IN THE MATTER OF
The Resource Management Act 1991

AND

IN THE MATTER OF
Proposed Plan Change 62 to the Selwyn District Plan

JOINT STATEMENT

of the

HARTS CREEK STREAMCARE GROUP

and

ELLESMERE SUSTAINABLE AGRICULTURE INCORPORATED

7 September 2020

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1. INTRODUCTION

1.1 This joint statement is provided in support of submissions and further submissions lodged on Proposed Plan Change 62 (hereafter referred to as 'PPC62') to the Selwyn District Plan (hereafter referred to as 'SDP') by the Harts Creek Streamcare Group and Ellesmere Sustainable Agriculture Incorporated (hereafter referred to as 'the submitters').

1.2 The submitters have read the application documentation, the Section 42A Officer Report and associated reports, and the expert evidence provided by the applicant. The submitters would like to express that they do not fundamentally oppose further residential development in Leeston. However, they are concerned specifically with any potential adverse environmental effects on surface water and groundwater quality and quantity down gradient and downstream of Leeston Township and other townships within the Ellesmere area.

1.3 Any queries regarding this statement can be directed to the author, Carey Barnett[1], in the first instance. The statement has been reviewed by the members of the committees of the respective submitter groups and provides a joint representation of their collective views.

2. BACKGROUND OF THE SUBMITTERS

Harts Creek Streamcare Group (HCSCG) - Submitter and further submitter

2.1 The Harts Creek Streamcare Group consists of a committee of landholders that border Birdlings Brook and Harts Creek. The Committee was established in the mid 1990's with their vision being to restore the riparian margins and surface water quality and quantity of the lowland streams that ultimately flow into Te Waihora/Lake Ellesmere. Over the years the group has facilitated numerous restoration projects, liaised with landholders, organised riparian projects and funding applications, project management, and worked closely with the supporting partners of Environment Canterbury (ECan), Department of Conservation, Te Waihora Trust and Te Taumutu Runanga. There has also been some engagement with Selwyn District Council. **Annexure A** illustrates the location of the two lowland streams and the areas where work has been carried out and continues to be undertaken.

2.2 There has been extensive riparian restoration completed in this catchment in the order of several hundreds of thousands of dollars. The catchment project serves as a renowned example New Zealand-wide as to what can be achieved through constructive and concerted efforts via non-regulatory mechanism. An informative film on the Harts Creek/Birdlings Brook Project can be viewed at https://www.youtube.com/watch?v=NGo1vCaaGW8. A further $60,000 funding block was approved in September 2020 for three years of clearing and planting projects via the Immediate Steps Programme under the umbrella of the Selwyn Waihora Zone Committee.

2.3 This is the first time that this group has submitted on any proposal within a policy or consenting framework. The group generally focuses on non-regulatory 'on-the-ground' improvements. However, in this instance the proposed re-zoning has the potential to have significant adverse

[1] Carey Barnett has previously been employed as an Environmental Planner – Team Leader Consent Planning at Selwyn District Council (four years at SDC including policy planning) and nine years as Senior Planner and Principal at Boffa Miskell Limited.

impacts on both the water quality and quantity within these streams and the restoration of them. A fundamental key concern of this group is protection and enhancement of these waterways and ensuring all activities affecting them do so in a positive manner and do not detract from the improvement that has and continues to occur. The group lodged a late submission but considers that this has not fundamentally put the applicants at a disadvantage and requests that the submission be accepted for consideration subject to Section 37A of the Resource Management Act. Regardless of this, the group has lodged further submissions raising the same points.

2.4 The Harts Creek Streamcare Group Committee currently consists of the following Lakeside landholders and interested parties: Mr John Legg (Chairperson), Mrs Carey Barnett (Secretary/Treasurer), Mr Stu McLachlan, Mr Peter Chamberlain, Mr George Chamberlain and Mr Bryan Gilchrist.

Ellesmere Sustainable Agriculture Incorporated (ESAI) - Further Submitter

2.5 Ellesmere Sustainable Agriculture Incorporated (ESAI) is made up of approximately 112 farming members located between the Rakaia and Selwyn/Waikirikiri Rivers and east of State Highway 1 to the east coast of the Selwyn District. It encompasses the rural areas known as Irwell, Brookside, Doyleston, Leeston, Lakeside, Sedgemere, Southbridge, Killinchy and Little Rakaia, which are commonly referred to collectively and in this context as 'Ellesmere'. **Annexure B** attached illustrates the location of this area.

2.6 ESAI was officially formed in 2009 in order to provide a collective representation on water related issues, predominantly in respect to irrigation and the protection and maintenance of the water resource; both ground and surface water. In 2016 ESAI widened its representation to include other areas of concern to agriculture and the environment beyond those strictly relating to water.

2.7 Since 2009 ESAI has worked closely with Environment Canterbury (ECan), Selwyn District Council (SDC), the Ministry for Primary Industries and various other stakeholders including: the Foundation for Arable Research; Irrigation NZ; DairyNZ; and, Horticulture NZ to inform and assist in the development of relevant, practical, efficient and effective regulation. ESAI has been involved in 'ground-truthing' Good Management Practices that now form part of Farm Environment Plans (FEP), assessing the implementation and practical auditing of FEPs and holding farm field seminars to inform farmers, ECan Councillors and Auditors about recognised and appropriate farm management practices. The group has also been liaising with the planning staff of SDC in relation to new draft provisions proposed for release in the revision of the District Plan. ESAI has been recognised as a key stakeholder in this process. Members also assist with Sustainable Farming Fund projects which trial new ways of improving environmental outcomes from farm practices and environmental treatments.

2.8 This group has been proactive in forging positive and informative relationships with a variety of entities and has long been supportive of the facilitation offered through the forming of the ECan Zone teams that now operate in the various catchments throughout the Canterbury region (ours being the Selwyn Waihora Zone). ESAI was also highly supportive of the appointment of a Cultural Land Advisor and jointly promoted the first 'Shed Talks - Understanding Mahinga Kai' seminar in conjunction with ECan held at Tim Chamberlain's property along the banks of Harts

Creek in 2018. This was coincidently timed when ESAI was contemplating appointing its own Cultural Advisor.

2.9 In addition to the core work of ESAI, the group has firm connections to two other agricultural groups that have a strong positive environmental focus which also operate in the Ellesmere area. These are the aforementioned Harts Creek Streamcare Group and Quorum Sense (a Regenerative Agriculture group focused on practicing and educating on the benefits of this biological farming type). These entities are also continuously undertaking projects and promotions to improve farming systems and recognise the importance of environmental protection, especially in respect to lowland stream protection and enhancement. ESAI has recently been granted a $2.2 million funding package from the Ministry for Primary Industries to undertake further riparian enhancement projects in the Ellesmere area - an exciting opportunity to provide further on-ground environmental improvement and engage further with landholders and key stakeholders such as ECan and SDC. This funding package is considered the stepping stone to creating outstanding outcomes for our lowland streams and will include additional investment and commitment from adjoining landholders. This project also includes a regime of water quality testing and analysis at the headwaters of 14 Ellesmere lowland streams to provide a basis for future benchmarking and testing that will assist future monitoring programmes, potentially in conjunction with ECan.

2.10 Members of ESAI are predominantly 'family farmers'. They are farmers who have owned and managed the same property for several generations and have a natural affinity to the land, its use and its protection. Traditionally these types of farmers have engaged in long-term farming practices that utilise environmentally sustainable farming systems. They perceive farming as a long-term plan to retain their heritage and livelihood so that it can be progressed through future generations. A key characteristic of the family farmer is operating in an efficient and caring manner with strong environmental ethics and stewardship. Family farms are predominantly financed through production from the farm itself and are not subject to many off-farm shareholders or corporate investment. Finance and production is very carefully managed. Inefficient use of fertiliser or water is considered costly and used sparingly under stringent and precise management and application systems. Historically, the family farmer cares greatly for their farm, its produce, livestock and surrounding environs. They have high level expertise and acquired local knowledge which is vastly comprehensive. The farm is seen as not only an asset to the owner but also to the community and its immediate physical and social environment; all of which it aims to protect and maintain to its highest quality. These farms are also subject to a host of regulatory provisions ensuring their practices are environmentally sound and in the majority of cases allowed to operate by way of a resource consent to farm under the provisions of the Canterbury Land and Water Regional Plan.

2.11 Agriculture in the Canterbury region contributes substantially to New Zealand's overall production, and as a consequence the economic viability of the country as a whole. Ellesmere and Leeston are an intrinsic part of this economy. The area includes a variety of agricultural land uses such as arable (wheat, barley, ryegrass, clover, small seed such as radish, carrot, kale), dairy, vegetables for market, blackcurrant and berry crops, sheep and beef. All of these uses require sustainable farming and environmental practices, which includes waterway protection and environmental responsibility. Leeston Township is an important connection for and is an integral part of the agricultural economy and community in this area. Many of the rural families

have family living in the township and also take part in leading, being members of or contributing to the organisations associated with it.

2.12 The ESAI Committee presently consists of eight elected members: Mr Tim Chamberlain - Chairman; Mr Nigel Greenwood - Vice Chairman, Mr David Birkett - Treasurer, Mr Craig Croft - Secretary, Ms Jo Jermyn Benny - Publicity Officer and Project Development, Mr Simon Osborne, Mr Stuart McPherson, Mr Stuart Macaulay. Mrs Carey Barnett is the Environmental Advisor to this Committee.

3. SUBMISSIONS

3.1 In summary the submission and further submissions of The Harts Creek Streamcare Group and Ellesmere Sustainable Agriculture Incorporated consisted of the following concerns:

1. That HCSCG had not been consulted during any consultation phase of the re-zoning proposal;

2. PPC62 has the potential to increase adverse effects on surface quality and quantity in Birdlings Brook and Harts Creek. The proposal has not adequately addressed significant potential adverse effects on the environment and how they might be avoided, remedied and/or mitigated;

3. PPC62 may result in increased adverse effects on groundwater quantity and quality downgradient of the land proposed to be re-zoned.

4. No further degradation of water quality in these streams and ultimately Lake Ellesmere/Te Waihora are acceptable. There is scientific analysis available that recognises the significant adverse impact that increased urbanisation has on water quality and quantity. It is not appropriate to address such matters at the time of subdivision.

5. That PPC62 be declined in its entirety, or alternatively, approve only part of the proposed re-zoning area to ensure adverse effects on Birdlings Brook and Harts Creek are completely avoided.

4. POST SUBMISSION CONSULTATION

4.1 The submitters are not aware of any consultation with any parties beyond the township or the proposed re-zoning area during the investigation or post lodgement phases prior to notification of this proposal by the applicants' representatives or the Council. A meeting and or a formal pre-hearing meeting was requested by the submitters. A request to the Council for a formal pre-hearing meeting was declined but a meeting with Council staff and representatives of the applicants was undertaken with a representation from HCSCG and ESAI. This meeting took place in Leeston on 14 July 2020 and provided an understanding of the matters of issue. The Baseline Group representatives who were present were to provide an illustration of where runoff from the subject land was to flow in relation to the various stormwater catchments in August. This

has not been provided to date although some further information has been provided in the expert evidence lodged on behalf of the applicants for consideration at the hearing.

5. POTENTIAL ADVERSE ENVIRONMENTAL EFFECTS

5.1 As mentioned above, the submitters are primarily concerned with the potential for PPC62 to result in adverse environmental effects on surface and ground water quantity and quality. These will be addressed under the following headings:

1. The potential increase in contaminants including copper and zinc entering Birdlings Brook and Leeston Creek and aquifers; and

2. Flooding and/or raised water levels in Birdlings Brook; and

3. The potential increase in adverse downgradient effects emanating from the upgraded Leeston Stormwater North Bypass development.

5.2 These concerns are explained and addressed below and are an appropriate consideration under the provisions of Section 76(3) of the Resource Management Act 1991. The submitters are committed to adhering to the principles of Te Mana O te Wai as the integrated and holistic well-being of the water as prescribed in the Freshwater National Policy Statement.

Potential Increase of Contaminants to Surface and Ground Water

5.3 There is no ecological assessment provided as part of the application documentation and the impact that contaminants from urban development including copper and zinc may have on either Birdlings Brook (which ends at its confluence with Harts Creek in Lakeside), Leeston Creek or underground aquifers. It is noted that in Mr James Hopkins' evidence, on behalf of the applicants, detail is provided that compares contaminants emanating from rural and residential land use. The submitters recognise that all land uses can result in impacts on natural water systems. This is not disputed. However, what is key is the extent of any future impact and whether this would be further detrimental to the water quality of relevant natural water bodies. It is also understood that ultimately if PPC62 was approved, that the provisions of the Canterbury Land and Water Plan stormwater disposal rules, objectives and policies would apply and would assess any proposal accordingly in relation to the proposed stormwater disposal design, its effects and management plan.

5.4 All of the Ellesmere surface waterbodies contain habitat for a wide variety of biota that are both introduced and native such as trout and eels and numerous species of native flora and fauna. In order to gain some insight into what level of contamination already exists in the area the submitters looked towards the information contained in the application for resource consent to legalise the disposal of stormwater from Leeston Township (CRC186175).

5.5 Resource consent application CRC186175 to ECan was lodged by the Selwyn District Council in 2018 as part of a suite of consent applications to gain global consent/s for stormwater discharge across many of the townships within the Selwyn District. It is understood they are required to legitimise an historical void where no discharge or only some stormwater discharge consents

were in place in some townships. ECan has confirmed that there does not currently appear to be a consent for stormwater disposal for Leeston Township.[2] The application is currently on hold pending the requirement to provide further information relating to an array of matters. This application for Leeston appears to relate only to the existing township area and only includes some of the area subject to this re-zoning proposal. However, the current deferred zone areas are contained in the consent application's associated Leeston Stormwater Management Plan 2017, the Network Discharge Consent boundary attached to the Assessment of Environmental Effects (AEE) only contains mainly the existing non-deferred zonings. It is not clear currently the extent of the areas to be included in the consent area.

5.6 The AEE attached to this application provides an initial analysis of the current state of Birdlings Brook near the re-zoning site. It also provides information on Leeston Creek. This information has been provided by Jacobs and highlights the following:

> *"As part of the application, wet weather sampling of Leeston Creek and Birdling Brooks*[sic] *was undertaken in October 2017. In summary, TSS [total suspended solids] and total phosphorus in Leeston Creek increased downstream of the townships discharges, whilst all other parameters were in generally similar concentrations upstream and downstream, noting that copper and zinc were above guideline values both upstream and downstream of the cumulative town inputs. Birdling*[sic] *Brook had low TSS and broadly similar results for other parameters, excluding dissolved zinc and copper which were above guideline values both upstream and downstream of the discharge point with higher concentrations observed downstream."*
>
> (Page 51 of Jacobs resource consent application for SDC Leeston Stormwater)

A copy of the Water Quality and Ecology Technical Report by Jacobs provided with the AEE is attached in **Annexure C**. It shows that there are considerable exceedances of the guidelines under the provisions of the Canterbury Land and Water Regional Plan (see Tables 17 and 18 on page 42 of the Annexure C).

5.7 This gives a clear indication that copper and zinc concentrations are higher below the existing township residential areas in Birdlings Brook. It also showed that phosphorus levels increased downstream of the township in Leeston Creek. All of these contaminants should be avoided from entering waterways to protect aquatic and human life. They can be significantly detrimental to fauna and human health.

5.8 The AEE goes on further to advise that stormwater discharge may be having some effect on the water quality of these streams but that the ecology would be more affected by intermittent flows. This statement is significantly inconsistent with the experiences of the landholders immediately adjacent to Birdlings Brook.

5.9 The Oxford Dictionary defines 'intermittent' as 'irregular'. While Birdlings Brook does undergo seasonal changes in flow largely due to weather events and the loss of spring pressure caused by over allocation of groundwater in the upper catchment (although this is should be diminishing as a result of the Central Plains Water Scheme), it remains a reliable spring fed stream that is only known to have had a short reach go dry below the township in 2017. 2017 was the year that the

[2] Email confirmation received from Sam Leonard – Environment Canterbury 1/9/20

Selwyn River went dry at Coes Ford and the Canterbury Plains had suffered a significant period of drought. Of the historic knowledge from the family farming landholders in this area, none had experienced irregular flows in this waterway. Seasonal changes are normal but suggesting Birdlings Brook has an intermittent flow may be unjustified. In addition, it is noted that the sampling undertaken in the ecological report was done during the significant drought period of the summer of 2017. It is considered that this is not a representative observation of the flow in Birdlings Brook.

5.10 Resource consent application CRC186175 is on hold pending the provision of substantial further information relating to:

1. Extra site inclusions given that further development might occur in the district before the 2025 date when the consent will apply from, including high risk sites;
2. Hazard assessment including flooding and changes from 'greenfield' areas to urban;
3. Surface water and ecology effects;
4. Groundwater effects;
5. Monitoring programmes;
6. Tangata Whenua Values.

5.11 The Section 92 request for further information is attached in **Annexure D**. It specifies information required relating to surface water and ecological effects in the Doyleston and Leeston townships. It highlights that the existing assessment contains inaccuracies and is insufficient in order to assess any effects on the receiving environment. Specifically in relation to Leeston, it is noted that copper and zinc levels in the Leeston Lake Road, Chapman and Beethams Drains already exceed the Canterbury Land and Water Regional Plan Schedule 5 Water Quality Standards when the right thresholds are applied (C(2)(b)(iv)). At point C(2)(b)(viii) the Processing Officer also queries "the assumption that Leeston Creek and Birdlings Brook only flow during wet-weather". Birdlings Brook is not known to run dry below the Harmans Road and Feredays Road intersection at all unless in extreme drought periods like 2017. Being a spring fed stream it has a reasonably regular flow albeit subject to the normal seasonal variations that all surface waterbodies in this area are characterised by. The request for further information also queries effects on groundwater quality.

5.12 PPC62 proposes a large stormwater management area or a series of management areas within the Outline Development Plan (ODP) to deal with stormwater runoff. Given that there are already high levels of contaminants being discharged into waterbodies in rainfall events then this proposed system would need to contain all contaminants within the site and prevent them from entering both the ground and surface water systems. It is noted that the water table in this area is close to the ground surface. Page 2 of the peer review report by Geotech Consultant Ian McMahon which reviewed the geotechnical information submitted with the PPC62 application recognised that "The water table was measured at 0.6, 0.7 and 1.1m in three of the auger holes" when soil testing was undertaken across the site. This would indicate that there is potential for any excavation of stormwater management areas to intercept the water table and thus impact on the size and capacity of the proposed system. The Council's Asset Manager Water Services - Mr Murray England, has also indicated that there would likely be a need for

further stormwater management areas and that primary and secondary run off to Birdlings Brook would occur. Mr Hopkins in his evidence has also recognised the need for primary and secondary runoff to Birdlings Brook. The submitters consider that this would be an unacceptable scenario given the already elevated levels of contaminants recorded in Birdlings Brook under existing urbanised levels.

5.13 At paragraphs 35 and 36 of Mr Hopkins' evidence he has set out Rule 5.93 of the Canterbury Land and Water Regional Plan and how conditions 2 and 3 of the rule would require analysis of flow and contaminant management. However, and with respect, it is considered that condition 1 of that rule may not be met because the proposal does not meet the stipulated 11 August 2012 date and this would direct the proposed activity as being considered a non-complying activity pursuant to Rule 5.94:

Rule 5.94

The discharge of stormwater or construction-phase stormwater from a reticulated stormwater system onto or into land or into or onto land in circumstances where a contaminant may enter water, or into groundwater or a surface waterbody that does not meet the conditions of Rule 5.93 is a non-complying activity.

5.14 Regardless of where stormwater is drained to or how it is managed, it appears that there is real potential for there to be an increase in contaminants reaching nearby waterways and/or groundwater. Even if contaminated runoff from any eventual housing is managed within the proposed ODP stormwater management area, this may not deal with the runoff of contaminants experienced from increased traffic in the vicinity which may not be treated within the PPC62 area (potentially 800 more vehicles in the area – based on a two per household scenario).

5.15 Given the above considerations the submitters remain cautious and concerned that PPC62 will result in significant adverse effects on surface and ground water quality. Having considered the information available relating to the existing township stormwater disposal effects this concern is justified, particularly given that the gaining of consent for the existing disposal appears to be still some way off with considerable work to be done to ensure suitable stormwater management plan is in place. The submitters question the ability to confidently determine PPC62 given that there remains significant questions over the disposal of stormwater for the existing residential, business and industrial areas of Leeston.

Potential Increased Water Flows in Birdlings Brook

5.16 There is potential that PPC62 will cause raised water levels in Birdlings Brook. Should this occur for sustained periods or cause increased flood levels then there is the potential to affect nearby farmland and/or be detrimental to the retention of riparian restoration works. The photographs attached in **Annexure E** shows significantly raised water levels in Birdlings Brook as a result of a high rainfall event in July 2017 near Lochheads Road, Lakeside. While this level was doing some damage to the existing riparian planting that has been established at the site, further heightened levels due to increased stormwater runoff from Leeston would definitely damage or destroy the planting. It is also noted that contaminants including copper and zinc are also detrimental and toxic to plants.

5.17 Landholders are also concerned that additional contaminants reaching farm land via flood events or through groundwater contamination may have an adverse impact on the ability for crops to meet increasing food production standards. For example, produce leaving farms is now highly scrutinised for toxins and where toxin levels cannot be met then produce contracts may be breached leading to loss of investment and income. This may arise if there were increased cases of flood waters containing metal contaminants covering crops or pasture.

Potential Increased Adverse Effects Resulting from Leeston Stormwater North Bypass

5.18 It is critical to the landholders downstream of this proposal that it does not further exacerbate the potential issues associated with what appear to be design failings that may occur as part of the stormwater upgrade for Leeston. The proposed Leeston Stormwater North Bypass upgrade that is to pass through the northern aspect of the PPC62 land will improve flood hazard effects across Leeston Township and through the southeast of the township. However, the design modelling indicates that there are significant areas of farmland in the vicinity of Volckman Road and to the east of the township which will experience more widespread flooding effects and in some cases to projected deeper flood water levels. The maps attached in **Annexure F** were provided to an affected landholder by the Council after the meeting with submitters on PPC62.

5.19 While the submitters appreciate that this upgrade is not directly related to this re-zoning proposal, although both the Council and applicants representatives have stressed the importance of vesting the bypass section within the PPC62 area in the Council as being critical to this upgrade, they are concerned that any further stormwater flowing into this upgraded system and not already calculated into the modelled projections would further exacerbate flood hazard events and contamination beyond the township boundary. The resulting outcomes would include further loss of crop and contamination, increased delay in farm cultivation activities and significant property damage. It is understood that there may not have been any consultation with landholders in this downstream area until interest in the effects of the PPC62 application was brought to the fore.

5.20 The submitters feel that it is appropriate to bring this to the attention of the Hearing Commissioner/s to confirm there is no capacity for this PPC62 development to drain into the bypass system. Given the modelled effects downgradient of the existing capacity it is questioned if the system already exceeds proposed capacity requirements. For the submitters there is the cumulative concern that further development in Leeston will exacerbate flood effects to the north east and east of the township, in effect shifting the flooding effects from the west to the east and then potentially further contaminating Birdlings Brook through allowing PPC62.

5.21 It is also noted that previous and considerably smaller re-zoning applications to the southwest of Leeston have been declined in the past due to concerns over stormwater disposal and flood hazard - Proposed Plan Change 49, in 2000, Millbridge Limited, Feredays Road. While the Commissioner/s cannot take this decision into account while making an independent decision on PPC62, it does highlight that concerns of this nature have been considered of significance previously.

Conclusions - Surface and Groundwater Effects

5.22 The Section 42A Reporting Officer and Council Asset Manager for Water appear comfortable in allowing any stormwater issues to be dealt with at the stage of subdivision. Although Mr England considers it would be appropriate for a stormwater consent to be obtained before the subdivision consent is sort. This would indicate that there are uncertainties with these effects that have not been dealt with yet. The submitters consider that there is an obligation imposed by Section 76(3) of the Act that requires an assessment of the environmental effects, including any adverse effects, of the proposal. It is not appropriate to disregard any potential adverse effects because they will be dealt with later.

5.23 It is the submitters' desire that issues relating to stormwater disposal are addressed and assessed appropriately at the time of considering PPC62. Should it not be adequately considered at this time then there is potential that the 'horse will have bolted' as far as hearing relevant concerns on stormwater effects. In addition, it could also result in a scenario where a large area of land is re-zoned for residential purposes but cannot progress because a stormwater disposal consent cannot be obtained. The information provided above indicates that the issues of stormwater disposal for Leeston and any future development remains unresolved at this time and that considering a proposal for a further 400 plus households may be beyond the capacity of the township and the surrounding environment at present.

6. ELLESMERE AREA PLAN

6.1 Leeston Township is subject to the development discussion and outline provided in the Ellesmere Area Plan. The location of the PPC62 area is consistent with the location of where new residential development might be located. However, this area plan also highlights the propensity of flooding and stormwater as being major issues for the town (Figure 8 Leeston Opportunities and Issues, Leeston, Ellesmere Area Plan) and how it has historically influenced the growth of the township. Both of these issues are highlighted on the subject land along with loss of rural land.

6.2 The Plan also states that 'Retrofitting stormwater infrastructure is complex and also limits opportunities to intensify or infill established neighbourhoods' (Page 25, 'Issues - Population, growth capacity and urban form'). Page 26 of the Ellesmere Area Plan further reiterates the issues associated with wastewater treatment and stormwater disposal in the township and the importance to tangata whenua given that drainage ultimately will ultimately flow to Lake Ellesmere/Te Waihora. Birdlings Brook and Harts Creek are also of importance to tangata whenua being located within the Cultural Landscape/Values Management areas under the provisions of the Canterbury Land and Water Regional Plan.

6.3 Part of the PPC62 land is located in the Leeston Area 1 - Lee 1 which is a preferred siting for township growth provided improvements to the township's existing infrastructure upgrading issues can be resolved. In other words, signalling that stormwater issues be resolved for these areas before further re-zoning occurs. The current proposal suggests re-zoning and then dealing with stormwater management. Essentially PPC62 appears to 'require' further re-zoned land in order to deal with the stormwater issue. There are also a number of disadvantages listed for this Lee 1 area including: high groundwater, localised flooding and poor land drainage. The

remainder of the PPC62 site, while labelled with a future direction of growth title, is not listed as one of the preferred areas. The conclusion of the Leeston section of this Plan sets out specifically the intent of what is envisaged for the township until 2031 and also comments on the difficulty of retro-fitting stormwater systems. While this proposal would not technically be a retrofit, it will result in a considerable area of land used for stormwater management which could then not be developed for housing. Therefore any future development could result in further urban spread over time onto productive rural land.

6.4 Overall, the submitters consider that the proposal is not consistent with what is intended for Leeston until 2031, based on the concerns around stormwater disposal. The submitters also raise the concern of the application of deferred zonings for long periods of time. Some of the subject land has been under the deferred label for many years and stretched across district plan periods. This is not an ideal scenario, particularly when environmental effects may become more adverse or change throughout the deferred period. Where there are no foreseeable remedies to the restrictions to future land development and the existing deferred zonings, or, the remedies may be some considerable time away, then the submitters suggest that deferred zonings should be avoided. This is especially the case when there may already be significant adverse effects occurring prior to deferrals being lifted.

7. CONCLUSIONS

7.1 From the above assessment the following conclusions are reached:

1. Contaminants in Birdlings Brook may already exceed Canterbury Land and Water Regional Plan Water Quality Standards for copper and zinc which are key elements that emanate from residential development. PPC62 proposes to retain stormwater on the site but will drain to Birdlings Brook in primary and secondary stormwater flows even with the proposed stormwater management area in place. Further stormwater in Birdlings Brook may also detrimentally affect riparian planting and management downstream to Harts Creek and ultimately Lake Ellesmere/Te Waihora;

2. The proposal to date has not addressed adequately adverse environmental effects on surface water and groundwater quality and quantity. This remains of concern given that the SDC is yet to obtain a stormwater disposal consent from ECan for the existing Leeston Township. Available information to date indicates there may already be significant adverse effects occurring with regard to the existing stormwater disposal system that need to be addressed;

3. There is no capacity for any of the proposed PPC62 land to discharge stormwater to Leeston Creek and/or the existing Leeston stormwater disposal system because of the significant flooding effects that may arise at the downgradient end of that system on rural land. Disposing of stormwater to Leeston Creek is therefore not an alternative option to avoid further potential adverse effects on Birdlings Brook;

4. The submitters are of the view that should PPC62 be approved then it could seriously jeopardise the existing and continued restoration of the riparian areas of Birdlings Brook

and Harts Creek and be detrimental to the health of these waterways and Lake Ellesmere/Te Waihora.

7.2 Given the above, the submitters consider that PPC62 should not be approved unless the adverse environmental effects associated with stormwater can be avoided.

8. RECOMMENDATIONS

8.1 The submitters recommend that the Hearing Commissioner/s make one of the following decisions:

1. Decline PPC62 in its entirety;

Or,

2. Approve an area of the PPC62 area which is capable of providing a maximum of 80 residential allotments in line with the current water supply and sewerage disposal servicing limitations and where stormwater management can be retained and managed within the zoned area with no contaminated runoff reaching Birdlings Brook or Leeston Creek. The Outline Development Plan will need to be amended to ensure it is clear how and where stormwater management will be dealt with. The submitters consider that this 80 allotment area may be best sited on the area north of Leeston Dunsandel Road;

And,

This area remains a deferred zoning until a stormwater disposal consent has been approved for the existing Leeston Township by Environment Canterbury.

And,

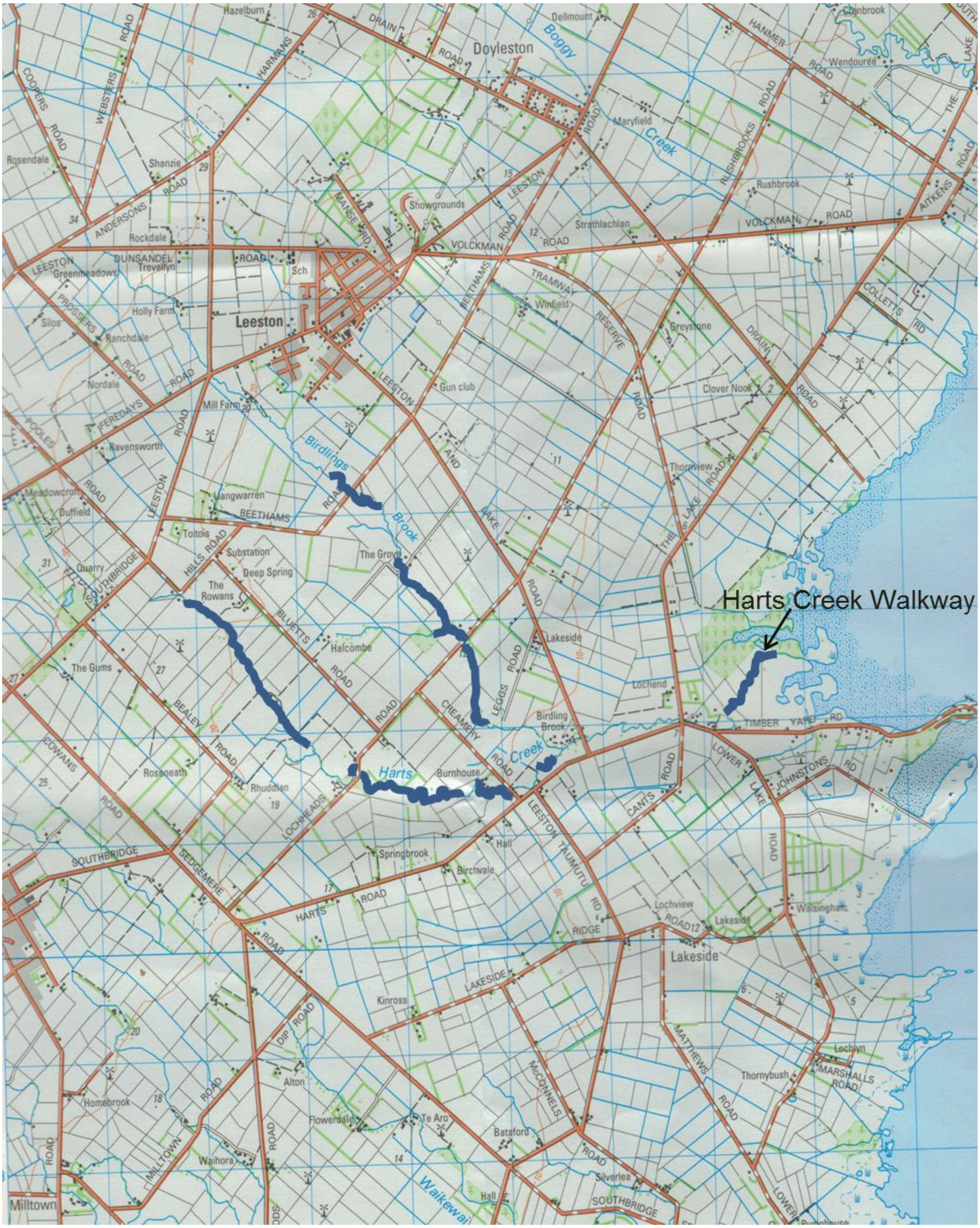
That additional rules be inserted in the District Plan that minimise the run off of contaminants from each residential allotment before reaching reticulated stormwater disposal systems.

ANNEXURE A

Lowland Streams

Birdlings Brook and Harts Creek

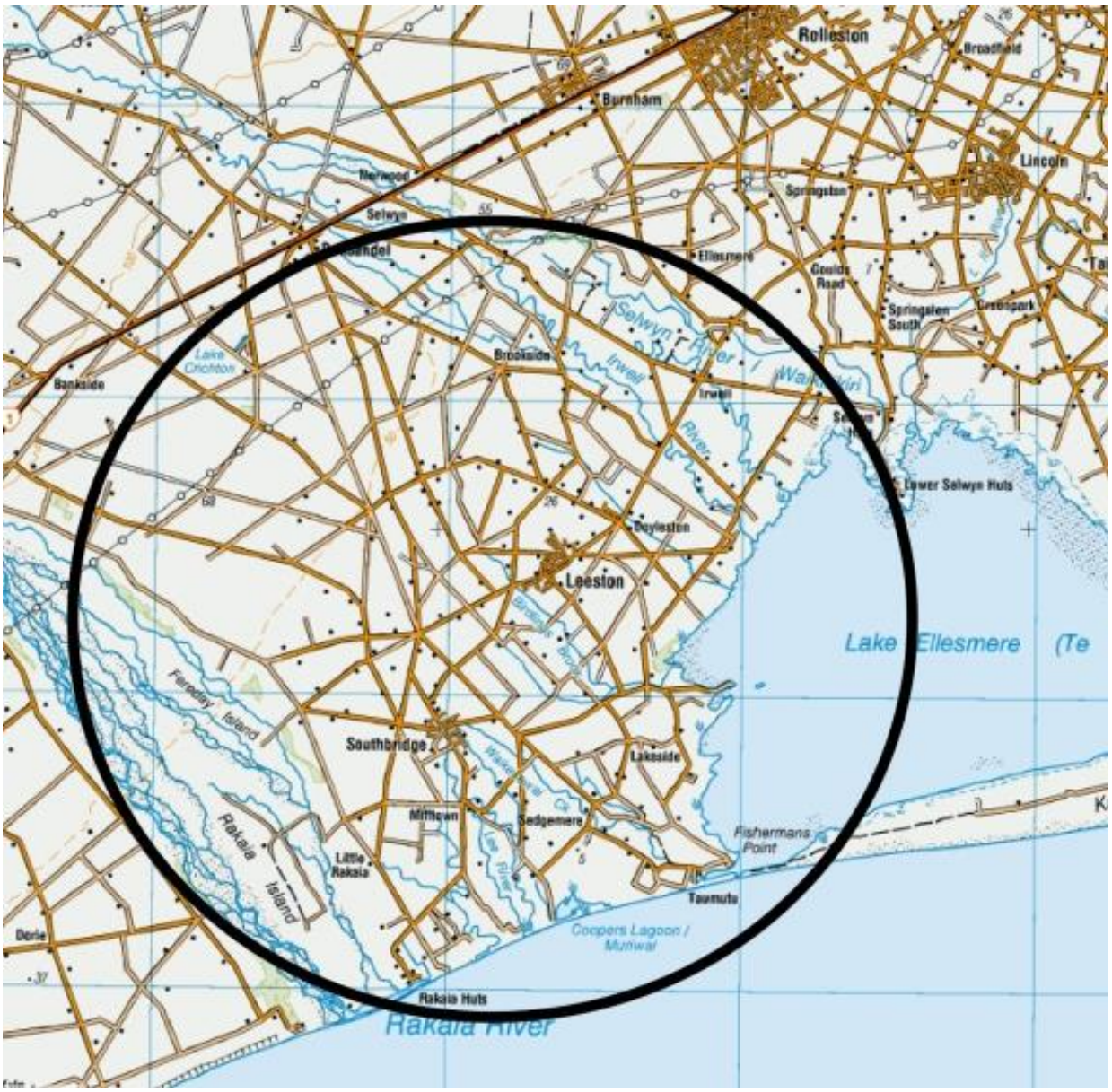
Location and Restoration Project Sites


Harts Creek Walkway
Doyleston
Leeston
Lakeside
Milltown
Hazelburn
Dellmount
Boggy
Creek
Maryfield
Rushbrook
Wendouree
Rosendale
Shanzie
Rockdale
Showgrounds
Strathlachlan
Greenmeadows
Trevellyn
Holly Farm
Ranchdale
Nordale
Winfield
Greystone
Clover Nook
Gun club
Mill Farm
Ravensworth
Birdlings
Brook
Langwarren
Meadowcroft
Duffield
Toitois
Substation
Deep Spring
The Grove
Quarry
The Rowans
Halcombe
The Gums
Thornview
Lochend
Birdling Brook
Harts
Burnhouse
Rosneath
Rhuddlan
Springbrook
Birchvale
Hall
Lochview
Walsingham
Kinross
Alton
Homebrook
Flowerdale
Te Aro
Bataford
Waihora
Silverlea
Waikewai
Thornybush
Lochlyn
TIMBER YARD RD
JOHNSTONS RD
MARSHALLS ROAD
SOUTHBRIDGE
VOLCKMAN ROAD
TRAMWAY
LEESTON ROAD
BEETHAMS
HILLS ROAD
BLUETTS ROAD
BEALEY ROAD
COWANS ROAD
CREAMERY ROAD
LEGGS ROAD
LAKE ROAD
CANTS ROAD
LOWER LAKE ROAD
TAUMUTU RD
RIDGE
LAKESIDE
HARTS ROAD
SEDGEMERE
LOCHHEADS
DIP ROAD
McCONNELLS
MATTHEWS ROAD
MILLTOWN
DUNSANDEL
ANDERSONS ROAD
COOPERS ROAD
WEBSTERS ROAD
HARMANS
MANSE RD
POOLES
IFFEREDAYS
PROSSERS
HANMER ROAD
RUSHBROOKS ROAD
AITKENS ROAD
COLLETTS RD
RESERVE ROAD
DRAIN ROAD
THE LAKE ROAD

ANNEXURE B

Ellesmere Sustainable Agriculture Incorporated

Membership Area


Rolleston
Broadfield
Burnham
Lincoln
Springston
Norwood
Selwyn
Ellesmere
Gould's Road
Springston South
Greenpark
Lake Crichton
Bankside
Brookside
Irwell
Irwell River
Lower Selwyn Huts
Doyleston
Leeston
Lake Ellesmere (Te
Ferndale Island
Southbridge
Lakeside
Rakaia Island
Mitchen
Sedgemere
Little Rakaia
Fishermans Point
Taumutu
Coopers Lagoon / Muriwai
Dorie
Rakaia Huts
Rakaia River

ANNEXURE C

Water Quality and Ecology Technical Report - Jacobs

For Leeston Stormwater Disposal

Resource Consent Application CRC186175

June 2018

See attached electronic file

ANNEXURE D

Environment Canterbury Request for Further Information

Resource Consent Application CRC186175

See attached electronic file

ANNEXURE E

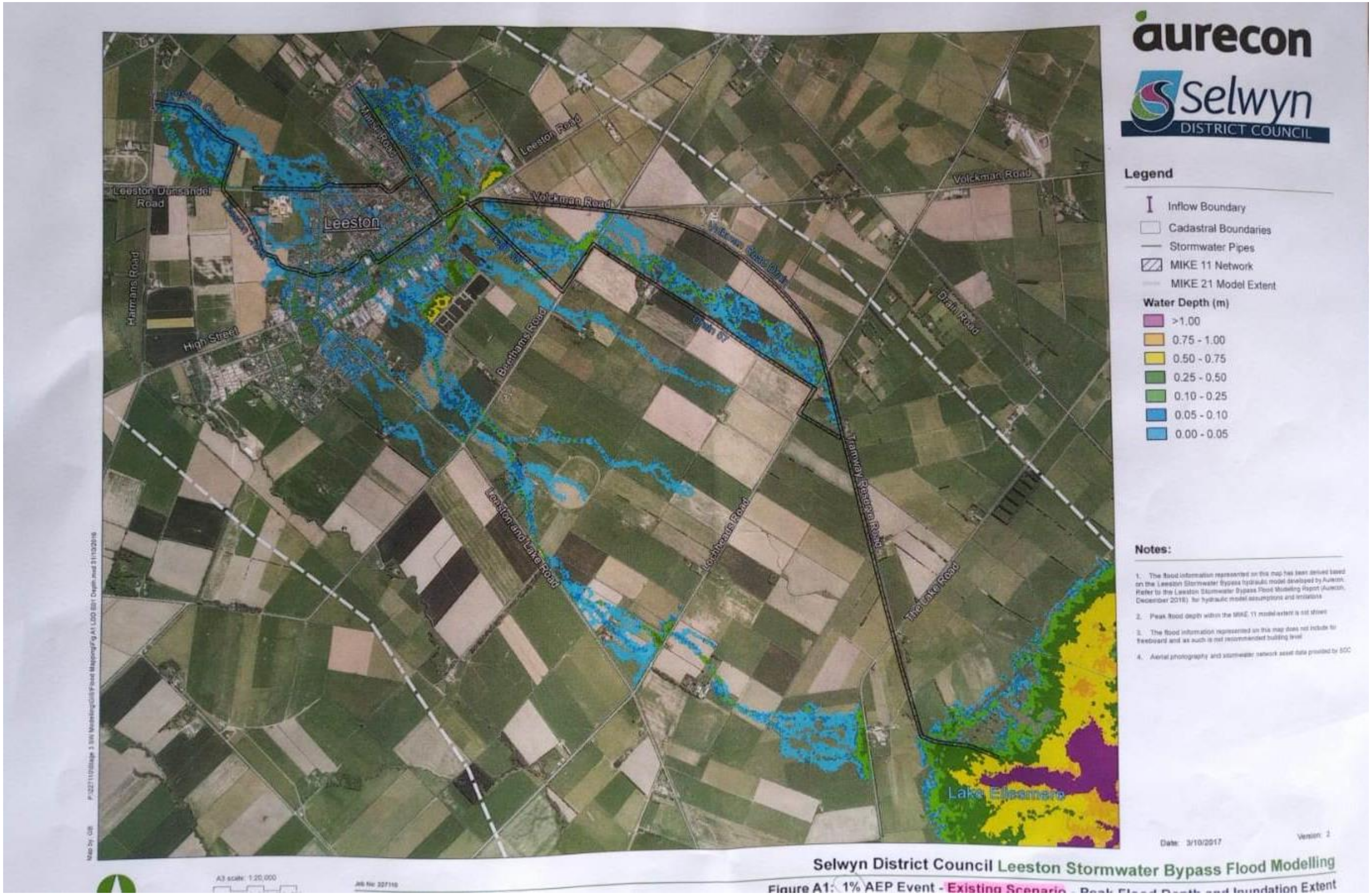
Birdlings Brook Water Level

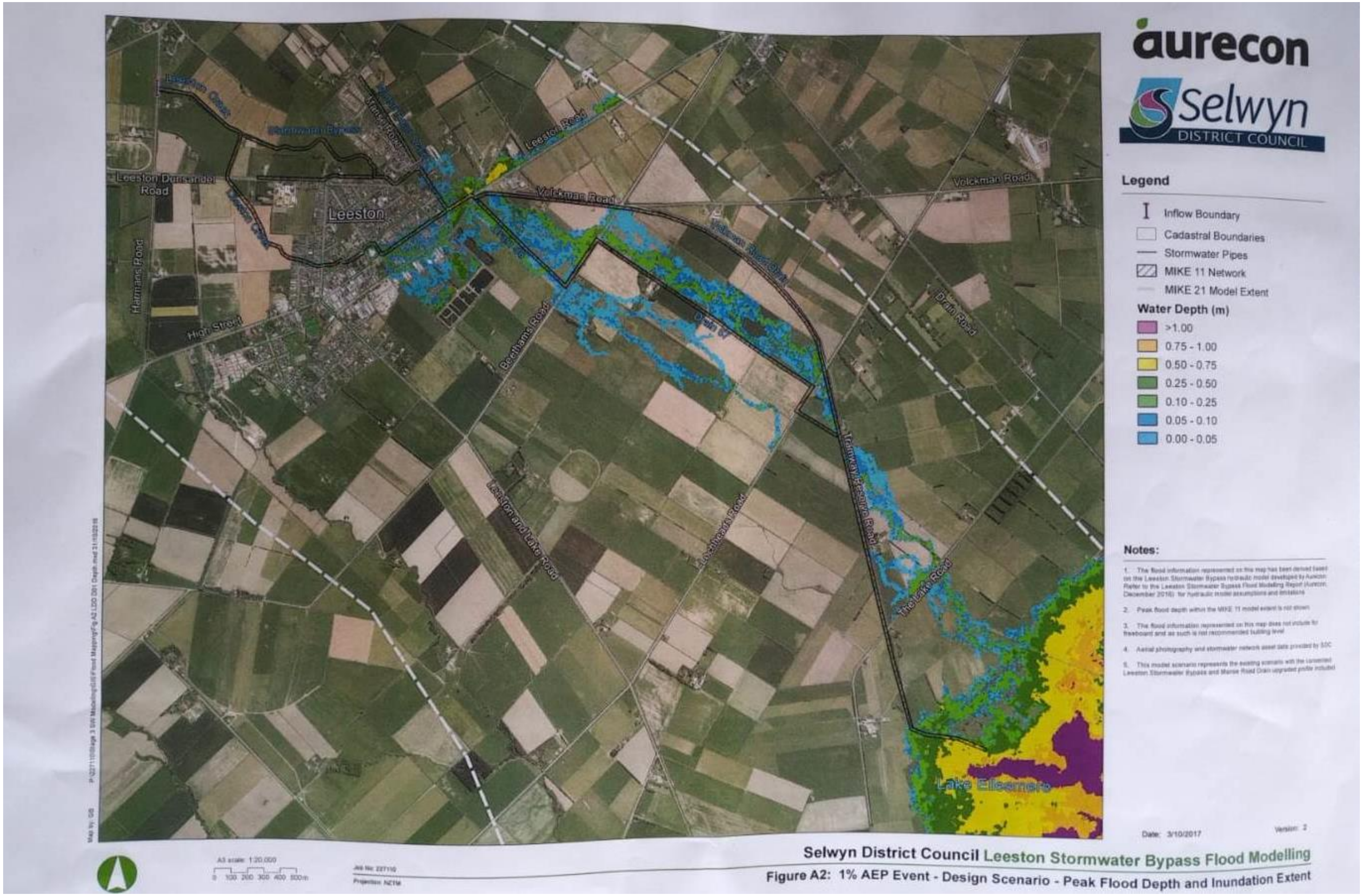
July 2017

ANNEXURE F

Leeston Stormwater Northern Bypass

Flood Modelling Maps


aurecon
Selwyn
DISTRICT COUNCIL
Legend
Inflow Boundary
Cadastral Boundaries
Stormwater Pipes
MIKE 11 Network
MIKE 21 Model Extent
Water Depth (m)
>1.00
0.75 - 1.00
0.50 - 0.75
0.25 - 0.50
0.10 - 0.25
0.05 - 0.10
0.00 - 0.05
Notes:
Leeston
Leeston Road
Volckman Road
Leeston Dunsandel Road
Harmans Road
High Street
Brennans Road
Drain Road
Drain 67
Tramway Reserve Road
Leeston and Lake Road
Lochheads Road
The Lake Road
Lake Ellesmere
Date: 3/10/2017
Version: 2
A3 scale: 1:20,000
Selwyn District Council Leeston Stormwater Bypass Flood Modelling
Figure A1: 1% AEP Event - Existing Scenario


aurecon
Selwyn
DISTRICT COUNCIL
Legend
Inflow Boundary
Cadastral Boundaries
Stormwater Pipes
MIKE 11 Network
MIKE 21 Model Extent
Water Depth (m)
>1.00
0.75 - 1.00
0.50 - 0.75
0.25 - 0.50
0.10 - 0.25
0.05 - 0.10
0.00 - 0.05
Notes:
1. The flood information represented on this map has been derived based on the Leeston Stormwater Bypass hydraulic model developed by Aurecon. Refer to the Leeston Stormwater Bypass Flood Modelling Report (Aurecon, December 2016) for hydraulic model assumptions and limitations
2. Peak flood depth within the MIKE 11 model extent is not shown
3. The flood information represented on this map does not include for freeboard and as such is not recommended building level
4. Aerial photography and stormwater network asset data provided by SDC
5. This model scenario represents the existing scenario with the consented Leeston Stormwater Bypass and Manse Road Drain upgraded profile included
Leeston
Leeston Creek
Leeston Dunsandel Road
Harmans Road
High Street
Volckman Road
Leeston Road
Beethams Road
Leeston and Lake Road
Drain Road
The Lake Road
Lake Ellesmere
Date: 3/10/2017
Version: 2
A3 scale: 1:20,000
0 100 200 300 400 500m
Selwyn District Council Leeston Stormwater Bypass Flood Modelling
Figure A2: 1% AEP Event - Design Scenario - Peak Flood Depth and Inundation Extent

aurecon

Selwyn DISTRICT COUNCIL

Legend

- Inflow Boundary
- Cadastral Boundaries
- Stormwater Pipes
- MIKE 11 Network
- MIKE 21 Model Extent

Difference (m)

- <0.50
- 0.25 - 0.50
- 0.10 - 0.25
- 0.05 - 0.10
- 0.02 - 0.05
- -0.02 - 0.02
- -0.05 - -0.02
- -0.10 - -0.05
- -0.25 - -0.10
- -0.50 - -0.25
- >-0.50

Notes:

1. The flood information represented on this map has been derived based on the Leeston Stormwater Bypass hydraulic model developed by Aurecon. Refer to the Leeston Stormwater Bypass Flood Modelling Report (Aurecon, December 2016) for hydraulic model assumptions and limitations.
2. The flood information represented on this map does not include for freeboard and as such is not recommended building level.
3. Aerial photography and stormwater network asset data provided by SDC.
4. See design report for a description of the mitigation measures included in this model scenario.

Date: 3/10/2017 Version: 2

A3 scale: 1:20,000
0 100 200 300 400 500 m

Job No: 227110
Projection: NZTM

Selwyn District Council Leeston Stormwater Bypass Flood Modelling

Figure A6: 1% AEP Event - Mitigation Option 1 Scenario - Existing Scenario Difference Map

8. Leeston

The township of Leeston is the largest township covered within this assessment. It has the greatest range of land use activities of the townships.

8.1 Description of existing environment and stormwater discharge

8.1.1 Leeston township description, stormwater network and discharge location

The Leeston network consent application area covers the existing urban and residential areas of Leeston. The township is located on the Canterbury Plains on Leeston Road between Doyleston and Southbridge. The landuse activities in the area are primarily residential with approximately 600 houses, and commercial areas including pubs, cafés, automotive servicing, vehicle sales yards, engineering workshops, a gym and Leeston School. The stormwater network is shown in Figure 15. There are large areas of reticulated piped networks flowing through the township. As for most towns the township network has developed over time so includes a range of pipe sizes and types. Of particular note for the network the stormwater within the township can be separated into three subcatchments based on where discharges flow to as follows:

Leeston Creek subcatchment - The main subcatchment is the northern portion of the township in which discharges all enter Leeston Creek. This area contains some areas of older housing where drainage is mostly captured in curb and channel before discharging to the creek. Some sections do have grassed berms over which stormwater can flow prior to capture. The most northerly area is a newer subdivision in which stormwater is captured into a wetland and treated. In recent years SDC have undertaken works through this area to increase the conveyance of stormwater which has involved upgrading sections of Leeston Creek and other pieces of the drainage network. Various discharges from the township enter Leeston Creek and the downstream location of all these discharges is the intersection between Leeston Road and Volckman Road. At this point Leeston Creek passes through a large engineered concrete drain. This is considered to be the monitoring point for the cumulative effects of discharges from this subcatchment of the township. This subcatchment comprises roughly two thirds of the townships area (112 ha) with the majority of the township's residential housing plus the town centre and main commercial activities.

Leeston Lake Drain subcatchment - The middle section of the township also has generally an older network with stormwater captured in curb and channel and some grassed berm areas. Three discharge points exist from this area. Two of the discharges are located just outside the township boundary on Leeston and Lake Road (Figure 16). Discharges occur on both sides of the road, one into a heavily vegetated drain (Leeston Lake Drain) which ultimately discharges into Birdling Brooks (Figure 15). The discharge on the other side of the road is into Beethams Drain that flows down Leeston and Lake Road and across into Birdlings Brook. The third discharge is to Chapmans Drain near Woodville Road. This is also an open grassed drain that is normally dry which flows into Birdlings Brook. The three discharge point picks up about a quarter of the townships stormwater (approximately 150 buildings or 35 ha).

Birdling Brook Stormwater Basin subcatchment – The smallest and most southerly catchment discharges to Birdlings Brook and captures stormwater from newer subdivision areas. This is treated in a dry pond system prior to discharge. The discharge site is located at the end of Clausen Avenue. The stormwater basin is grassed with small events infiltrating through the basin and only large events passing to the stream once the basin is full. The basin picks up flows from approximately 100 houses (22 ha). A small discharge occurs from the vegetated roadside drains alongside High Street flows into Birdlings Brook. This is located above the dry pond discharge and takes flows from the road and a small number of roadside properties.

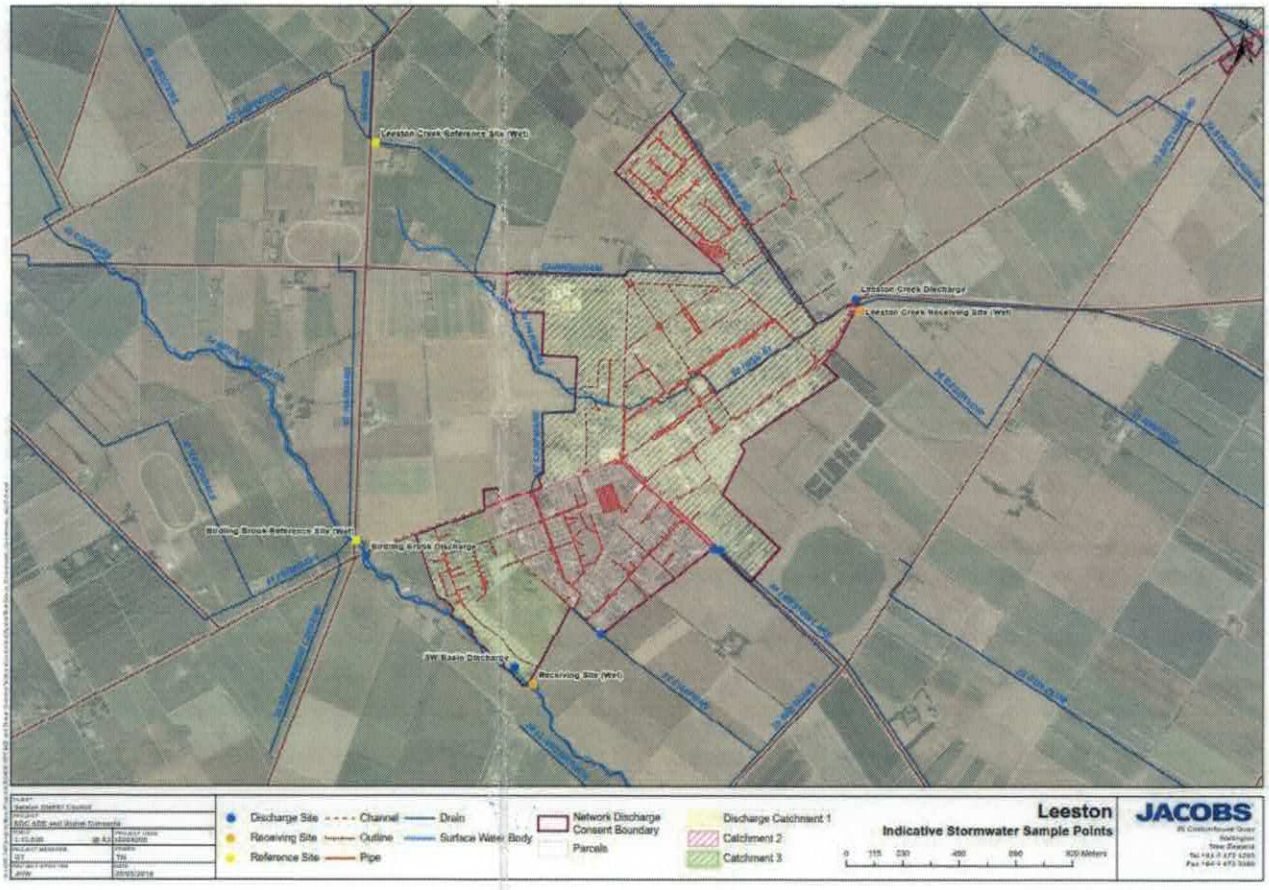


Figure 15 : Proposed Leeston stormwater network consent area and stormwater discharge points.

Figure 16 : Discharge points at Leeston. Left is the Birdling Brook stormwater basin, middle is Leeston Creek discharge and the right is Leeston Lake Drain discharge. All photos were taken on the 28 February 2017.

8.1.2 Monitoring sites

The stormwater discharge from the township flows ultimately into two waterways, Leeston Creek and Birdling Brook. Leeston Creek is a spring fed lowland stream. Numerous waterways and drains that are tributaries of the creek pass through Leeston before coming together near the junction of Leeston and Volckman Roads. Leeston Creek then flows through farmland towards Lake Ellesmere roughly 10 km away.

Birdling Brook is also a spring fed lowland stream located south of the township. Birdling Brooks flows along the township boundary and also ultimately flows into Lake Ellesmere. Leeston lake Drain enters Birdling brook downstream of Leeston.

Reference Sites

The reference site for Leeston Creek is located on Hermans Road approximately 150 m from the junction with Andersons Road (Figure 15). Leeston Creek is a small artificial intermittent stream/drain, which has some coverage from trees. The stream was dry at the time of dry weather sampling and showed a cracked soft sediment bottom with high vegetation along the stream. The creek flows through agricultural land before the township.

The reference site for Birdling Brook and Leeston Lake Drain was located just above the High Street and Hermans Road intersection. The site is characterised by starkly different land use from one side of the road to the other (Figure 17). There is high vegetation growth on the township side of Birdling Brooks in comparison to the grassed farmland on the opposite side. The site was dry during the dry weather site visit. This reference site is not directly upstream of Leeston Lake drain as the township drainage network forms all of the lake Drain catchment. This site is therefore the closest most relevant upstream point on an adjacent waterbody that can be monitored.

Figure 17 : Reference sites for Birdling Brooks (Left and middle) and Leeston Creek (Right). Photos taken 28 February 2017

Receiving Site

The receiving site for Leeston Creek was based at the junction between Leeston Road, Volckman Road and Station Street (Figure 18). The drain at the time of surveying 28th February 2017 was dry. The drain splits into two at this location with flows governed by manual control structures. The main flow follows Volckman Road. Leeston Creek Drain was observed to be flowing during a site visit on the 26th July 2017. This was following a large rain event that caused localised flooding across the district. Figure 18 contains images of the discharge point in both wet and dry weather. Leeston Creek is therefore an intermittently flowing waterbody.

The receiving site for the Leeston Lake Drain subcatchment is the Leeston Lake Drain that runs alongside Leeston and Lake Road. This is a grassed straightened drain that is intermittently flowing. Figure 16 shows a picture of the drain on the 26th July 2017 following heavy rain where a small clear baseflow could be seen in the narrow grassed channel.

The receiving site for the Birdling Brook stormwater basin discharge was located downstream of the township past the stormwater basin at the end of Clausen Avenue (Figure 18). The surrounding environment included farm land and new housing development. Birdling Brooks stream was dry at the time of surveying 28th February 2017, however was flowing during a wet weather survey on 26th July and therefore the stream is considered to be intermittent.

Figure 18 : Receiving sites for Birdling Brooks wet weather (top left) and dry weather (bottom left) and Leeston Creek wet weather (top right) and dry weather (bottom right). Photos taken on 28 February and 26 July 2017

8.1.3 Existing water quality

Leeston Creek and Birdling Brooks were visited in dry weather on the 28th February 2017. No water samples were taken as the sites were dry. Wet weather water quality samples were taken on the 9th October 2017 after a rainfall event during the 7th and 8th October 2017 and the data is provided in Table 17. The data indicates that:

- In the Leeston Creek subcatchment total suspended solids increased downstream of the township discharges as did total phosphorous.
- In this catchment all other parameters were in generally similar concentrations upstream and downstream. Copper and zinc were above guideline values both upstream and downstream of the cumulative township inputs.
- Birdlings Brook above and below the stormwater basin discharge had low total suspended solids and mostly broadly similar results for other parameters except metal concentrations.
- Dissolved zinc and copper were elevated above guidelines both upstream and downstream of the discharge point with higher concentrations observed downstream.

It is therefore likely that the various discharges into Leeston Creek are giving rise to the elevated total suspended solids that are being observed. Without having data from the discharge from the dry stormwater pond it cannot be easily concluded whether that discharge was giving rise to the slightly elevated metals concentrations recorded at the downstream site.

Table 17 : High flow data for upstream and downstream of discharge sites in Leeston. Samples taken 9 October 2017.

Parameter (mg/L unless stated)	Leeston Creek		Birdling Brook Stormwater Basin		Guidelines
	Reference	Receiving	Reference	Receiving	
Total Suspended Solids	<3	11	<3	<3	-
Dissolved Copper	**0.0025**	**0.0021**	**0.0011**	**0.0035**	0.001
Dissolved Lead	<0.0005	<0.0005	<0.0005	<0.0005	0.001
Dissolved Zinc	**0.008**	**0.009**	**0.007**	**0.011**	0.0024
Total Nitrogen	17.1	12.6	12.8	8.37	-
Total Ammoniacal – N	0.02	0.02	0.02	0.02	2.18
Dissolved Reactive Phosphorus	0.008	0.009	0.014	0.012	0.016
Total Phosphorus	0.008	0.025	0.028	0.021	-
pH	6.75	7.21	6.87	**6.48**	Between 6.5-8.5
Conductivity	530	559	431	452	
Temperature	12.5	12.8	12.8	12.6	<2 °C change

Note: [1]Guidelines from Canterbury Land and Water Regional Plan – Water Quality Management Units and Classes for Spring-fed Plains.

Data in BOLD indicates that results are above guideline values.

No historic water quality data is available for Birdling Brooks on the Canterbury maps system. However, there is water quality data available in a AEE collected by Kingett Mitchel Limited for Leeston Creek in 2006. The AEE was carried out for Leeston North Subdivision to support the application for a stormwater diversion channel and included the effects of subdivision construction activities. The monitoring was undertaken in winter after a few wet days when the creek was flowing. This data shows a broadly similar pattern of water quality to the recent wet weather data with total suspended solids rising slightly after passage of water through the township and copper and zinc being above guidelines but not changing much with passage through Leeston.

Table 18 : Water Quality in Leeston Creek near the reference site and receiving site (19 June 2006)

Parameters	Leeston Creek at Harmans Road (At SDC Reference site)	Leeston Creek at Manse Road/high street intersection (300m above SDC receiving site)	Leeston Creek 300m below SDC receiving site	Guidelines[1]
Total Suspended Solids	<3	10	13	-
Dissolved Copper	**0.0016**	**0.0017**	**0.0015**	0.001
Dissolved Lead	-		-	0.001
Dissolved Zinc	**0.008**	**0.05**	**0.005**	0.0024
Total Nitrogen	12	6.9	11	-
Total Ammoniacal – N	0.04	0.05	0.07	2.18[A]
Nitrate N + Nitrite N	-	-	-	-
Total Kjeldahl Nitrogen (TKN)	1.1	0.8	1.3	-
Dissolved Reactive Phosphorus	**0.019**	**0.026**	**0.039**	0.016
Total Phosphorus	0.043	0.056	0.087	-
pH	7.0	7.2	7.3	Between 6.5 – 8.5
Temperature (°C)	8.0	4.9	6.2	< 2°C change
Conductivity (mS/m)	48	28	41	-

Note: [1]Guidelines from Canterbury Land and Water Regional Plan – Water Quality Management Units and Classes for Spring-fed Plains.
[A] As total ammonia N at pH 7 for 95% protection level

Data in BOLD indicates that results are above guideline values.

8.1.4 Existing water use and value

Leeston Creek runs through agricultural land and is frequently modified and straightened. Birdling Brook also flows through agricultural land, however is visually more appealing with a more natural channel form. No recreational or amenity use of the waterways is known. There are no known consented surface water takes in the vicinity of the township, however there are two community drinking water protection zones within the township for well or bore takes. The stormwater discharge is not expected to impact the drinking water protection zones.

8.1.5 Existing ecology

Kingett Mitchell Limited undertook an ecological assessment alongside the water quality assessment for Leeston Creek in 2006 and identified the following:

- No periphyton growth due to the lack of a stony substrate to colonise.
- Macrophytes present close to reference site but none at the receiving site.
- All macrophtyes present were common and widespread, but regularly removed by contractors. Regular channel maintenance removes important macrophyte habitat for invertebrates and fish.
- Invertebrate communities are typical of lowland stream, being dominated by pollution tolerant amphipods and snails.
- No fish were recorded.

No existing ecological data was available for Birdling Brook, and the stream was dry at the time of the dry weather site visit. The habitat quality and ecological value is expected to be low as the stream is intermittent.

8.1.6 Stormwater quality

There is no existing stormwater quality data available for the six discharges form the three discharge subcatchments in Leeston. Stormwater is anticipated to contain the usual range of potential contaminants however it is the largest of all the townships being considered and contains the greatest variety of commercial activities. Stormwater quality is discussed for each subcatchment in turn:

Leeston Creek subcatchment – This is the largest subcatchment with the greatest amount of commercial activities and traffic generation. Leeston Creek receives the discharges from multiple sources and locations including the commercial activities within the township, which include: farm equipment stores, petrol station, restaurants and cafes and a supermarket. Closer to the township's centre there are less grassed areas and more kerb channel and sumps allowing untreated stormwater to enter into the engineered drain which flows from Messines Street to Station Road. It is therefore more likely that untreated stormwater is entering into the Leeston Creek discharge. Wet weather water quality data indicates that total suspended solids concentrations have risen with passage of Leeston Creek through the township and hence the township discharges may be contributing to these elevated concentrations. Within the north of this catchment is the Leeston North subdivision, from which stormwater passes through a wetland prior to entering Leeston Creek. Figure 19 contains an image of this wetland that was visually observed to be reducing turbid water to a much clearer discharge after passage through the wetland when visited after rain on the 26th July 2017. This wetland will provide for treatment of a proportion of the contaminants from this area. Overall given the size of the catchment and variety of landuses there is considered to be a medium risk of causing contaminated stormwater due to the untreated commercial landuse.

Leeston Lake Road subcatchment – This subcatchment contains mainly residential landuse and lower trafficked roads. As such it is likely to be of lower risk in terms of stormwater contamination than the Leeston Creek subcatchment.

Birdlings Brook Stormwater Basin – This catchment could be expected to be similar to the Leeston Lake Road subcatchment with a similar size and range of landuses. The final stormwater quality would be expected to be better given the presence of a new engineering dry pond system to provide treatment. However wet weather water quality data indicate that metal concentrations are rising downstream of the discharge which indicates that the stormwater could be having an impact.

Figure 19 : Wetland providing treatment of stormwater discharge from the northern subdivision of Leeston. Photo taken on the 26th July 2017

8.2 Assessment of Effects on the Environment

Water quality data is available from upstream and downstream of the stormwater discharges however no data is available from the discharges themselves, hence a semi-quantitative assessment of the potential effects of the discharges has been made. This assessment considers the primary contaminants associated with the stormwater and discusses them in turn.

8.2.1 Suspended Sediment

The wet weather monitoring data did not indicate any issues with the discharge from the Birdlings Brook dry pond system. This is as would be expected as the ponds are designed to contain stormwater prior to infiltration to ground in smaller events and only discharge directly in high flow events.

The data for Leeston Creek wet weather monitoring indicates that the township discharges may be contributing to the elevated suspended solid concentrations observed downstream of the township. However, concentrations at the receiving site, while higher than upstream, were not elevated to levels that may be likely to have ecological impacts. Concentrations in discharges of 50 mg/L are often used as limits on discharges to minimise the risk of adverse effects. Therefore, while this catchment may be giving rise to elevated suspended sediments they would appear to be unlikely to be having ecological impacts.

8.2.2 Nutrients

The township does not contain notable activities that would cause nutrient contamination above normal/residential stormwater. Water quality data from 2017 show similar concentrations of all parameters in upstream and downstream sites except total phosphorous which rose slightly. No guideline values exist for total phosphorous but the more bioavailable dissolved reactive phosphorous concentrations were below guideline values indicating that adverse effects on stream ecology are unlikely. Given the intermittent nature of the stream flow the growth of nuisance algae or excessive macrophytes as a result of this slight change in nutrient is considered to be unlikely.

8.2.3 Heavy Metals

Dissolved copper and zinc were elevated in both upstream and downstream sites in the wet weather sample taken from Birdlings Brook with concentrations increasing downstream of the dry pond discharge. This indicates that the township discharge may be having an impact on the water quality. It has been recommended as part of the Stormwater Monitoring Programme that discharge points are also sampled with the reference and receiving sites to aid future identification of the source of elevated metal concentrations, and further sampling would be required to build up a trend.

The wet weather water quality data for Leeston Creek again showed elevated concentrations of dissolved copper and zinc but concentrations were similar above and below the township.

No freshwater ecological assessment was conducted on Birdling Brooks as the stream was dry during the low flow season. However, it is assumed that, similar to Leeston Creek, the composition of invertebrates would be dominated by pollution and disturbance/intermittent flow tolerant species during wet weather. Therefore, the elevated heavy metals that may occur during high flow events are not expected to have the main controlling effect on the ecological value of the stream as the intermittent flow is considered most likely to be controlling the ecological value.

From the data provided Birdling Brooks discharge is expected to have a higher risk than the other discharge points of heavy metals entering into the downstream environment. Further sampling at the discharge point is required to identify if there is an issue within this catchment.

8.2.4 Hydrocarbons

Hydrocarbon concentrations are anticipated to be moderate due to the larger size of the township compared to the others within this assessment. Leeston therefore has greater amounts of traffic movements giving rise to a greater build up on drips of oils etc. Some stormwater passes through roadside swales and drains where passage through vegetation and soils will allow for adsorption of the hydrocarbons from where soil microbes can break them down over time. Other areas however do not have a similar level of treatment as the stormwater is captured in curb and channel areas.

The wetland servicing the Leeston North subdivision and the dry pond to the south are both expected to treat the hydrocarbon inputs such that no impact on the water quality and ecology below these sections of Leeston would be expected. The remaining areas of Leeston have less treatment and some hydrocarbons would be expected to enter the receiving waters.

If hydrocarbons are present in the stormwater then it is considered more likely these will be elevated early in a storm, as drips of hydrocarbons arising from oils and fuels from vehicles on roads/hardstanding are washed off. It is therefore considered that the majority of hydrocarbons entering dry channels such as the drains would be treated with the passage of smaller runoff events and the first flush of larger events through the soil. For Leeston Creek there would also be some adsorption within channel as the creek starts to pond after rainfall and then starts to flow. Given the fact that the Leeston Creek and drains are only intermittently flowing the ecology will be controlled primarily by the flow regime. Any small changes to water quality with hydrocarbon inputs at the start of rain events would not be expected to have an impact on the ecological values of the waterway.

8.2.5 Summary Assessment

Overall, the stormwater discharge from the six discharge points may be having some impacts on the water quality of Leeston Creek and Birdling Brook. This is primarily through sediment input to Leeston Creek and metals input to Birdling Brook. It is considered unlikely that these would be having a notable effect upon the ecology as the intermittent flow would be the primary control on the ecological value of the receiving environments. Due to the increases observed in some parameters it is recommended that further monitoring is undertaken for Leeston Township.

17 June 2019

Environment Canterbury
Regional Council
Kaunihera Taiao ki Waitaha

Customer Services
P. 03 353 9007 or 0800 324 636

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PO Box 345
Christchurch 8140

E. ecinfo@ecan.govt.nz

www.ecan.govt.nz

Jacobs New Zealand Ltd
Attn To: Ian Wiseman
PO Box 1147
Christchurch 8140

Dear Ian,

Request for Further Information

Response required by: 8 July 2019
Record Number/s: CRC186171
Applicant Name: Selwyn District Council
Activity Description: to discharge stormwater to surface water and onto or into land

Overview

As you are aware, Meg Buddle has been processing your consent application. So we can progress your application, we are asking for some further information under Section 92 of the Resource Management Act 1991 (RMA).

Options available to you are detailed below under **Response options**. Please complete one of these options by 8 July 2019. We need this information so we can understand any potential effects from your application. Without this further information, your application may have to be notified or declined.

Notification means that potentially affected parties and/or the general public are given the opportunity to raise their concerns or support for your proposal. Notification does not guarantee your application will be granted – there is the possibility it could be declined. For more information about notification, please go to https://ecan.govt.nz/do-it-online/resource-consents/notifications-and-submissions/.

Information requested

Meg Buddle has identified the following information which we need to understand your proposal fully.

A. Extra site inclusions from 2025

Since the proposal is now to include and manage the discharges from all sites within the respective Stormwater Management Areas, from January 2025, could you provide some background information on the extra sites ('high-risk sites') which are now going to be included in the consent come 2025, including:

1. Estimates of the number of high-risk sites which are currently discharging into the Selwyn District Council Network;
2. Estimates of the number of high-risk sites which currently discharge directly to surface water; and
3. Estimates of the number of high-risk sites which currently discharge directly onto or into land.

B. Hazards assessment

The stormwater network includes areas that have not yet had building, development or other impermeable hardstanding occur, meaning there is potential for increases to impermeable areas and therefore greater stormwater volumes. The application assessment suggests that the effects would be negligible, however, this is not quantified.

1. Please confirm that, for all the stormwater management areas with a greenfield component, those greenfield areas are not expected to be developed to introduce more impermeable area; and
2. If the relevant greenfield areas will experience future development, please provide justification as to how the effects of an increase in impermeable area would be negligible over the duration of the consent.

Mention is made of flooding within the *'surface water objectives'* and *'stormwater service targets'* of the stormwater management plans. Flooding is not included in the 'issues' sections, and no further details on flooding management are provided.

3. Please provide details on how flooding will be managed and incorporated into the stormwater management plans. Alternatively, you may wish to justify why flooding is not considered within the *'issues'* section of the stormwater management plans, and why details of flooding management are not necessary.

It is noted that many of the towns (*Springston, Leeston, Arthurs Pass, Doyleston, Glentunnel, and Lake Coleridge*) are currently only designed for a 2-year storm event, significantly below current engineering design standards. In other cases (*Dunsandel, Springfield, and Whitecliffs*) the design standard of the stormwater system is not identified.

4. Please identify the design standard of all stormwater systems;
5. There is no discussion within the stormwater management plans on improving the capacity of the existing stormwater network. Please discuss why improving the existing stormwater system is not included within the stormwater management plan, especially considering it is significantly below existing stormwater design standards.
6. Please discuss any initiatives that may be included in the stormwater management plans for the townships that are aimed at managing flooding from existing sites.

C. Surface Water & Ecology

1. Dunsandel, Glentunnel and Springston

The information and assessment of effects provided for the townships of Dunsandel, Glentunnel and Springston need to be provided to for our expert to determine whether the stormwater discharges cause, or will cause, any effects on the receiving environment.

a. Dunsandel

We require additional information to support your conclusion that the receiving waterbody, the unnamed tributary of the Irwell River (the 'Brookside Drain'), is normally dry outside of rain events. Could you:

i. Visit, and take a geo-tagged photo in dry weather conditions to show that the stream is dry. This should occur outside of the summer months.

b. Glentunnel

We require additional information to support your conclusion that the receiving waterbody, the Selwyn River, is not, or will not be, significantly affected by total suspended solids (TSS) present in stormwater discharges. Could you:

i. Measure the TSS concentrations in discharges to the waterbody during the next storm event, and estimate or measure the discharge rates during the time of sampling.

c. Springston

We require additional information to support your conclusion that the receiving water bodies, the Days Road Drain and the two tributaries of the Leeston Road Drain, are normally dry outside of rain events. Could you please:

i. Visit, and take a geo-tagged photo in dry weather conditions to show that the water bodies are dry. This should occur outside of the summer months.

2. Doyleston and Leeston

The information and assessment of effects provided for the townships of Doyleston and Leeston contain some inaccuracies and is insufficient for our expert to determine whether the stormwater discharges cause, or will cause, any effects on the receiving environment.

a. Doyleston

In our opinion, the limited water quality data presented in your application is not sufficiently robust to support the conclusion that the discharge of stormwater is not having, or will not have, an impact on the receiving surface water bodies of Boggy Creek and the Doyleston Drain ('Drain Road Drain'), as:

i. You have not provided any dry-weather water quality, sediment concentration or ecological sampling;

ii. There is insufficient wet-weather sampling data to be able to make categorical conclusions regarding the effects of stormwater discharges on the ecology of receiving water bodies;

iii. You have not presented sufficient evidence to support your view that the receiving waterbodies have no flow during dry weather and, as a result, there is limited potential for effects to arise from the discharge of stormwater to these streams;

iv. You have incorrectly applied the wrong Schedule 5 water quality standards in your assessment (used the 99% species protection threshold instead of the correct 95%). The discharges, when assessed using the correct threshold, in fact, did cause the Schedule 5 standards for zinc to be exceeded in Doyleston Drain on the day that sampling was conducted; and

v. Your assessment of the effects the stormwater discharges are having or will have, on water quality and ecology in Boggy Creek is not sufficient.

Please provide an assessment of the effects of the discharges from the Doyleston Township taking the above points into account.

Please also provide:

vi. An explanation of why water quality and ecology in Boggy Creek itself were not assessed as part of the AEE (if no reasonable explanation can be given, a proper assessment of water quality will be required);

vii. Any additional information to support your assumption that Doyleston Drain and Boggy Creek only flow during wet-weather (if such evidence exists, the recommended dry weather and ecological monitoring should not be required).

b. <u>Leeston</u>

In our opinion the limited water quality data presented in your application is not sufficiently robust to support the conclusion that the discharge of stormwater is not having, or will not have, an impact on the receiving surface water bodies of Leeston Lake Road, Chapman or Beetham drains, as:

i. You have not provided any dry-weather water quality, sediment concentration or ecological sampling;

ii. There is insufficient wet-weather sampling data to be able to make categorical conclusions regarding the effects of stormwater discharges on the ecology of receiving water bodies;

iii. You have not presented sufficient evidence to support your view that the receiving waterbodies have no flow during dry weather and, as a result, there is limited potential for effects to arise from the discharge of stormwater to these streams; and

iv. You have incorrectly applied the wrong Schedule 5 water quality standards in your assessment (used the 99% species protection threshold instead of the correct 95%). The discharges, when assessed using the correct threshold, in fact, did cause the Schedule 5 standards for copper and zinc to be exceeded in the waterbodies on the day that sampling was conducted.

Could you revisit your assessment of the effects of the discharges from the Leeston Township taking the above points into account.

Please also provide:

v. End-of-pipe ammonia, phosphorus and *E. coli* concentrations;

vi. An explanation as to why water quality and ecology in Leeston Lake Road, Chapman and Beetham drains were not assessed as part of the AEE;

vii. Confirmation of the location of receiving environment monitoring sites for Leeston Lake Road, Chapman and Beetham drains; and

viii. Any additional information you may have to support your assumption that Leeston Creek and Birdlings Brook only flow during wet-weather.

D. Groundwater

Your groundwater assessment has been examined by one of our groundwater scientists. As a result of his advice, our main concerns are around groundwater mounding and potential effects on groundwater quality in private wells that supply drinking water.

Could you please provide further information around:

a. How you plan to mitigate the effects of stormwater discharges on groundwater quality in private wells that are used for drinking water within the discharge areas

b. Any past observations groundwater mounding at/ or near the discharge points. How do you plan to manage/ mitigate effects on groundwater quality at the discharge sites with a high groundwater table.

c. Any measurements you may have for the depth to groundwater at the soak hole sites in the township of Dunsandel.

E. Monitoring Programmes

1. Groundwater

Please provide an updated monitoring programme for each township which, as appropriate, includes sufficient baseline and ongoing monitoring to detect:

a. If or when groundwater contaminant concentrations, in the vicinity of the existing or future discharges of stormwater to land, exceed the Canterbury Land and Water Regional Plan (LWRP) Schedule 8 water quality standards; and

b. If the existing or future discharges of stormwater to land are causing the exceedance.

2. Surface water quality and ecology

a. Dunsandel and Springston

If the receiving water bodies are found to be ephemeral through the investigations required above, then dry-weather water quality, sediment quality and ecological monitoring should not be required. However, if the receiving water bodies are found to have a baseflow outside of rain events, dry-weather water quality, sediment quality and ecological monitoring should be required so that any changes resulting from a shift in land-use, climate, or traffic volume can be detected and managed. Monitoring should include:

i. Quarterly dry-weather water quality monitoring for five years if wet-weather sampling reveals increasing trends in contaminant concentrations or exceedances of the LWRP Schedule 5 water quality standards;

ii. Three-yearly sediment quality monitoring, beginning the first year of the consent; and
iii. Invertebrate sampling two times in every five-year period beginning the first year of the consent, with samples being taken on non-consecutive years.

b. Glentunnel and Whitecliffs

The monitoring plan should be amended to include, for the respective discharge points to the Selwyn River:

i. Quarterly dry-weather water quality monitoring for five years if wet-weather sampling reveals increasing trends in contaminant concentrations or exceedances of the LWRP Schedule 5 water quality standards; and
ii. Three-yearly (instead of five yearly) sediment quality monitoring, beginning the first year of the consent.

c. Doyleston and Leeston

The draft monitoring programme is not robust enough to establish a baseline or detect trends in water quality, sediment quality or ecology. We recommend that:

i. Two rounds of wet-weather water sampling every third year beginning the first year of the consent;
ii. Quarterly in-stream water sampling be conducted (for Doyleston in Doyleston Drain and Boggy Creek (not it's tributary); and for Leeston in Leeston Creek and Birdlings Brook) for the first five years of the consent (or monthly sampling for two years);
iii. Annual ecological monitoring be conducted (for Doyleston in Doyleston Drain and Boggy Creek (not it's tributary); and for Leeston in Leeston Creek and Birdlings Brook) for at least the first five years of the consent;
iv. Sediment quality be monitored every three years; and
v. Dissolved organic carbon and hardness be measured in all water samples.

d. Arthur's Pass and Lake Coleridge

Water quality, sediment quality and ecological monitoring is required in the unnamed creek so that any changes resulting from a shift in land-use, climate, or traffic volume can be detected and managed.
Monitoring (for Arthur's Pass in the Bealey River, and for Lake Coleridge in the unnamed creek only) should include:

i. Two rounds of wet-weather water sampling every third year beginning the first year of the consent;
ii. Quarterly dry-weather water quality monitoring for five years if wet-weather sampling reveals increasing trends in contaminant concentrations or exceedances of the LWRP Schedule 5 water quality standards;
iii. Three-yearly sediment quality monitoring, beginning the first year of the consent; and
iv. Invertebrate sampling two times in every five-year period beginning the first year of the consent, with samples being taken on non-consecutive years.

3. <u>Tangata Whenua Values</u>

Where appropriate, could you update your proposed monitoring programme for each township to show the details of your ongoing monitoring regarding the effects of the existing and future discharges of stormwater on Tangata Whenua values.

Response options

The options available to you are set in Section 92A(1) of the RMA. You must choose one of the following options.

A. **Supply the requested information** by 8 July 2019.

   If the information can be easily collated and supplied by this date, please provide it in writing (via email is fine) to Meg Buddle.

B. **Agree in a written notice** by 8 July 2019 to supply the information requested.

   Sometimes technical information will take some time to collate or key contacts may not be immediately available. If you need a longer period of time to supply the information requested, please contact Meg Buddle to advise when you can provide the information. You can do this via email or letter.

C. **Refuse in a written notice** by 8 July 2019 to supply the requested information.

   If you chose Option C, section 95C of the RMA requires us to publicly notify your application. If you receive submissions on your application, then you can expect to go through a resource consent hearing process. The charges fact sheet at this link indicates likely costs for a resource consent hearing: https://ecan.govt.nz/do-it-online/resource-consents/first-steps-and-costs/. You should be aware that your application could be declined through this process.

If you chose not to respond to this letter, then the process for Option C. applies.

If you would like to discuss this request in more detail, please don't hesitate to contact Meg Buddle at meg.buddle@ecan.govt.nz or 03 367 7408.

Yours sincerely,

Catherine deGraaff
Team Leader Consents Planning

cc:
Selwyn District Council
Attn To: Murray England
PO Box 90
Rolleston 7643