLOCK PROJECT | ROBERTS FAMILY TRUST
PHOTOGRAPHIC SURROUNDING STUDY E AND F

Location G - View from Cardrona Valley Road (south-west) - Entrance to Cardrona Distillery & Museum

Location H - View from Cardrona Valley Road (south-west) - approximately 2.3km to the centre of Lot 5 - Lots 5, 11, 12, 15, and 16



baxter design

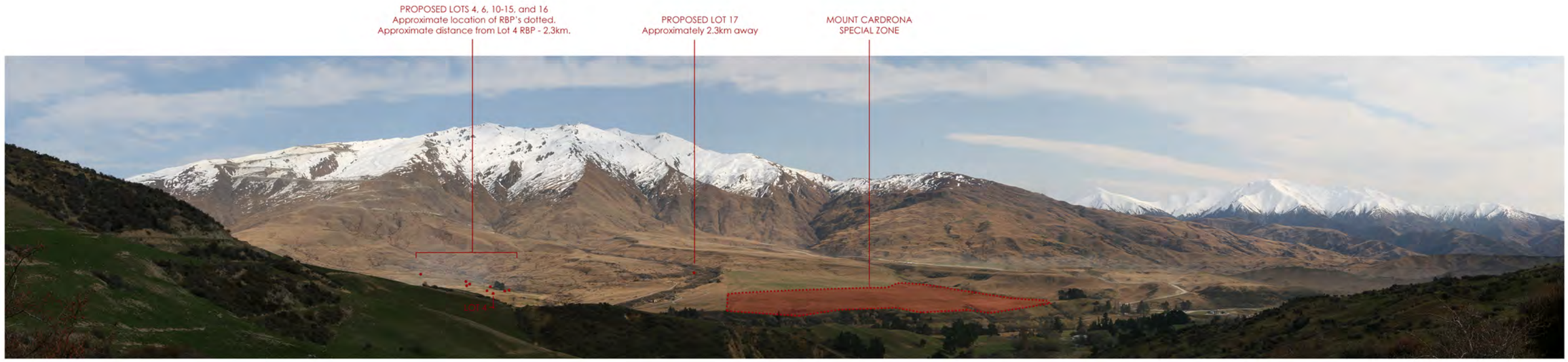
REFERENCE : 2738-SK31 - SCALE = NIL - 10 SEP 2019
DRAFT - NOT A WORKING DRAWING - NOT FOR CONSTRUCTION

BAXTER DESIGN
LANDSCAPE ASSESSMENT
ATTACHMENT J

MCDOUGALL'S BLOCK PROJECT | ROBERTS FAMILY TRUST
PHOTOGRAPHIC SURROUNDING STUDY G AND H

Location I - View from Cardrona Valley Road (south-west) - approximately 4.5km to the centre of Lot 12 - Lots 12, 14, 15, and 16 marked

Location J - Meg Hut Track - Department of Conservation controlled public track - approximately 2.3km to the centre of Lot 4



baxter design

REFERENCE : 2738-SK32 - SCALE = NIL - 10 OCT 2019
DRAFT - NOT A WORKING DRAWING - NOT FOR CONSTRUCTION

BAXTER DESIGN
LANDSCAPE ASSESSMENT
ATTACHMENT K

MCDOUGALL'S BLOCK PROJECT | ROBERTS FAMILY TRUST
PHOTOGRAPHIC SURROUNDING STUDY I AND J

North

SKI FIELD ACCESS ROAD

HOMESTEAD GULLY

Mt Cardrona Station
Proposed Scheme

PRINGLES CREEK

Existing dwellings

McDougalls Block Project
Building Platforms (if approved)

PONGS CREEK

LOT 1
LOT 2
LOT 3
LOT 4
LOT 5
LOT 6
LOT 7
LOT 8
LOT 9
LOT 10
LOT 11
LOT 12
LOT 13
LOT 14
LOT 15
LOT 16

GIN AND RASPBERRY LANE

CURTIS RD

PRINGLES CREEK RD

CARDRONA VALLEY RD

baxter design

0 50 100 250m
SCALE = 1:5000 AT A1

REFERENCE : 2738-SK33 - SCALE = 1:10000 AT A3 - 08 JAN 2020
DRAFT - NOT A WORKING DRAWING - NOT FOR CONSTRUCTION

BAXTER DESIGN
LANDSCAPE ASSESSMENT

ATTACHMENT L

MCDOUGALL'S BLOCK PROJECT | ROBERTS FAMILY TRUST
MT CARDRONA STATION COMPARISON

Proposed Building and Landscape Controls:

Roberts Family Trust | **McDougall's Block**
Curtis Road, Cardrona Valley

January 2019

PROPOSED BUILDING AND LANDSCAPE CONTROLS:

Note: Lot 16 (as indicated on the Proposed Concept Masterplan (Attachment A)) will be excluded from the below design controls as this RBP is previously consented under RM090876.

Landscape Controls

1.1. Planting

Objectives:

- To create a consistent approach to planting across the development area lots.
- To visually integrate the residential curtilage areas into the wider development area.

Controls:

1.1.1. Plant species to be used within the lot landscaping area shall be limited to the following list;

Note: Any other indigenous species not included on this list below, but considered to be appropriate to the Cardrona Valley, shall be permitted.

Trees:

- *Plagianthus regius (Ribbonwood)*
- *Sophora microphylla (South Island Kowhai)*

Grasses/Sedges/Flax:

- *Chionochloa rigida (Snow Tussock)*
- *Phormium cookianum (Whaririki/Mountain Flax)*
- *Cortaderia richardii (South Island Toe Toe)*

Shrubs:

- *Coprosma propinqua (Mingimingi)*
- *Coprosma rugosa (Needle-leaved mountain coprosma)*
- *Coprosma virescens (NZ Coprosma)*
- *Corokia cotoneaster (Korokio)*
- *Discaria toumatou (Matagouri)*
- *Hebe cupressoides (Cypress Leafed Hebe)*
- *Hebe salicifolia (Koromiko)*
- *Olearia odorata (Tree Daisy)*
- *Olearia lineata (Small-leaved Tree Daisy)*
- *Olearia bullata*
- *Olearia hectorii (Hectors Tree Daisy)*
- *Ozothamnus vauvilliersii (Mountain Cottonwood)*

1.1.2. In order for planting to be visually contiguous with the species planted by the developer, each lot owner shall plant a minimum of 8 species from the above list within their curtilage areas.

1.1.3. No exotic trees or plants are permitted, except small contained vegetable and herb gardens.

1.1.4. Varieties of plant cultivar or colour are discouraged.

1.1.5. Plant numbers on slopes must be calculated for the actual surface area and not the plan area to ensure slopes will be sufficiently planted.

1.1.6. The lot owner shall ensure that the lot is kept free of noxious weeds and in a neat and tidy condition.

1.1.7. All plantings should be designed and located as to not impede on the visual amenity or solar gain of any neighbouring property except where permission from the adjoining landowner is provided.

1.1.8. Selected species to be sporadically planted to suit the wider context of the alpine and rural character.

1.2. Fencing

Objectives:

- To avoid an urban response to marking lot boundaries and instead achieve a seamless integration of common and private boundaries.

Controls:

1.2.1. Fences are permitted to mark property boundaries on road side and driveway entrances only for proposed lots 2-15. These can be constructed with traditional post and rail, and shall be no higher than 1m in height.

1.2.2. Fences to mark the property boundaries for proposed lots 1, and 16 are permitted and can be constructed with traditional post and rail fence on road side and driveway entrances. Traditional post and wire farm fencing is to be used to mark the remaining boundary.

1.2.3. Where fences are required for containment within the curtilage area for a pet, it shall be no higher than 1m in height and be constructed in traditional post and wire, or waratah and wire, or post and netting, or waratah and netting.

1.2.4. Fencing/walls/screens for the purpose of privacy and shelter (around courtyards for example) are permitted within the building platforms and shall be constructed in the materials specified for architectural wall claddings. Fencing/walls described shall not exceed 1.5m in height.

1.3. Driveways

Objectives:

- To create a singular typology of materiality and scale across the site that minimises the visual impact from external views.

Controls:

1.3.1. Gravel driveways to lot boundaries will be provided and lot owners shall use gravel, or concrete with an exposed aggregate finish only for all driveway and vehicle courtyards within the lot boundaries. Driveways are to be no wider than 3.5m.

1.3.2. Ornamental gates or entry features are permitted and to be designed in similar fashion to the traditional post and wire fence, not exceeding 1.0m in height and in timber only.

1.3.3. House letterboxes are located at the entrance to the development.

1.4. External Lighting

Objectives:

- To minimise external light spill and prioritise the natural environment over the built form.

  Note: The controls below have been informed by the strategies and rules for outdoor lighting standards from the Mackenzie District Plan Section 12.

Controls:

1.4.1. All exterior lighting shall be restricted to down lighting only and only for the purpose of lighting private areas within the boundary setbacks.

1.4.2. Lighting should not create any light spill onto adjoining properties.

1.4.3. All exterior lighting not fixed to a residential or accessory building shall be no more than 1.2m in height and directed downward.

1.4.4. Light sources are to be LED, incandescent, halogen, or other “white light”, not sodium vapour or other coloured light.

1.5. Site Utilities & Exterior Service Areas

Objectives:

- To minimise adverse effects of service areas and utilities mounted, positioned, and arranged in individual dwellings.

Controls:

1.5.1. Exterior Service Areas to be appropriately screened with native planting from planting species list.

1.5.2. Air condition units, meter readers or any other electronic units relating to the house shall be painted to match house cladding or screened with planting if deemed appropriate to the unit.

1.5.3. Air conditioning units, or other units of any kind are not permitted to be mounted on the roof. These must be flush mounted where appropriate, and accessible for maintenance, readings etc.

1.5.4. All exterior service areas must be placed within the building platform allocated for each lot.

1.5.5. All site utilities such as gas supply, electrical supply, storm water piping, foul sewer, telecommunications, shall be underground or contained within the building structure.

1.5.6. Water tanks for the purposes of firefighting and potable water shall be concrete and buried.

1.5.7. If required, water tanks for the purposes of irrigation are to be buried.

1.6. Swimming & Spa Pools

Objectives:

- To locate swimming and/or spa pools appropriately in the allocated curtilage area where structures are permitted, to reduce adverse visual effects on the surrounding landscape.

Controls:

1.6.1. Swimming pools and spas are permitted but must be located within the curtilage areas where structures are permitted. The pool plant is to be housed inside the house, garage, or ancillary building and must be acoustically insulated.

1.6.2. Pool fencing is to comply with any applicable local authority and safety standards and integrate with the house and landscape design utilising dark colours and natural materials.

1.7. Paving

Objectives:

- To minimise visibility of hard surfaces into the sensitive rural character environment while promoting recessive materiality and colour combinations.

Controls:

1.7.1. Paved areas are permitted within the curtilage areas and restricted to mid to dark grey 'natural materials', such as schist paving, asphalt, exposed aggregate, granites, bluestone or similar.

1.7.2. Coloured concrete paving in colours other than those described above are not permitted.

1.8. Materiality

Objectives:

- To maintain a consistent colour and material palette throughout the development.

Controls:

1.8.1. Materials for other landscape features (e.g. fire pits, decking) are to compliment the architectural materiality outlined in the architecture design controls.

1.8.2. This is to ensure there is balance and continuity of materiality throughout the development. These materials must be complimentary of the landscape and architectural design.

1.9. Sculptures & Garden Art

Objectives:

- To select sculptures and garden art appropriate to the area.

Controls:

1.9.1. Sculptures and garden art shall be discrete and of an appropriate colour range as described in the controls and to be no higher than 1.5m.

Architectural Controls

2.1. General

2.1.1. All buildings, including ancillary buildings, must be located within the proposed residential building platforms.

2.1.2. All buildings must not extend beyond 4.5m of a specified datum floor level to the highest point of the roof.

2.1.3. All buildings must not exceed a site coverage of 50% of the building platform area.

2.2. Roofs

2.2.1. The main roof forms of the residential dwellings across lots 2-16 are to be gabled with the pitch of these roofs to be a minimum of 25% and maximum of 35%. 15% of the roof can be flat to allow for connections between gabled forms

2.2.2. Mono-pitched roof is permitted for Lot 1.

2.2.3. Hip roofs are not permitted. No gables shall run into one another.

2.2.4. Roof colours should have an LRV between 5% - 22%. Roof materials shall be restricted to one material from the following materials only:

- Steel tray cladding/roof in Resene (or similar) 'Element', 'Grey Friars', 'Ironsand', Nocturnal', 'Charcoal', 'Cave Rock', 'Karaka', 'Windswept', with matte finish only
- Profiled Steel in Resene (or similar) 'Element', 'Grey Friars', 'Ironsand', Nocturnal', 'Charcoal', 'Cave Rock', 'Karaka', 'Windswept', with matte finish only
  Timber shingles dark stained to match an LRV of 5 - 22%.

2.2.5. The roof material for Lot 1, in addition to the above materials, shall also include the option for the roof to be grassed (green roof).

2.3. Wall Cladding and Colour

2.3.1. For Lots 2 - 16, the following materials shall be selected from the palette below to complement the natural environment. Materials shall be resilient and durable in nature.

- Natural timber cladding, left to weather, or in dark browns or greys, including burnt larch;
- Stained timber cladding, in dark stain to match a LRV 5 - 22%;
- Stone: Random sized schist as cladding and landscape wall elements, laid horizontally, and locally sourced;
- Profiled metal: Standing seam profile in dark colours, pre-weathered zinc, or mild steel;
- All joinery to have low reflectance glazing with dark aluminium, steel, or timber frames.

- Concrete: low light reflection coefficient to be achieved through texture or oxide additives, or textured concrete such as 'board-formed'.

- Corten or mild steel: as wall cladding panels or landscaping features.

2.3.2. In addition to the materials listed above, Lot 1 can also include rammed earth as a wall cladding option.

2.3.3. All window and door joinery, gutters, and downpipes shall be coloured to match the roof and exterior wall cladding.

2.4. Glazing

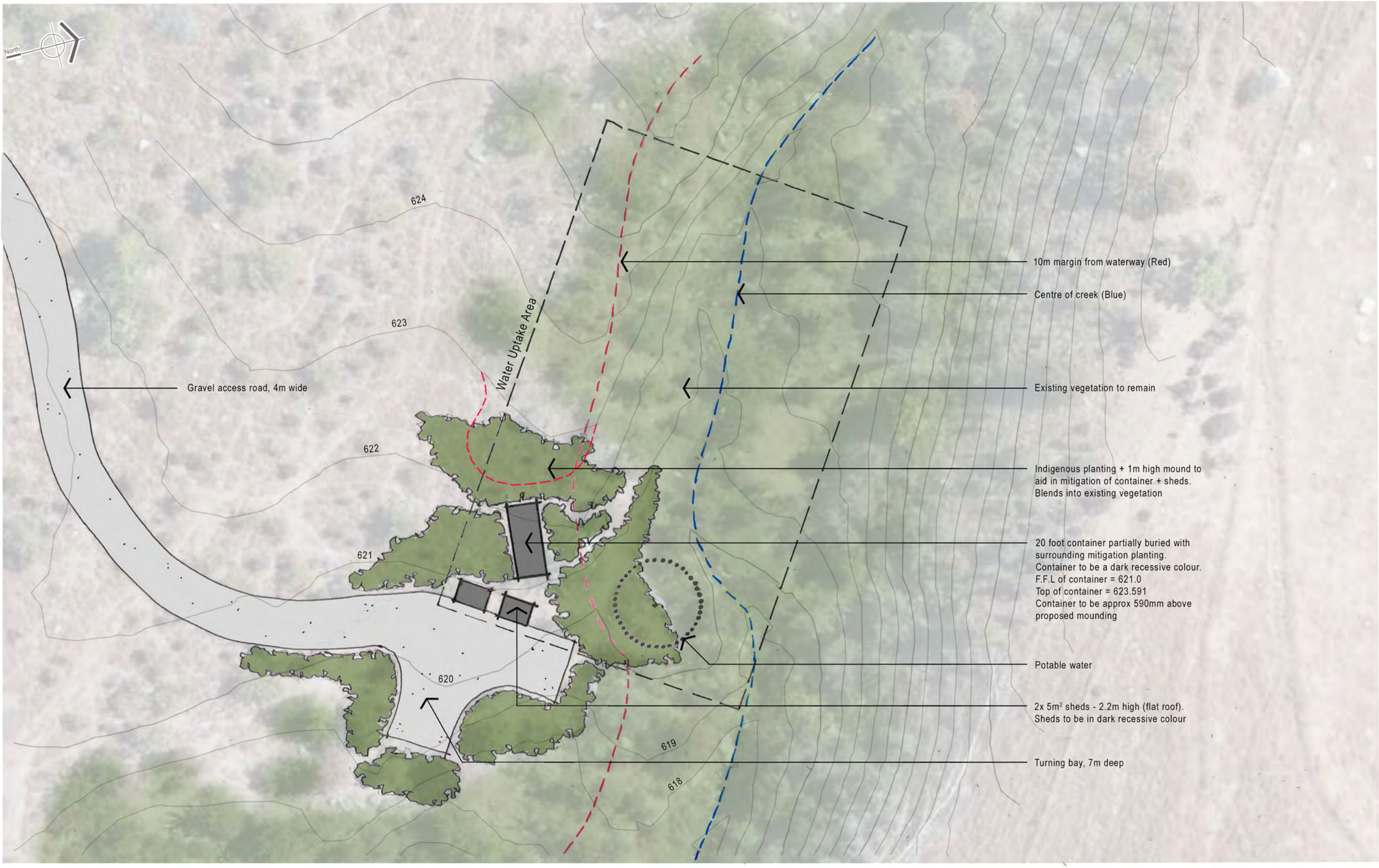
2.4.1. All glazing is to be anti-reflective and recessed into wall profiles, or setback under the roof form.

2.4.2. Minor tinting may be considered appropriate.

2.5. Ancillary Buildings

2.5.1. Any ancillary building such as garage or shed is to be no higher than 4.5m of the specified datum floor level to the highest point of the roof.

2.5.2. All ancillary buildings to be clad in the same materiality and colour of the residential dwelling.



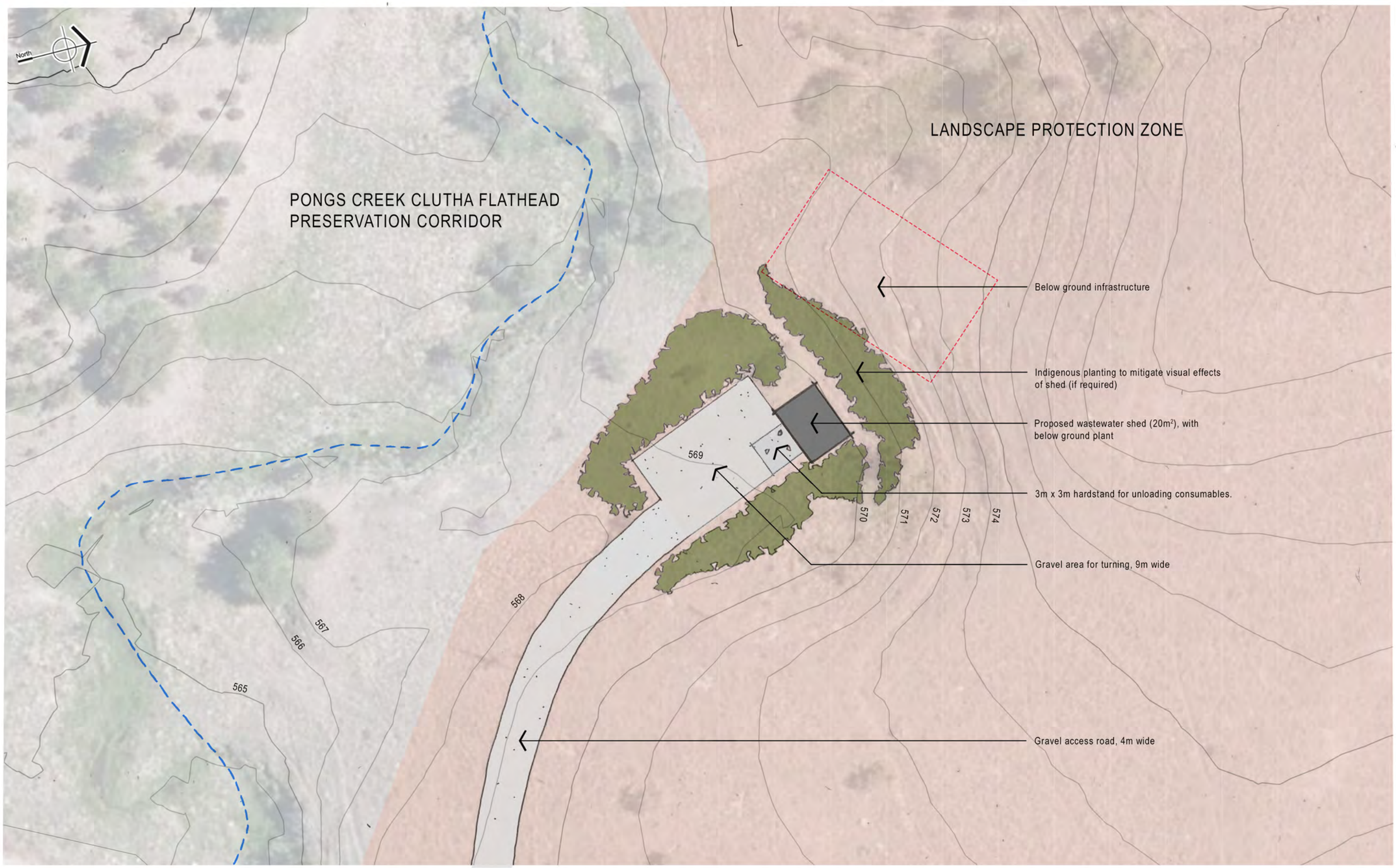
baxter design

0 1.5 3 7.5m
SCALE = 1:150 AT A1

REFERENCE : **2738-SK41** - SCALE = 1:300 AT A3 - **23 MAR 2022**
DRAFT - NOT A WORKING DRAWING - NOT FOR CONSTRUCTION

BAXTER DESIGN
LANDSCAPE ASSESSMENT
ATTACHMENT N

MCDOUGALL'S BLOCK PROJECT | ROBERTS FAMILY TRUST
WATER TAKE AREA



baxter design

0 1.5 3 7.5m
SCALE = 1:150 AT A1

REFERENCE : **2739-SK42** - SCALE = 1:300 AT A3 - **23 MAR 2022**
DRAFT - NOT A WORKING DRAWING - NOT FOR CONSTRUCTION

BAXTER DESIGN
LANDSCAPE ASSESSMENT
ATTACHMENT O

MCDOUGALL'S BLOCK PROJECT | ROBERTS FAMILY TRUST
WATER TAKE AREA

Landscape Memo
in response to QLDC s.92 request for further information: point 11

Roberts Family Trust | McDougall's Block
Curtis Road, Cardrona Valley
RM200267

AUGUST 2020

s.92 Point 11 extract

Section 5.2.2 of the GeoSolve report states that they expect that finished floor levels of 750mm above the finished ground surface on Lots 11 & 13 should provide adequate protection from stream avulsion of Pongs Creek. Alternatively, bunds could likely be used for this purpose, but this would require consent from the Otago Regional Council for a defence against water. While the engineering details can be confirmed for Engineering Acceptance, if flood protection bunds are proposed then the associated consents should be applied for prior to granting subdivision consent and covenant areas should be shown on the scheme plan protecting the proposed bunds. Alternatively, if effectively reducing the height limit on these lots by up to 750mm is acceptable to the applicant, there are no engineering concerns with this.

RESPONSE

Change to Datum Levels

1. In response to Point 11 within the s.92 report (shown above), the applicant proposes an adjustment to the datum levels of Lots 11 and 13. These lots are to be raised 750mm to an F.F.L 604.75 (Lot 11) and F.F.L of 621.75 (Lot 13).

2. The increase in datum levels for these two lots by 750mm will adequately protect the potential stream avulsion of Pongs Creek as stated in Section 5.2.2 of the Geosolve report.

3. The increase in datum levels for these two lots by 750mm will be an unperceivable change when viewed across the wider proposed development from outside the site and, to that end does not require a reassessment of the visual effects of the proposed development.

4. Lots 11 and 13 within the proposed development are positioned within a rising landform to the south of the lots, and dwellings on these lots will not breach any ridgelines or skylines with the proposed 750mm increase in datum levels.

5. There is no need to reduce the height limit control on dwellings on Lots 11 and 13 with this 750mm increase in datum. The wider character of the development and any potential effects remain the same.

6. The mitigating effects of the extensive planting framework that will not be diminished by this change in level.

7. Taking the above into account, the conclusions reached in the original Landscape Assessment remain unchanged.

8. From surrounding views, the proposed 750mm increase to the datum levels for Lots 11 and 13 recommended in order to alleviate the potential stream avulsion of Pongs Creek will be imperceptible.

Minor Structures associated with Wastewater treatment and Water Take
(refer Baxter Design Drawings 2738 SK37, SK41 & SK42)

9. Small structures are required as part of the water management. One small structure is required within the wastewater treatment area (*Baxter Design Drawings 2738 – SK37 & 42*). This structure is 5x4 metres on plan and approximately 2.2 metres high, to be clad in dark coloured (grey) corrugated iron.

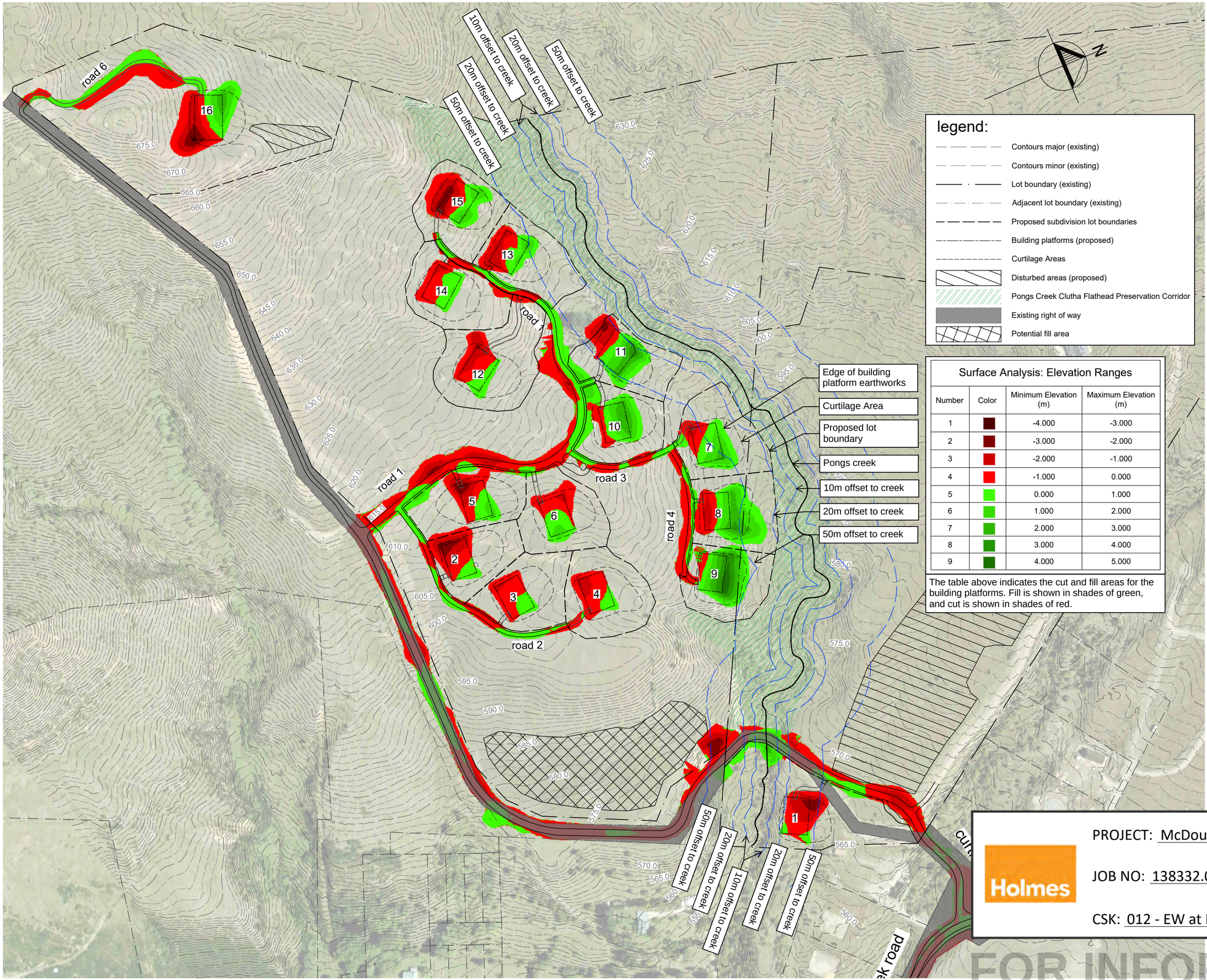
10. Given the location of this structure, within a small depression adjacent to Pongs Creek) this will not be visible from wider public views, including those views from residents in dwellings on Gin and Raspberry Lane. Proposed indigenous planting can be carried out in the immediate vicinity of the small structure if required to mitigate views internally from future residents in the lots to the south of his site.

11. A small collection of 3 structures is required at the water take area (*refer Baxter Design Drawings 2738 SK37 & 41*). One is a 20 - foot container partially buried into the ground (2.4metres high) and two 5m2 sheds adjacent to that container, both 2.2m high and painted in dark recessive colours.

12. These small structures are to be located at the base of the eastern escarpment of a small creek tributary of Pongs Creek. Groups of indigenous plantings will be undertaken within the immediate vicinity of these structures.

13. None of these structures will be visible from public views.

14. Taking into account the small scale of these structures, the recessive colours of the structure, the location and the planting the effects on the wider landscape will be less than minor.



Surface Analysis: Elevation Ranges

Number	Color	Minimum Elevation (m)	Maximum Elevation (m)
1		-4.000	-3.000
2		-3.000	-2.000
3		-2.000	-1.000
4		-1.000	0.000
5		0.000	1.000
6		1.000	2.000
7		2.000	3.000
8		3.000	4.000
9		4.000	5.000

The table above indicates the cut and fill areas for the building platforms. Fill is shown in shades of green, and cut is shown in shades of red.

Holmes

PROJECT: McDougall's Block

JOB NO: 138332.00 DATE: 04/08/2020

CSK: 012 - EW at Pongs Cr. REV: 1

FOR INFORMATION

Notes:

1) Areas and dimensions are subject to survey.

2) Lots 1 - 16 are subject to building platforms and curtilage areas as per Baxter Design Master Plan (See Sheets 104 and 105).

3) ROW legal widths are as per the Infrastructure report dated 02/09/2019

4) ROW on underlying Lot 6 DP 344432 is an easement to be cancelled.

5) Refer to sheet 106 for details of proposed easements and land covenants, easements to be retained and easements to be cancelled.

6) Subdivision is to be staged - refer to Sheet 103.

REVISION	DETAIL	DATE
B	remove lot 17	05/02/2020
C	edit preservation corridor	18/02/2020
D	BP ties	10/07/2020
E	Access Easements	5/5/2022
F	Access Easements	10/5/2022

C HUGHES & ASSOCIATES LTD

Surveying and Resource Management • Central Otago

WANAKA
LEVEL 3, 80 ARDMORE ST
P.O. BOX 599
03 443 5052

CROMWELL
17A MURRAY TERRACE
P.O. BOX 51
03 445 0376

www.chasurveyors.co.nz

Project

Roberts Family Trust
Cardrona Valley

Title

Scheme Plan
Overall

for Resource Consent

Scale: 1:1000

Job No:	Drawn By:	Lvl Datum:	Coordinate System:
5890	TD	NZVD16	Lindis 2000

Drawing No:	Sheet No:	Revision:	Date Created:
W1184	100	F	10 May 2022

Notes:

1) Areas and dimensions are subject to survey.

2) All existing easements on Lot 2 DP 512956 are to be retained.

3) Refer to sheet 106 for details of proposed easements and land covenants, easements to be retained and easements to be cancelled.

REVISION	DETAIL	DATE
B	remove lot 17	05/02/2020
C	edit preservation corridor	18/02/2020
D	BP ties	10/07/2020
E	Access Easements	5/5/2022
F	Access Easements	10/5/2022

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17A MURRAY TERRACE
P.O. BOX 51
03 445 0376

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Project

Roberts Family Trust
Cardrona Valley

Title

Scheme Plan
Underlying Titles
for Resource Consent

Scale: 1:1000

Job No:	Drawn By:	Lvl Datum:	Coordinate System:
5890	TD	NZVD16	Lindis 2000

Drawing No:	Sheet No:	Revision:	Date Created:
W1184	101	F	10 May 2022

Notes:

1) Areas and dimensions are subject to survey.

2) Refer to sheet 106 for details of proposed easements and land covenants, easements to be retained and easements to be cancelled.

REVISION	DETAIL	DATE
B	remove lot 17	05/02/2020
C	edit preservation corridor	18/02/2020
D	BP ties	10/07/2020
E	Access Easements	5/5/2022
F	Access Easements	10/5/2022

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Project

Roberts Family Trust
Cardrona Valley

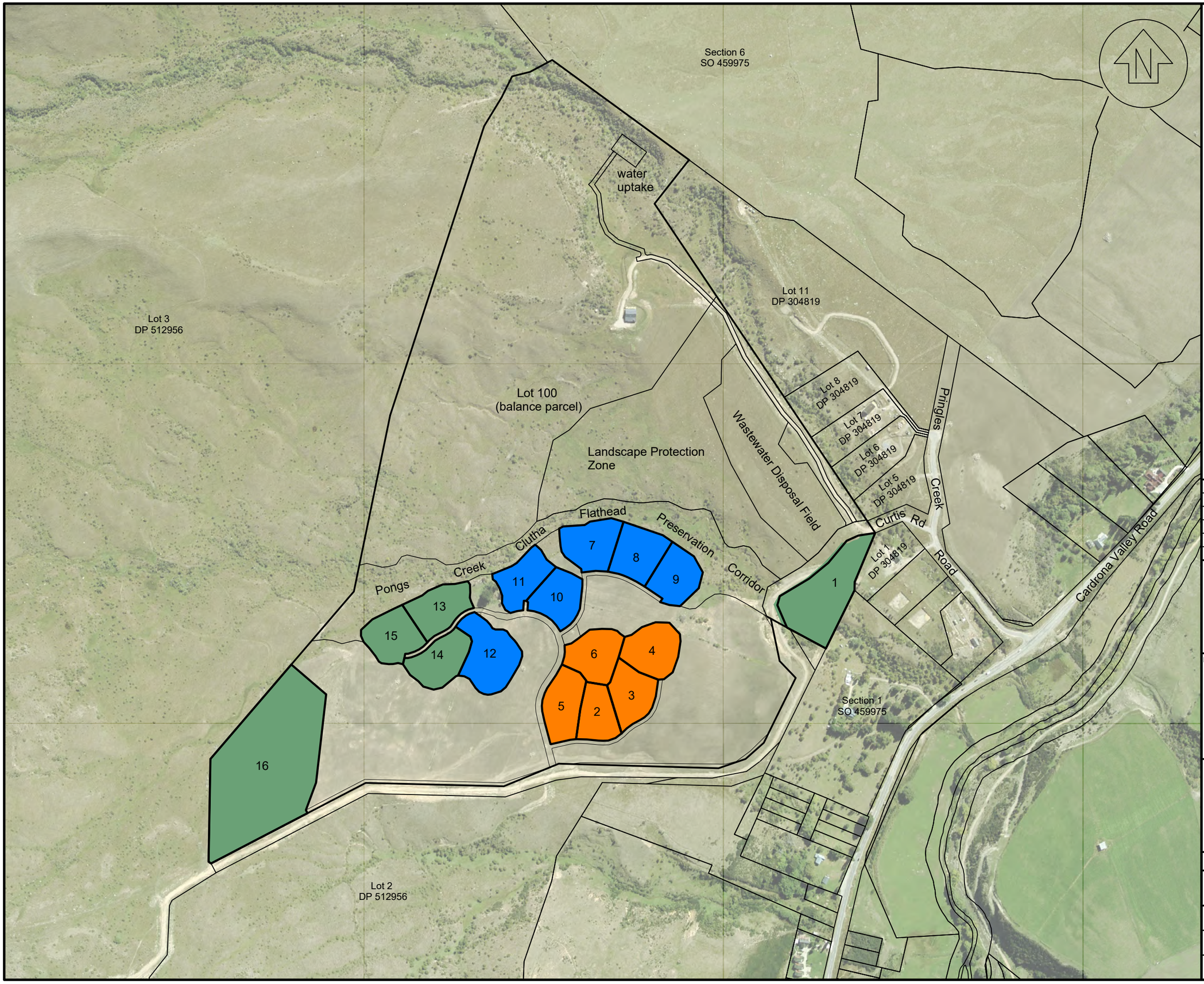
Title

Scheme Plan
Proposed Land Covenants
for Resource Consent

Scale: 1:1000

Job No:	Drawn By:	Lvl Datum:	Coordinate System:
5890	TD	NZVD16	Lindis 2000

Drawing No:	Sheet No:	Revision:	Date Created:
W1184	102	F	10 May 2022



Notes:

1) Areas and dimensions are subject to survey.

2) Subdivision is to be completed in three seperate stages. These are as follows:

Stage 1:
- Lot 1
- Lot 13
- Lot 14
- Lot 15
- Lot 16
- Land Covenants XX and YY

Stage 2:
- Lot 7
- Lot 8
- Lot 9
- Lot 10
- Lot 11
- Lot 12

Stage 3:
- Lot 2
- Lot 3
- Lot 4
- Lot 5
- Lot 6

3) Easements shall be created for each individual stage as neccessary to protect constructed services.

4) Refer to sheet 106 for details of proposed easements and land covenants, easements to be retained and easements to be cancelled.

Stages

Stage 1

Stage 2

Stage 3

REVISION	DETAIL	DATE
B	remove lot 17	05/02/2020
C	edit preservation corridor	18/02/2020
D	BP ties	10/07/2020
E	Access Easements	5/5/2022
F	Access Easements	10/5/2022

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Project

Roberts Family Trust
Cardrona Valley

Title

Scheme Plan
Proposed Staging
for Resource Consent

Scale: 1:1000

Job No:	Drawn By:	Lvl Datum:	Coordinate System:
5890	TD	NZVD16	Lindis 2000

Drawing No:	Sheet No:	Revision:	Date Created:
W1184	103	F	10 May 2022

Notes:

1) Areas and dimensions are subject to survey.

2) Easements shall be created for each individual stage as neccessary to protect constructed services.

3) Refer to sheet 106 for details of proposed easements and land covenants, easements to be retained and easements to be cancelled.

Key:

Building Platform

Curtilage Area

REVISION	DETAIL	DATE
B	remove lot 17	05/02/2020
C	edit preservation corridor	18/02/2020
D	BP ties	10/07/2020
E	Access Easements	5/5/2022
F	Access Easements	10/5/2022

C HUGHES & ASSOCIATES LTD

Surveying and Resource Management • Central Otago

WANAKA
LEVEL 3, 80 ARDMORE ST
P.O. BOX 599
03 443 5052

CROMWELL
17A MURRAY TERRACE
P.O. BOX 51
03 445 0376

www.chasurveyors.co.nz

Project

Roberts Family Trust
Cardrona Valley

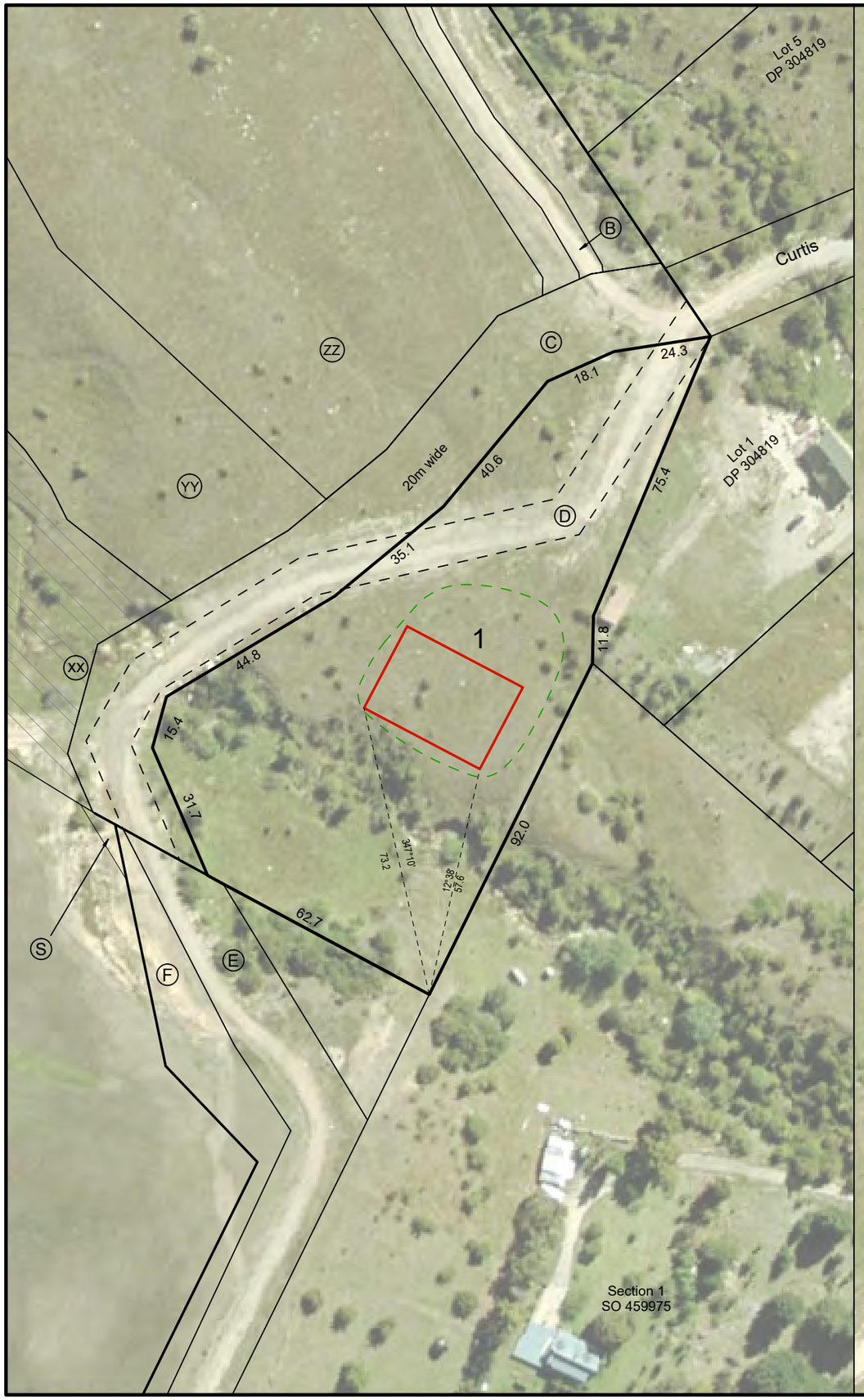
Title

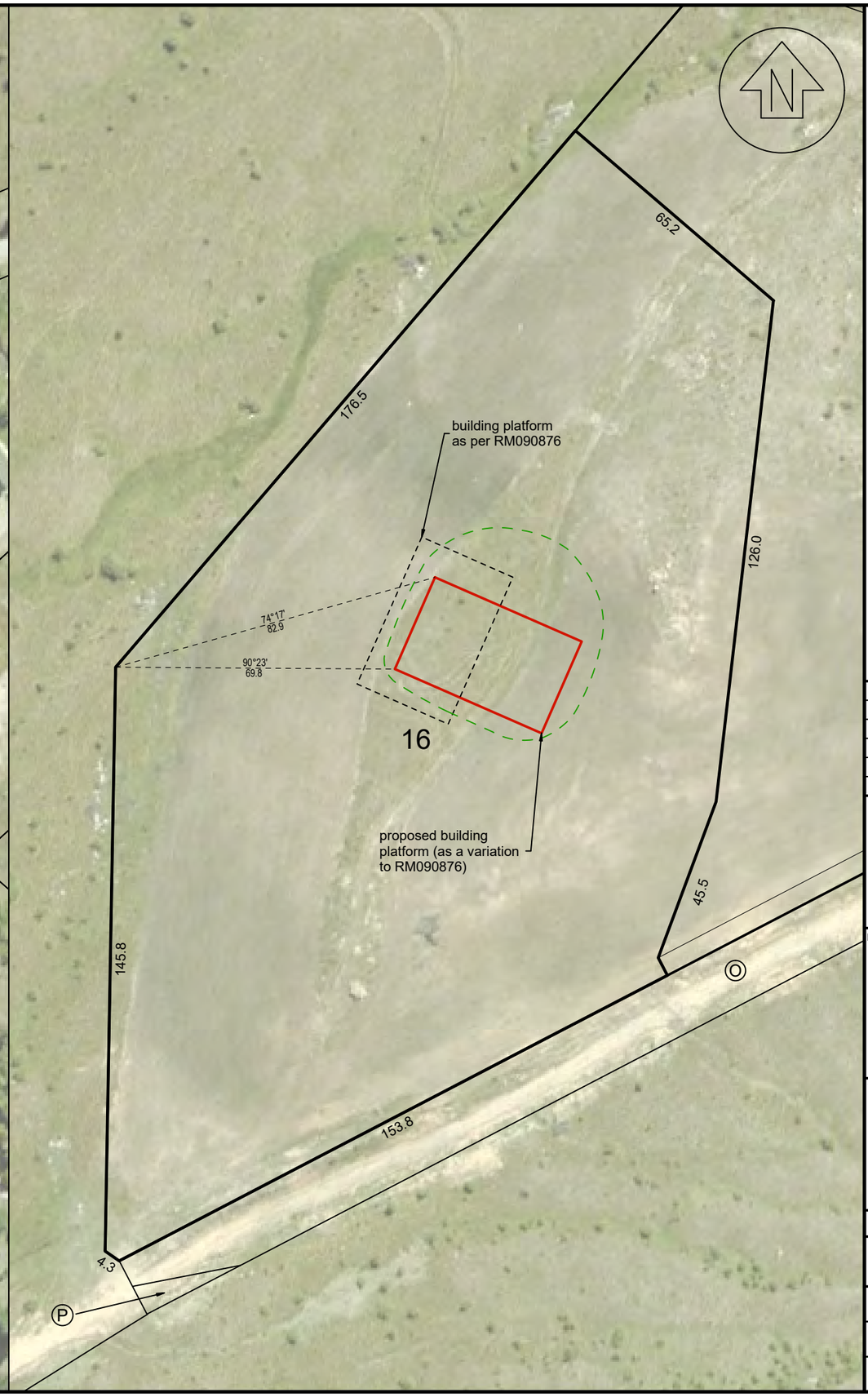
Scheme Plan
Title Detail 1
for Resource Consent

Scale: 1:1000

Job No:	Drawn By:	Lvl Datum:	Coordinate System:
5890	TD	NZVD16	Lindis 2000

Drawing No:	Sheet No:	Revision:	Date Created:
W1184	104	F	10 May 2022





Notes:

1) Areas and dimensions are subject to survey.

2) Easements shall be created for each individual stage as neccessary to protect constructed services.

3) Refer to sheet 106 for details of proposed easements and land covenants, easements to be retained and easements to be cancelled.

Key:

Building Platform

Curtilage Area

REVISION	DETAIL	DATE
B	remove lot 17	05/02/2020
C	edit preservation corridor	18/02/2020
D	BP ties	10/07/2020
E	Access Easements	5/5/2022
F	Access Easements	10/5/2022

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WANAKA
LEVEL 3, 80 ARDMORE ST
P.O. BOX 599
03 443 5052

CROMWELL
17A MURRAY TERRACE
P.O. BOX 51
03 445 0376

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Project

Roberts Family Trust
Cardrona Valley

Title

Scheme Plan
Title Detail 2

for Resource Consent

Scale: 1:1250

Job No:	Drawn By:	Lvl Datum:	Coordinate System:
5890	TD	NZVD16	Lindis 2000

Drawing No:	Sheet No:	Revision:	Date Created:
W1184	105	F	10 May 2022

Schedule of Existing Appurtenant Easements

Purpose	Shown	Burdened Land / Servient Tenement	Benefitted Land / Dominant Tenement	Creating Document
right of way	E J N K	Lot 2 DP 512956	Lot 1 DP 433836 Lot 6 DP 344432 Lot 1 DP 425263	EI 6097426.5
right to transmit electricity				
right to transmit telecommunications				
right to convey water				
right to convey electricity	G J P I M U	Lot 2 DP 512956	Lot 1 DP 19397	T 838333.3
right of way	E J N K F G O P	Lot 2 DP 512956	Lot 1 DP 425263	EI 8574798.5
right to convey water				
right to convey telecommunications & computer media				
right to convey electricity				
right of way	E J N K F G O P	Lot 2 DP 512956	Lot 3 DP 512956	EI 10872078.2

Existing Easements in Gross to be Cancelled

Purpose	Shown	Burdened Land / Servient Tenement	Creating Document
right to convey electricity	D (Z on DP 344432)	Lot 6 DP 344432	EI 6378833.1

*Area YY is a "Landscape Protection Zone" land covenant. This overlaps part of Area B and all of Area ZZ.

*Area XX is a land covenant for the "Pongs Creek Clutha Flathead Preservation Corridor".

*All existing easements and land covenants on Lot 2 DP 512956 are to be retained.

*Lots 1 - 16 are subject to building platforms and curtilage areas - see Sheets 104 and 105.

Memorandum of Easements

Purpose	Shown	Burdened Land / Servient Tenement	Benefitted Land / Dominant Tenement
right of way	C	Lot 100	Lot 1
right of way	C	Lot 100	Lot 3 DP 512956 Lot 5 DP 344432 Lot 1 & 2 DP 512956
right to convey water			
right to convey telecommunications & computer media			
right to convey electricity			
right of way	C Q R S T U	Lot 100	Lots 2 -16
right of way	S	Lot 100	Lot 2 DP 512956

Memorandum of Easements in Gross

Purpose	Shown	Burdened Land / Servient Tenement	Benefitted Land / Dominant Tenement
right to convey electricity	B C Q R S T U	Lot 100	Aurora Energy Ltd
right to convey telecommunications & computer media			Chorus New Zealand Ltd
right to convey electricity	A	Lot 100	Aurora Energy Ltd
right to convey water	A B C Q R S T U	Lot 100	Management Company
right to drain sewage	B C Q R S T U ZZ	Lot 100	Management Company
right of way	C Q Q S T U ZZ	Lot 100	Management Company
right to take & store water	A	Lot 100	Management Company
right to convey electricity	E F G J K N O P	Lot 2 DP 512956	Aurora Energy Ltd
right to convey telecommunications & computer media			Chorus New Zealand Ltd
right of way right to convey water right to drain sewage	E F G J K N O P	Lot 2 DP 512956	Management Company

Notes:

1) Areas and dimensions are subject to survey.

2) Lots 1 - 16 are subject to building platforms and curtilage areas as per Baxter Design Master Plan (See Sheets 104 and 105)

REVISION	DETAIL	DATE
B	remove lot 17	05/02/2020
C	edit preservation corridor	18/02/2020
D	BP ties	10/07/2020
E	Access Easements	5/5/2022
F	Access Easements	10/5/2022

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Project

Roberts Family Trust
Cardrona Valley

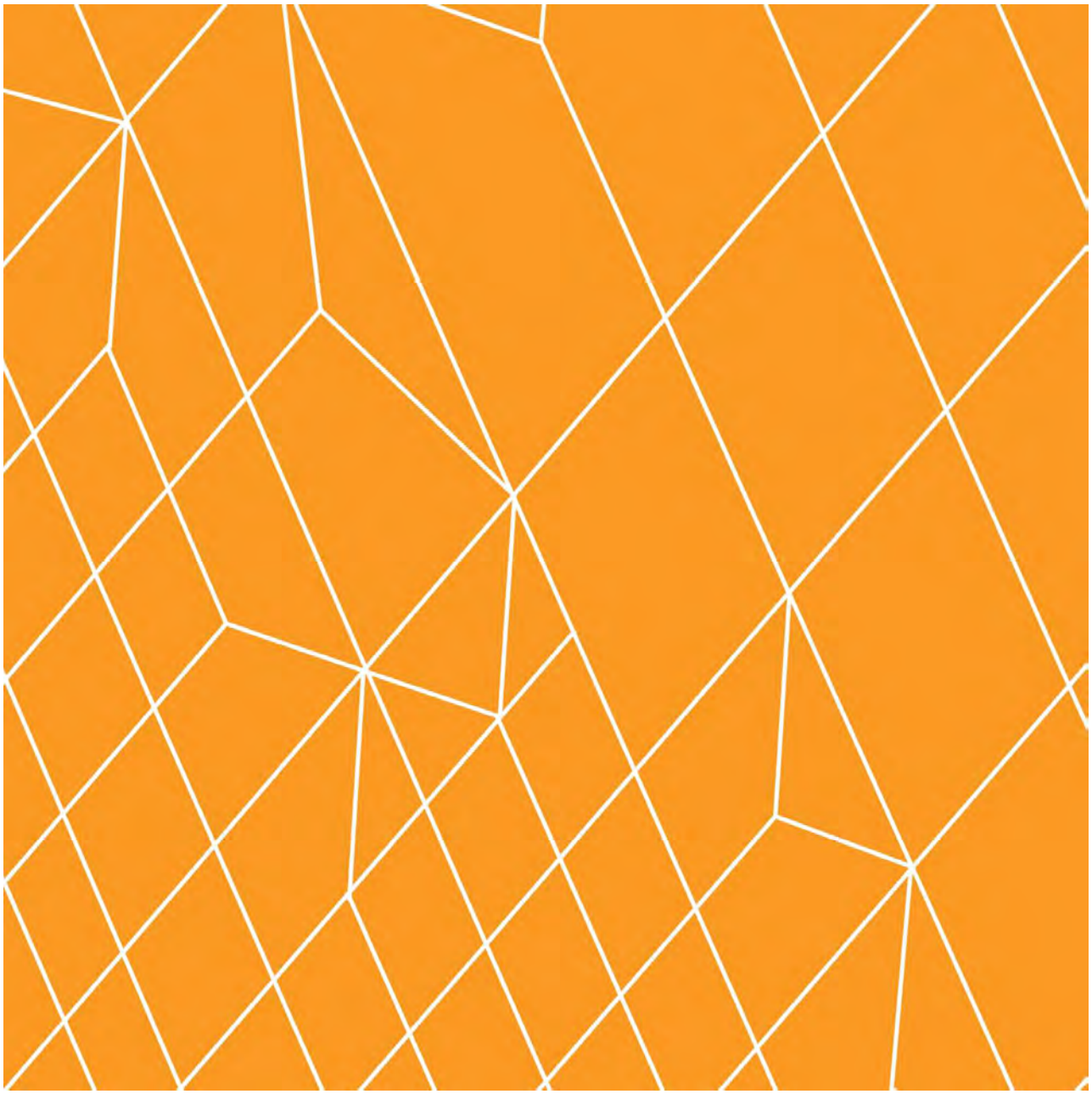
Title

Scheme Plan
Easement & Covenant Detail
for Resource Consent

Scale: 1:1000

Job No:	Drawn By:	Lvl Datum:	Coordinate System:
5890	TD	NZVD16	Lindis 2000

Drawing No:	Sheet No:	Revision:	Date Created:
W1184	106	F	10 May 2022



Erosion and Sediment Control Plan
McDougall's Block

10 Curtis Road
Cardrona
New Zealand

Report

Holmes Consulting

Version 4
3 September 2021
138332.00

Report

McDougall's Block

Prepared For:
Roberts Family Trust

Date: 3 September 2021
Project No: 138332.00
Revision No: 4

Prepared By:

Gerhard Fourie
PROJECT ENGINEER
Holmes Consulting LP

Reviewed By:

Ben Henry
SENIOR PROJECT ENGINEER
Holmes Consulting LP

TABLE OF CONTENTS

Appendix A: Diversion Bund Flow Calcs

1 INTRODUCTION

Holmes Consulting Limited Partnership has been engaged by Roberts Family Trust to prepare an infrastructure report suitable for a resource consent for the proposed 16 lot Development at 10 Curtis Road.

1.1 Objective

This report and plan have been issued to provide a preliminary erosion and sediment control framework to support a resource consent application. At the request of Otago Regional Council (ORC), extra consideration has been given to identify the erosion sediment control in relation to the potential construction methodology prior to the tender being awarded to a contractor. The design described in this report provides guidance to minimise dust, sediment, and erosion by a combination of prevention and control measures. It should be read and implemented in conjunction with Auckland Council's GD05 (Auckland Council, 2016) as design reference.

This erosion and sediment control plan (ESCP) should be considered a live document, updated to suit site specific conditions encountered at the time of construction. It is prepared to demonstrate how erosion and sediment control could be appropriately managed during construction. The appointed contractor is required to take ownership of this plan and develop it to meet their specific construction methodology based on actual site staging.

This report should be read in conjunction with the ESCP drawing C23-01.

1.2 Site and Project Description

The existing site is dominated by grassed surfaces and generally slopes from the west to the east at a gradient of 5˚-20˚, with some existing swales, hills, gullies and creeks within the site boundary. There are two water races crossing through the site and overland flow routes through the property drain to either Pongs or Pringles Creek. Pongs Creek and its associated Riparian zone is classified as a protection zone and is adjacent to Lots 1, 7-11, 13, and 15.

The project manager has supplied a staging plan:

- Stage 1 = lot 1, lot 16, lot 13, lot 14, lot 15.
- Stage 2 = lot 7, lot 8, lot 9, lot 10, lot 11, lot 12.
- Stage 3 = lot 2, lot 3, lot 4, lot 5, lot 6.

Surface water runoff from disturbed/un-vegetated surfaces has the potential to create excess sediment to leave the site and enter adjacent watercourses. Under Otago Regional Council (ORC) Regional Plan Clause 12.C.1, the discharge of water or any contaminant to water, or onto or into land in circumstances which may result in a contaminant entering water, is a permitted activity.

This plan focuses on minimising dust sediment, and erosion from the above sources by a combination of prevention and control measures described in the sections below. It shall be read and implemented in conjunction with Queenstown Lakes District Council's (QLDC's) 'QLDC Guidelines for Environmental Management Plans' (Queenstown Lakes District Council, 2019).

1.3 Geotechnical Summary

Site investigations into soil conditions have been undertaken in the vicinity of the proposed building platforms with the findings summarised in the Geotechnical Report (Geosolve Ltd, 2020). These investigations indicate that soils in the area are typified by topsoil, overlying softened fan alluvium overlying fan alluvium.

The observed stratigraphy is summarised below:

- 0.15-0.4 m of topsoil, overlying;
- 0.2-0.55 m of softened fan alluvium, overlying;
- 0.6-2.9 m+ of fan alluvium.

1.4 Erosion and Sediment Control Guidance Document

The erosion and sediment controls used on this site must meet the requirements of Auckland Council's Guidance Document 05 (GD05) 'Erosion and Sediment Control for land Disturbing Activities in the Auckland Region' (Auckland Council, 2016). This is also referred to as a best practice for ESCP's in the QLDC's 'Guidelines for Environmental Management Plans, June 2019' (Queenstown Lakes District Council, 2019).

2 PROJECT DESCRIPTION

2.1 Description of Work

There is potential for dust and sediment to exceed the existing conditions during construction. There is also potential for sediment to discharge into the existing watercourses if no controls are put in place. Dust and sediment could be generated from the following sources:

- Clearing of vegetation and topsoil
- Cut/fill of soil across the building platforms
- Cut/fill for access roads
- Excavation for utilities
- Unstabilised earth surfaces exposed to wind and rain, including stockpiles
- Truck movements

2.2 Proposed Methodology

For the purposes of this preliminary ESCP, a construction methodology has been assumed to demonstrate how erosion and sediment can be managed on site. Once a Contractor has been engaged, a final detailed ESCP will be provided to suit the Contractor's programme and methodology. The Contractor's ESCP shall include staging and sequencing and will be provided following ORC and QLDC Resource Consent uplift as part of Engineering Acceptance and satisfying pre-construction Consent Conditions. The Contractor's programme and sequence will depend on a number of factors, such as:

1. The Contractor's chosen methodology,
2. the time taken to obtain approvals, and
3. the remaining sealing season together with the restrictions on earthworks in the Consent Conditions.

The provisional staging is shown in the figure below.

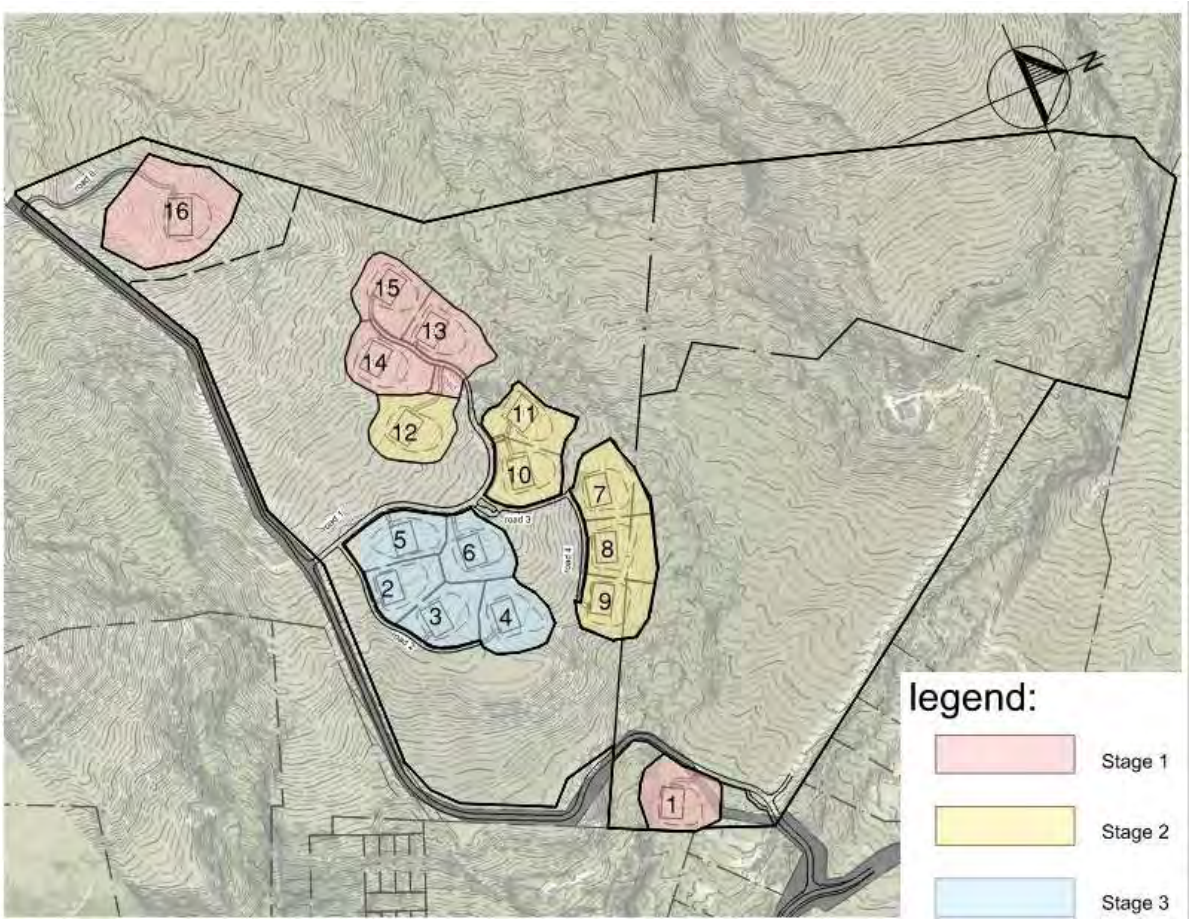


Figure 1: Provisional development staging plan

2.2.1 Stage 1

Stage 1 will include developing lots 1 and 13-16 as shown in Figure 1. Construction is likely to commence with earthworks for the access roads to lots 13-15 and 16 from the existing stabilised Curtis Road, including utilities along the new roads.

Once access can be gained to the new lots, individual cut/fill operations for each building platform can commence. The upgrading of Curtis Road to Type E1 standard, as per QLDC's Land Development and Subdivision Code of Practice (LDSC), includes road swales, check dams and soakage if required. Installation of utilities can happen in parallel with road construction, noting that Curtis Road is used for access to other properties. This will restrict the ability to have large open areas and require a sequence that allows the road to be trafficable in part during construction.

It is expected earthworks will be mostly localised to individual lots and road sections by cut to fill balancing to minimise the haulage of material. The construction duration is expected to be in the order of 4-5 months.