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OTAGO REGIONAL COUNCIL

**NOTICES OF REQUIREMENT**

Waitaki District Plan

31 May 2022

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## REPORT INFORMATION

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# A

## **ANNEXURE A**

Notice of Requirement for Designation

**NOTICE OF REQUIREMENT BY REQUIRING AUTHORITY FOR DESIGNATION**

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Sections 145, 168(1), (2), 168A, and 181, and clause 4 of Schedule 1, Resource Management Act 1991

To Waitaki District Council

1. The **Otago Regional Council** (“**ORC**”) gives notice of a requirement for a designation for a public work where a restriction is necessary for the safe and efficient functioning and operation of that public work. The purpose of the designation is:

*Lower Waitaki Flood Protection which includes all groynes, cross banks and floodways and those works, structures, facilities, devices and appliances associated with the assets and all activities relating to the assets, including construction, operation, maintenance, repair, reconstruction, extension, modification, replacement and improvement.*

The ORC is a requiring authority pursuant to section 166 of the Resource Management Act 1991 (“**the RMA**” or “**the Act**”).

2. The sites to which the requirement applies are described as flood protection assets in the Lower Waitaki, as shown in the Appendices. Legal descriptions of the sites are set out in **Appendices A - C**.

The notice of requirement includes land that is located within the Rural Scenic and Rural General Zones. Copies of plans and photographs of the works are included in the Appendices.

3. The nature of the work is:

The Otago Regional Council’s existing flood protection assets on the Lower Waitaki Plain. In general, this includes

- Henderson and Waikoura Creeks Floodway
- Hilderthorpe Floodway
- Flood protection assets

The flood protection assets that are the subject of this Notice of Requirement include:

- **Groynes** – embankments built out from a riverbank to help control erosion.

- **Cross-banks** – banks that have been built to guide water away from entering low lying land.
- **Floodways** – channels that convey flood water; in respect of the Lower Waitaki Floodways these convey water from surrounding farmland and tributaries of the Waitaki, rather than the river itself.

The existing infrastructure at these sites will continue to operate within the terms of the designations. The work includes the operation, erection, installation, maintenance, replacement, alteration, upgrading, improvement and removal of the works, structures, facilities and devices.

Plans and photographs are attached within **Appendices A - C**.

This Notice of Requirement is for designations for the ongoing use of the sites for flood protection purposes. The designations also provide for the ongoing operation, maintenance and upgrading of these facilities. Any changes to the established infrastructure will be subject to the Outline Plan procedures as set out in Section 176A of the RMA, and the conditions of the designation as set out in **Appendix D** attached.

4. The nature of the proposed conditions that would apply are:

The designation purpose sought for these sites is:

- Henderson and Waikoura Creeks Floodway
- Hilderthorpe Floodway
- Flood protection asset

The nature of the work is defined in Section 3 above. This will allow for existing works and facilities on the site, as well as any future upgrades.

This Notice seeks to establish conditions on the new designations which have been designed to:

- Provide a level of consistency for the operational requirements of the assets;
- Balance managing potential environmental effects with the operational requirements of flood protection assets; and
- Reflect the predominant character of the area in which they are located.

The conditions cover the following:

- The bulk and location of structures;
- Accidental discovery protocols; and
- Construction and maintenance noise.

An advice note detailing when an Outline Plan of Works is required is also proposed.

These conditions are proposed to ensure that any potential environmental effects are avoided, remedied, or mitigated where necessary and to an appropriate level.

Please refer to **Appendix D** for the proposed designation conditions to apply to the respective designations.

5. The effects that the work will have on the environment, and the ways in which any adverse effects will be mitigated, are:

**Annexure A** sets out the full assessment of environmental effects and details of the ways in which any adverse effects will be mitigated, along with a statutory assessment.

The Notice of Requirement enables the continued reliance on the existing flood protection assets and any further works consistent with the purpose of the designation, subject to compliance with the designation's conditions. Detail of any new works to be undertaken will be provided and managed in accordance with the Outline Plan process (section 176A of the Act) and the conditions of the designation.

6. Alternative sites, routes and methods have been considered to the following extent:

In considering the effects on the environment of allowing the requirement, section 171 (1) of the RMA requires the Council to have particular regard to whether adequate consideration has been given to alternative sites, routes, methods of undertaking the work, only if:

- a) The Requiring Authority does not have an interest in the land sufficient for undertaking the work; or
- b) It is likely that the work will have significant adverse effects on the environment.

In the case of the ORC's flood protection assets, consideration of alternative sites and locations is not required, and has not occurred. Flood protection assets already exist on the sites and have been in place for several years. While many of the specific assets are on Crown land, immediately adjoining property owners are direct beneficiaries of this infrastructure. Similarly, the land occupied by the floodways continues to be available for general rural activities when not in use.

Some of the assets cross legal road reserve that is administered by Waitaki District Council and/or Waka Kotahi NZ Transport Agency, railway land which is administered by KiwiRail, or the high voltage line corridor, administered by Transpower New Zealand Limited.

There will be no significant adverse effects on the environment resulting from the works (refer Section 5 above, and the attached assessment of environmental effects). On this basis, no consideration of alternative sites is required.



*Alternative Planning Methods:*

Alternative planning methods have been considered and partially implemented. It is considered that the designation process is appropriate in terms of providing for this infrastructure. Designating the land provides certainty for the ORC that the land can be used for flood protection purposes. It also provides the ORC with flexibility to manage its assets in a manner that ensures its effectiveness while enabling the continued use of the land by its owners. In addition, the designation process allows for the flood protection assets to be clearly defined for each site and the specific boundaries of the activity to be identified in the Waitaki District Plan.

In addition to the protection offered by the designation, the Council has an established bylaw in place (the Flood Protection Management Bylaw 2012), which also manages activities in proximity to these assets. The designation offers a complementary approach, highlighting the importance of these assets at a local level.

A designation therefore provides certainty to both the requiring authority and the community in terms of what can be expected to occur on the site into the future.

7. The work and designation are reasonably necessary for achieving the objectives of the requiring authority because:

The objectives of the Requiring Authority are as follows:

- To protect the ongoing integrity and effectiveness of the ORC's flood protection assets within the Lower Waitaki area from inappropriate development.
- To enable ongoing reliance on the existing flood protection assets across the Lower Waitaki.
- To provide positive outcomes that provide for the health and safety of the local community.
- To enable the control of activities that can impact on the efficiency and effectiveness of the ORC's assets.

These sites sought to be designated are currently, and will continue to be, used to accommodate floodways, stop banks and river groynes associated with the ORC's flood protection assets in the Lower Waitaki.

The existing assets on the sites sought to be designated are an integral and important part of what are now the ORC's flood protection assets within this geographic area. The assets were first established in the 1950's with groynes being established as part of the 1977 Lower Waitaki Catchment Control Scheme. Active berm management commenced as part of the 1984 Scheme review. As a whole, these assets service both the local communities and wider public with flood protection.

The continued operation, maintenance and improvement of the ORC's flood protection assets is vital and it is important that the assets are correctly designated under the RMA to ensure that the range of necessary activities and suitable land uses are appropriately provided for in the District Plan.

It is important to ensure that the Waitaki District Council recognises these needs and gives a clear indication to the public of the location and use of the sites through their designation in the District Plan.

Consideration has also been given to the use of the designation procedure. Designating the land provides certainty for the ORC that the land can be used for flood protection purposes. Designating the land will enable the subject land to be used for its intended purpose, while accurately specifying the boundaries of the land to which these activities will occur. The Notice of Requirement also states that the designation of the subject land will provide the flexibility for the Requiring Authority to upgrade the site in the future to reflect demand and changing technology.

Maintenance and upgrades are an essential function of the ORC's flood management functions and can occur on both a planned and unplanned basis. Upgrades are anticipated to take the form of raising the heights of cross banks and groynes, and deepening floodways. The outline plan procedure under section 176A of the Act provides the requiring authority with a degree of certainty that it can conduct essential maintenance when needed in the future. It also provides the requiring authority and territorial authority with an effective and efficient means for communicating and regulating activities for ensuring compliance with the RMA, and the site's neighbours with reasonable expectations as to the nature of activities that may occur within the designation.

8. The following consultation has been undertaken with the parties that are likely to be affected:

As the flood protection assets that are the subject of this notice of requirement are existing, the effects of the works are known. Consultation will occur in the second half of 2022, and this section will be updated once consultation has occurred.

9. The Otago Regional Council attaches the following information required to be included:

The following is attached to this Notice of Requirement:

- **Annexure B**- Assessment of Relevant Statutory Plans and Assessment of Environmental Effects
- **Appendix A** – Henderson/Waikoura Creeks Floodway
  - Legal description and ownership detail
  - Record of Title

- Photographs
- Plan
- **Appendix B** – Hilderthorpe Floodway:
  - Legal description and ownership detail
  - Record of Title
  - Photographs
  - Plan
- **Appendix C** – Flood Protection Assets (cross banks and groynes):
  - Legal description and ownership detail
  - Record of Title
  - Photographs
  - Plan
- **Appendix D** – Conditions

The Operative District Plan identifies the following specific information requirements for notices of requirement, and the table below identifies where each matter is discussed within this notice of requirement.

Details of the Order in Council or empowering legislation which allows the applicant to be a requiring authority, including any specified terms or conditions attached to the Order in Council.	Form 18, paragraph 1
A statement of how the requirement meets Part 2 of the Act.	Annexure A
A statement of the objectives the project or work is aiming to achieve.	Form 18, paragraph 7
The degree to which the requirement meets the objectives and policies of the Plan.	Annexure A
The relationship of the work to, or effect on, any relevant provisions of national or regional policy statements and regional plans.	Annexure A
Details of land ownership, acquisition and site clearance.	Form 18, paragraph 2, and appendices
The proposed sequence and timing of the work, clearly identifying any part which may not be commenced or completed within 5 years time.	NA – existing assets
Proposals for the use and maintenance of those parts of the land which will not be developed for 5 years or more, in particular, identification of those buildings and structures which could continue to be used and maintained in the meantime.	NA – existing assets

Identification of any other designation or heritage order applying to the site, whether it has been given effect to, and the effect the requirement may have on the existing designation or heritage order.

Annexure A

Signature:

Otago Regional Council

General Manager Operations – Dr Gavin Palmer

Dated at Dunedin this \_\_\_\_\_ day of \_\_\_\_\_ 2022

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**Note to person giving notice**

If the notice relates to a requirement for a designation, or an alteration to a designation, under section 168A of the Resource Management Act 1991, you must use—

- this form if the requirement is lodged with the Environmental Protection Authority; or
- form 20 if the requirement is not lodged with the Environmental Protection Authority.

If the requirement is lodged with the Environmental Protection Authority, you must also lodge a form in form 16A at the same time.

You must pay any charge payable to the territorial authority for the requirement or alteration to the requirement under the Resource Management Act 1991.

If this notice is to the Environmental Protection Authority, you may be required to pay actual and reasonable costs incurred in dealing with this matter (see section 149ZD of the Resource Management Act 1991).

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**B**



## **ANNEXURE B**

Assessment of Relevant Statutory  
Plans and Assessment of  
Environmental Effects

## STATUTORY ASSESSMENT

Section 171(1) of the Resource Management Act 1991 (“**RMA**” or “**the Act**”) outlines the matters that a territorial authority must have particular regard to when considering a Notice of Requirement (“**NoR**”). Subject to Part 2,<sup>1</sup> the territorial authority must consider the effects on the environment of allowing the NoR, having particular regard to any relevant provisions of a policy statement or plan.

Aside from the Resource Management Act 1991, the relevant policy statements and plans include:

- National Policy Statement for Freshwater Management 2020
- New Zealand Coastal Policy Statement 2010
- National Policy Statement for Electricity Transmission 2008
- Partially Operative Otago Regional Policy Statement 2015
- Proposed Otago Regional Policy Statement
- Regional Plan: Water for Otago
- Regional Plan: Coast for Otago
- Waitaki District Plan
- Kai Tahu ki Otago Natural Resource Management Plan 2005
- Flood Protection Management Bylaw 2012

## PART 2 OF THE RMA

### Section 5

The flood protection assets that the Otago Regional Council (“**ORC**”) is responsible for are a physical resource of significant regional importance to the Lower Waitaki community.

The provision of reliable and effective flood protection is critical for the social and economic wellbeing of the local community and for its health and safety. The assets play a vital role in managing natural hazards and their potential impacts on the local community, ensuring that current and future growth in this region will be provided for. The designations are therefore consistent with section 5(a) of the RMA.

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<sup>1</sup> It is understood that the Court of Appeal decision in R J Davidson Family Trust v Marlborough District Council means that there is no need to resort to Part 2 unless doing so would add something beneficial to the process. This is not the case here because the relevant planning documents are valid documents that give complete coverage over the proposed activity and potential effects. However, should the Council be assisted by such an assessment in this case, consideration of Part 2 is provided.

The nature of the proposed designation is such that it will not have any particular effect on the life supporting capacity of air, water, soil or ecosystems, and is therefore not contrary to section 5(b) of the RMA.

The effects of the flood protection assets are assessed below. In particular, the effects in relation to landscape and visual amenity, hydrology, risk, and noise and traffic have all been considered. It is concluded that the designation of the infrastructure in the District Plan with appropriate conditions will ensure that potential adverse environmental effects are adequately avoided, remedied, or mitigated. Accordingly, this NoR is consistent with section 5(c) of the RMA.

## **Section 6**

Section 6 identifies matters of national importance that all persons exercising functions and powers under the RMA must recognise and provide for. Two of the eight matters listed are of relevance to this NoR, as below:

- (a) the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development:*
- (h) the management of significant risks from natural hazards.*

The effects of the proposed designation on the preservation of the natural character of the coast, wetlands, lakes and rivers and their margins are assessed below. That section also contains a similar assessment in respect of the protections of these areas from inappropriate subdivision, use and development. The section concludes that the NoR will have no impact in respect of these areas, because the assets that are subject to this NoR are existing. Conditions on the designation and the requirement to submit outline plans of works for any works proposed will also ensure that future works can be appropriately managed. On this basis, the NoR is considered to be consistent with section 6(a) of the Act.

The NoR also seeks to support the ORC's existing approach to the management of flood risk in this area of the Lower Waitaki Plain. As such, the NoR is considered to appropriately recognise and provide for the management of significant risks from natural hazards as required by section 6(h) of the Act.

## **Section 7**

Section 7 of the RMA identifies additional matters that consent authorities shall "have particular regard to" when exercising their functions and powers under the Act. With respect to this NoR, the following matters are considered to be relevant:

- (b) the efficient use and development of natural and physical resources:*



- (c) the maintenance and enhancement of amenity values:*
- (f) maintenance and enhancement of the quality of the environment:*
- (g) any finite characteristics of natural and physical resources:*
- (h) the protection of the habitat of trout and salmon; and,*
- (i) the effects of climate change.*

This flood protection infrastructure is by necessity located within the communities that it serves. Protecting and maintaining this infrastructure will continue to ensure that the local community benefits from the Council's assets during flood events and high flows. Similarly, the designation will provide the Council with the ability to actively manage land use activities to ensure that the effectiveness of the assets can be protected. On this basis, the NoR is considered to promote the efficient use of resources, and to accord with section 7(b) of the Act.

The proposed NoR will not impact on amenity values within the context of the receiving environment as set out below. The Council's designated assets will commonly be available for activities typically found within the area, and thus will have no impact in respect of amenity values. Exclusions from those will typically only be during high flows or infrequent maintenance activities. As a result, it is considered that the amenity values of the area will be maintained and enhanced. Accordingly, the NoR is considered to be consistent with section 7(c) of the RMA. Similarly, the NoR is considered to maintain or enhance the quality of the environment, given that the designation of the existing assets will not result in any changes to the character of the receiving environment, and it is thus considered that the NoR is consistent with section 7(f) of the Act.

The NoR does not result in any changes to the finite characteristics of natural and physical resources. The designated areas will continue to be available for activities undertaken in accordance with the requirements of the District Plan, provided they meet the Council's operational requirements for the assets. As such the NoR will not result in any change to the finite characteristics of the physical land resource, and this aspect of the NoR meets the requirements of section 7(g) of the RMA.

The designation of the Council's flood protection assets in the Lower Waitaki will not impact on the habitat of trout and salmon. The designations are primarily located on land, however where the proposed requirement also impacts on the beds of waterways, habitat available (and fish passage) will be unaltered. On this basis the NoR accords with section 7(h) of the RMA.

The NoR specifically provides an opportunity for the Council to respond to the effects of climate change. As set out below, the Council is seeking to provide a more coherent response to the increasing frequency of storm events, by ensuring that land use activities within and adjacent to the Lower Waitaki Flood Protection assets are managed

appropriately via a suite of mechanisms. As such, the NoR is considered a suitable response to the effects of climate change, as set out in section 7(i) of the RMA.

On this basis, the designation of the Council's assets is well aligned with section 7 of the Act.

## Section 8

Section 8 of the RMA sets out that all persons exercising functions and powers under the RMA, in relation to managing the use, development and protection of natural and physical resources, shall take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).

The assessment of actual and potential cultural effects below provides an overview of sites of cultural significance to Māori, and will be further informed by the consultation and engagement that is undertaken in respect of the NoR. Of note, the area includes the following recorded features of interest to Māori:

- Statutory Acknowledgement for the Waitaki River under the Ngai Tahu Claims Settlement Act 1998.
- Statutory Acknowledgement for Te Tai o Arai Te Uru (the Otago Coastal Marine Area) under the Ngai Tahu Claims Settlement Act 1998.
- Nohoanga sites at Ferry Road and the Waitaki River Mouth.

None of these sites are impacted by the proposed designation.

## NATIONAL POLICY STATEMENTS

### National Policy Statement for Freshwater Management 2020

The National Policy Statement for Freshwater Management 2020 (“the NPSFM”) builds on previous National Policy Statements for Freshwater Management (dated 2014 and 2017). It provides a policy framework for the management of freshwater resources throughout New Zealand. The NPSFM includes a single overarching objective that is to:

*... ensure that the natural and physical resources are managed in a way that prioritises:*

- (a) First, the health and well-being of water bodies and freshwater ecosystems*
- (b) second, the health needs of people (such as drinking water)*
- (c) third, the ability of people and communities to provide for their social, economic, and cultural wellbeing, now and in the future.*

This objective embodies the principle of Te Mana o te Wai. Policy 1 seeks to ensure that freshwater management is undertaken to give effect to Te Mana o te Wai. Part 1.3 of the NPSFM provides additional detail as to the fundamental concept that is Te Mana o te Wai,

and notes that it encompasses six principles relating to the roles of both tangata whenua and other New Zealanders, being mana whakahaere, kaitiakitanga, manaakitanga, governance, stewardship and care and respect. Similarly, Policy 2 seeks to ensure that tangata whenua are actively involved in freshwater management, and that Māori freshwater values are identified and provided for.

The designation of the ORC's flood protection assets on the Lower Waitaki is aligned with the principle of Te Mana o te Wai. The designation seeks to enable the effective and efficient management of high flows and flood management. The designation of these assets will not impact on the health and wellbeing of the waterbodies affected, nor on the health needs of people, but will enable the community to provide for its social, economic and cultural wellbeing, both now and into the future.

The requiring authority recognises the principles of mana whakahaere, kaitiakitanga and manaakitanga, and power, authority and obligations of tangata whenua in relation to freshwater. The other principles of stewardship, and care and respect, that seek for all New Zealanders to care for freshwater and to manage freshwater in a way that sustains present and future generations, are to be upheld. While engagement with mana whenua has not yet occurred, it will commence in early 2022, and the outcomes of that engagement will be incorporated into the NoR when it is lodged with the Waitaki District Council.

Policy 3 of the NPSFM seeks to ensure that freshwater is managed in an integrated way that considers the effects of the use and development of land on a whole-of-catchment basis, including the effects on receiving environments. The NoR embodies this principle, as it proposes the management of floodwaters and high flows in an integrated manner. The designation is proposed in addition to the ORC's existing Flood Protection and Management Bylaw 2012, providing for the integrated management of the assets whilst enabling the continued use of the land by property owners and protecting the lower Waitaki area from high flows.

Policy 4 of the NPSFM directs that freshwater is managed as part of New Zealand's integrated response to climate change. Climate change is resulting in heightened intensities and frequencies of storm events, which results in a greater need for protection from the adverse effects of these events. The proposed designation provides a suitable response to these events, whilst enabling the protection of the community from natural hazards.

Policy 6 seeks to avoid further loss of extent of natural inland wetlands. The proposed designation will not result in any loss of natural wetlands, and thus is consistent with this policy outcome. Similarly, Policy 7 seeks to avoid the loss of river extent. The proposed designation will not impact on the extent of the river, and will serve to ensure that river extent is maintained.

Policies 8-10 relate to the protection of significant values of outstanding water bodies, habitats of indigenous freshwater species and the habitat of trout and salmon respectively. The proposed works will not impact on any of these features; the works are existing, and the lower reaches of the Waitaki River are not classed as outstanding. For similar reasons, no habitat of freshwater species will be impacted. Accordingly, the proposal fits well with these policies.

Policy 15 seeks that communities are enabled to provide for their social, economic and cultural wellbeing, consistent with the NPSFM. The proposed designation of the ORC's flood protection assets on the Lower Waitaki is appropriate within this context, as it provides for the wellbeing of the community.

Overall, it is considered that the proposal will be consistent with and not contrary to the objective and policies of the NPSFM.

### **New Zealand Coastal Policy Statement**

The New Zealand Coastal Policy Statement 2010 ("**NZCPS**") is also relevant to the consideration of this NoR as it relates to the cross banks located at the mouth of the Waitaki River, as these fall within the coastal marine area (see Figure 1 for clarity as to the extent of the coastal marine area within the mouth of the Waitaki River).

The NZCPS contains two objectives of specific relevance to this NoR:

#### **Objective 5**

*To ensure that coastal hazard risks taking account of climate change, are managed by: ...*

- *protecting or restoring natural defences to coastal hazards.*

#### **Objective 6**

*To enable people and communities to provide for their social, economic, and cultural wellbeing and their health and safety, through subdivision, use, and development, recognising that:*

- *the protection of the values of the coastal environment does not preclude use and development in appropriate places and forms, and within appropriate limits;...*

These objectives reflect the need for the flood protection assets to be maintained, thereby ensuring the continued wellbeing of the community in close proximity to the existing assets, noting in particular the small settlement located at the mouth of the Waitaki River on Kaik Road.

Policies 25 and 26 of the NZCPS are particularly relevant to coastal hazards, and relevantly provide as follows:

**Policy 25: Subdivision, use, and development in areas of coastal hazard risk**

*In areas potentially affected by coastal hazards over at least the next 100 years:*

- a. *avoid increasing the risk of social, environmental and economic harm from coastal hazards;...*
- e. *discourage hard protection structures and promote the use of alternatives to them, including natural defences; and...*

**Policy 26: Natural defences against coastal hazards**

1. *Provide where appropriate for the protection, restoration or enhancement of natural defences that protect coastal land uses, or sites of significant biodiversity, cultural or historic heritage or geological value, from coastal hazards.*
2. *Recognise that such natural defences include beaches, estuaries, wetlands, intertidal areas, coastal vegetation, dunes and barrier islands.*

The works are not, on balance, entirely consistent with these policies. The NZCPS encourages the relocation of sensitive activities away from areas potentially affected by coastal hazards, and the true right back of the Waitaki River Mouth is occupied by predominantly rural activities. Notwithstanding this, a small settlement is located approximately 600 metres south/southwest of the area of the Waitaki River mouth that falls within the coastal marine area. The existing interventions in this location provide an ability to manage both the integrity of the Waitaki River mouth, and the natural processes associated with a braided river. Further, these interventions are existing. The proposed designation of these assets is to enable greater protection to ensure their continued efficacy; aside from ongoing maintenance, no further works are planned for these areas at this time, and should they be proposed at a later date, outline plan consideration will be necessary. As such, while the works are not entirely congruent with the coastal hazard provisions in the NZCPS, their proposed designation does not offend the outcomes it promotes.

Policies 13 and 15 relate to the preservation of natural character and the protection of natural features respectively.

**Policy 13: Preservation of Natural Character**

1. *To preserve the natural character of the coastal environment and to protect it from inappropriate subdivision, use, and development:...*
  - b. *avoid significant adverse effects and avoid, remedy or mitigate other adverse effects of activities on natural character in all other areas of the coastal environment; including by:...*
2. *Recognise that natural character is not the same as natural features and landscapes or amenity values and may include matters such as:*
  - a. *natural elements, processes and patterns;*
  - b. *biophysical, ecological, geological and geomorphological aspects;*

- c. *natural landforms such as headlands, peninsulas, cliffs, dunes, wetlands, reefs, freshwater springs and surf breaks;*
- d. *the natural movement of water and sediment;*
- e. *the natural darkness of the night sky;*
- f. *places or areas that are wild or scenic;*
- g. *a range of natural character from pristine to modified; and*
- h. *experiential attributes, including the sounds and smell of the sea; and their context or setting.*

**Policy 15: Natural features and natural landscapes**

*To protect the natural features and natural landscapes (including seascape) of the coastal environment from inappropriate subdivision, use, and development:...*

- b. *avoid significant adverse effects and avoid, remedy, or mitigate other adverse effects of activities on other natural features and natural landscapes in the coastal environment; including by:...*

The area of the coastal marine area where the Council's flood protection assets are located is not identified as an area of significant or outstanding natural character. The existing assets are well integrated within the landform and are appropriately vegetated, thus ensuring they fit well with the receiving environment.

While the assets provide an opportunity to manage the natural processes associated with the mouth of the River, they are passive, and do not result in any adverse environmental effects that alter the character of the area. Accordingly, the NoR fits comfortably within the outcomes promoted by Policies 13 and 15

Finally, Policy 4 deals with the integration of the relevant planning documents and mechanisms with respect to the coastal marine area.

**Policy 4: Integration**

*Provide for the integrated management of natural and physical resources in the coastal environment, and activities that affect the coastal environment. This requires:*

- a. *co-ordinated management or control of activities within the coastal environment, and which could cross administrative boundaries, particularly:
 
  - i. *the local authority boundary between the coastal marine area and land;*
  - ii. *local authority boundaries within the coastal environment, both within the coastal marine area and on land; and...**
- b. *working collaboratively with other bodies and agencies with responsibilities and functions relevant to resource management, such as where land or waters are held or managed for conservation purposes; and*
- c. *particular consideration of situations where:*

- i. *subdivision, use, or development and its effects above or below the line of mean high water springs will require, or is likely to result in, associated use or development that crosses the line of mean high water springs; or*
- ii. *public use and enjoyment of public space in the coastal environment is affected, or is likely to be affected; or*
- iii. *development or land management practices may be affected by physical changes to the coastal environment or potential inundation from coastal hazards, including as a result of climate change; or...*

The proposed designation is appropriate within the context of this policy. The designation provides a mechanism whereby the management of effects on the Council's flood protection assets located at the mouth of the Waitaki River is provided for via the District Plan, in addition to the existing Bylaw protection of the assets. As such, the NoR is considered consistent with this policy.

On balance, the proposed designation is appropriate within the context of the NZCPS.

### **National Policy Statement for Electricity Transmission**

The National Policy Statement for Electricity Transmission ("**NPSET**") sets out an objective and associated policies to enable the management of the effects of the electricity transmission network under the RMA. It is relevant to this notice of requirement due to the proximity of high voltage power lines to the Council's flood protection assets on the eastern side of the Waitaki Bridge.

The objective contained in the NPSET seeks:

*To recognise the national significance of the electricity transmission network by facilitating the operation, maintenance and upgrade of the existing transmission network and the establishment of new transmission resources to meet the needs of present and future generations, while:*

- *managing the adverse environmental effects of the network; and*
- *managing the adverse effects of other activities on the network.*

Policy 2 complements this objective.

The existing groyne and cross bank on the eastern side of the Waitaki bridge do not impact on the electricity transmission network, as they do not affect the operation, maintenance or upgrading of the existing network. Further, these flood protection assets also provide some protection to Transpower's infrastructure in this location.

Policy 10 of the NPSET requires the management of activities to avoid reverse sensitivity effects on the electricity transmission network. The groyne and cross bank located beneath the high voltage line at Waitaki Bridge will not result in any reverse sensitivity

effects for the electricity transmission network, as it does not introduce any sensitive land use activities into the area.

On this basis, the proposed designation of the Council's flood protection assets is considered appropriate within the context of the planning framework provided by the NPSET.

## **REGIONAL POLICY STATEMENT OR PROPOSED REGIONAL POLICY STATEMENT**

### **The Partially Operative Otago Regional Policy Statement 2019**

The Otago Regional Policy Statement ("**partially operative RPS**") became partially operative on 14 January 2019. The proposed designations are considered in light of the relevant provisions of the partially operative RPS below.

The sites sought to be designated are located within the Otago Region, none of the proposed designations lie beyond the Otago Regional boundary. Of note, Policy 4.3.2 defines nationally and regionally significant infrastructure, and this definition does not extend to include flood protection schemes such as that included in this Notice of Requirement. Accordingly, the NoR has not been assessed against the objectives and policies that relate to regionally and nationally significant infrastructure within the partially operative RPS.

The following relevant provisions from the partially operative RPS are relevant to the NoR:

#### **Policy 3.1.1 Fresh water**

*Safeguard the life-supporting capacity of fresh water and manage fresh water to: ...*

- d) *Maintain or enhance, as far as practicable:*
  - i. *Natural functioning of rivers, lakes, and wetlands, their riparian margins, and aquifers;*
  - ii. *Coastal values supported by fresh water;*
  - iii. *The habitat of trout and salmon unless detrimental to indigenous biological diversity; and*
  - iv. *Amenity and landscape values of rivers, lakes, and wetlands; ...*
- f) *Avoid, remedy or mitigate the adverse effects of natural hazards, including flooding and erosion; and, ...*

#### **Policy 3.1.2 Beds of rivers, lakes, wetlands, and their margins**

*Manage the beds of rivers, lakes, wetlands, their margins, and riparian vegetation to:*

- a) *Safeguard the life supporting capacity of fresh water; ...*
- c) *Maintain or enhance bank stability; ...*
- e) *Maintain or enhance, as far as practicable:*



- i. Their natural functioning and character; and*
- ii. Amenity values; ...*
- g) Avoid, remedy or mitigate the adverse effects of natural hazards, including flooding and erosion.*

As set out in the assessment of effects below, the proposed NoR does not impact on the life supporting capacity of freshwater. The flood protection structures and mechanisms that are the subject of this NoR seek to enable the management of natural hazard events, and provide protection for both regionally and nationally significant infrastructure (such as the road and rail network), and for the Lower Waitaki community. The flood protection assets maintain coastal, amenity and landscape values, and do not impact on the habitat of trout and salmon. The interventions do not diminish the natural functioning of rivers lakes and wetlands, rather seek to manage these within the confines of their natural courses.

Chapter 4.1 of the partially operative RPS deals with natural hazards.

**Objective 4.1** *Risks that natural hazards pose to Otago's communities are minimised.*

The proposed designation of the existing flood protection assets will enable greater protection for those assets, in turn resulting in greater surety of their efficacy when they are required. Accordingly, the NoR will support the minimisation of the risk posed to the community by natural hazards.

**Policy 4.1.3 Natural hazard consequence**

*Assess the consequences of natural hazard events, by considering all of the following:*

- a) The nature of activities in the area;*
- b) Individual and community vulnerability;*
- c) Impacts on individual and community health and safety;*
- d) Impacts on social, cultural and economic wellbeing;*
- e) Impacts on infrastructure and property, including access and services;*
- f) Risk reduction and hazard mitigation measures;*
- g) Lifeline utilities, essential and emergency services, and their co-dependence;*
- h) Implications for civil defence agencies and emergency services;*
- i) Cumulative effects;*
- j) Factors that may exacerbate a hazard event.*

**Policy 4.1.5 Natural hazard risk**

*Manage natural hazard risk to people, property and communities, with particular regard to all of the following:*

- a) *The risk posed, considering the likelihood and consequences of natural hazard events;*
- b) *The implications of residual risk;*
- c) *The community's tolerance of that risk, now and in the future, including the community's ability and willingness to prepare for and adapt to that risk, and respond to an event;*
- d) *Sensitivity of activities to risk;*
- e) *The need to encourage system resilience;*
- f) *The social costs of recovery.*

The Council has considered the consequences of flooding in the Lower Waitaki area, and notes the potential impacts of land use activities on the Council's existing flood protection infrastructure in this area. The nature of the affected area includes primarily rural activities with associated fencing, yards, farm buildings and dwellings. In addition, the area includes State highways 1 and 83, a high voltage power line, and the South Island main south railway line, thus providing an important link between South Canterbury and Otago/Southland. Less typical activities within the wider area include a large commercial quarry, a restaurant with associated shops, visitors' accommodation and a hotel, Oamaru airport, a freezing works, Waitaki Bridge village, and a number of other small named settlements, which typically include only a hall or a school.

The nature of these activities, combined with the topographical nature of the area is such that it is an area susceptible to natural hazards (floods). Any significant floods that occur in this area can result in lifeline utilities being affected, which in turn has significant potential impacts on civil defence agencies and emergency services, both locally and more regionally. The use of a designation to ensure an additional layer of protection for the existing flood management assets provides a suitable remediation of this potential effect.

***Policy 4.1.6 Minimising increase in natural hazard risk***

*Minimise natural hazard risk to people, communities, property and other aspects of the environment by:*

- a) *Avoiding activities that result in significant risk from natural hazard;*
- b) *Enabling activities that result in no or low residual risk from natural hazard; ...*

***Policy 4.1.7 Reducing existing natural hazard risk***

*Reduce existing natural hazard risk to people and communities, including by all of the following:*

- a) *Encouraging activities that:*
  - i. *Reduce risk; or*
  - ii. *Reduce community vulnerability;*
- b) *Discouraging activities that:*

- i. *Increase risk; or*
- ii. *Increase community vulnerability; ...*
- e) *Relocating lifeline utilities, and facilities for essential and emergency service, to areas of reduced risk, where appropriate and practicable;*
- f) *Enabling development, upgrade, maintenance and operation of lifeline utilities and facilities for essential and emergency services;*
- g) *Reassessing natural hazard risk to people and communities, and community tolerance of that risk, following significant natural hazard events.*

As set out above, the NoR provides an additional layer of protection to ensure that the efficacy of the Council's existing flood hazard assets is maintained. Presently, these assets are protected only via the Flood Protection Management Bylaw 2012 (which is scheduled for review in 2022). The proposed designation will thus enable the ORC to avoid activities that are susceptible to flooding within the designated areas, while continuing to enable low impact activities alongside the Council's existing assets.

***Policy 4.1.9 Protecting features and systems that provide hazard mitigation***

*Avoid, remedy or mitigate adverse effects on natural or modified features and systems, that contribute to mitigating the effects of both natural hazards and climate change*

The proposed approach and NoR enables the avoidance, remediation or mitigation of flooding effects on the Council's flood protection assets, which contribute to the management of flood risk on the Lower Waitaki Plain.

***Policy 4.1.13 Hazard mitigation measures, lifeline utilities, and essential and emergency services***

*Protect the functional needs of hazard mitigation measures, lifeline utilities, and essential or emergency services, including by all of the following:*

- a) *Restricting the establishment of other activities that may result in reverse sensitivity effects on those measures, utilities or services;*
- b) *Avoiding significant adverse effects on those measures, utilities or services;*
- c) *Avoiding, remedying or mitigating other adverse effects on those measures, utilities or services;*
- d) *Maintaining access to those measures, utilities or services for maintenance and operational purposes;*
- e) *Managing other activities in a way that does not restrict the ability of those mitigation measures, utilities or services to continue functioning.*

The NoR provides protection for the functional needs of the flood hazard mitigation assets located across the Lower Waitaki plain. The designation of these assets will provide the ORC with greater visibility of any activities that could impact on the effectiveness of these assets, and provide an opportunity for the Council to avoid, remedy or mitigate the

adverse effects of activities, whilst enabling the continuation of activities that do not adversely affect the efficacy of the assets.

On the basis of the assessment above, the NoR is considered to fit comfortably with the objectives and policies relating to natural hazards from the partially operative RPS.

The objective and policies of section 4.3 of the partially operative RPS relate to the management and development of infrastructure. Although not considered regionally significant infrastructure, the flood protection assets are considered to fall within the more general infrastructure definition, and accordingly the objectives and policies are relevant to the consideration of the NoR.

**Objective 4.3**

*Infrastructure is managed and developed in a sustainable way.*

**Policy 4.3.1 Managing infrastructure activities**

*Recognise and provide for infrastructure by all of the following:*

- a) *Protecting and providing for the functional needs of lifeline utilities and essential or emergency services;*
- b) *Increasing the ability of communities to respond and adapt to emergencies, and disruptive or natural hazard events;*
- c) *Improving efficiency of natural and physical resource use;*
- d) *Minimising adverse effects on existing land uses, and natural and physical resources;*
- e) *Managing other activities to ensure the functional needs of infrastructure are not compromised.*

This notice of requirement will allow for the sustainable management and development of the ORC's flood protection assets and infrastructure in a manner that complements both the existing planning framework, and the existing activities already undertaken in the vicinity of the Council's assets. Overall, as this approach enables control over land use activities undertaken within the designation while enabling complementary activities to occur, it is consistent with Objective 4.3 and Policy 4.3.1.

The designation of the Council's flood protection assets in the Lower Waitaki will provide an appropriate planning framework to ensure that they continue to provide the flood mitigation required for the locality, including lifeline utilities. The designation of the assets make it clear to neighbours, property owners, and the Council what activity can be expected to occur within that area; and will also assist with protecting the existing assets from future incompatible development.

On this basis, the NoR is considered to be consistent with the relevant provisions of the partially operative RPS.

## The Proposed Otago Regional Policy Statement 2021

The Proposed Otago Regional Policy Statement 2021 (“**PORPS21**”) was notified on 26 June 2021. At the time of preparation, submissions and further submissions have been invited, however hearings have not yet been held. The following PORPS21 provisions in italics are considered relevant to this NOR and are assessed below in plain text.

In contrast to the partially operative RPS, the PORPS21 identifies flood protection infrastructure as regionally significant infrastructure, as follows:

*Regionally significant infrastructure means:...*

*(12) Otago Regional Council's hazard mitigation works including flood protection infrastructure and drainage schemes.*

The assessment of the relevant objectives and policies of the PORPS21 below is on the basis that the flood protection assets located on the Lower Waitaki are therefore deemed regionally significant infrastructure.

The Energy, Infrastructure and Transport section of the PORPS21 includes the objectives and policies of greatest relevance to the NoR.

### **Objectives**

#### ***EIT-INF-04 – Provision of infrastructure***

*Effective, efficient and resilient infrastructure enables the people and communities of Otago to provide for their social and cultural well-being, their health and safety, and supports sustainable economic development and growth within the region within environmental limits.*

#### ***EIT-INF-05 – Integration***

*Development of nationally and regionally significant infrastructure, as well as land use change, occurs in a co-ordinated manner to minimise adverse effects on the environment and increase efficiency in the delivery, operation and use of the infrastructure.*

The Council's existing flood protection assets on the Lower Waitaki provide an effective and efficient means to manage natural hazards, which in turn provides for the social and cultural well-being, and for the health and safety of the community. The NoR offers a coordinated solution to ensure the continued efficiency of the Council's flood protection assets, and to enable the continued use of land in the vicinity of the Council's assets in a manner that does not impact on the effectiveness of those assets. The proposed NoR fits comfortably within this policy framework.

### **Policies**

#### ***EIT-INF-P10 – Recognising resource requirements***

*Decision making on the allocation or use of natural and physical resources must take into account the needs of nationally and regionally significant infrastructure.*

The proposed NoR is consistent with this policy. The designation of the ORC's flood protection assets on the Lower Waitaki clearly identifies these assets to property owners and the wider community. It will in turn specifically identify those areas where particular care is required in undertaking land uses, and will thus serve to take into account the regionally significant infrastructure that is the Council's flood protection assets.

***EIT-INF-P11 – Operation and maintenance***

*... allow for the operation and maintenance of existing nationally and regionally significant infrastructure while:*

- (1) avoiding, as the first priority, significant adverse effects on the environment, and*
- (2) if avoidance is not practicable, and for other adverse effects, minimising adverse effects.*

As indicated in respect of EIT-INF-P10 above, the proposed approach enables the active management and avoidance of significant adverse effects of land use activities on this regionally significant infrastructure.

***EIT-INF-P12 – Upgrades and development***

*Provide for upgrades to, and development of, nationally or regionally significant infrastructure while ensuring that:*

- (1) infrastructure is designed and located, as far as practicable, to maintain functionality during and after natural hazard events,*
- (2) it is, as far as practicable, co-ordinated with long-term land use planning, and*
- (3) increases efficiency in the delivery, operation or use of the infrastructure.*

The NoR does not seek provision for any specific upgrading or development of the existing regionally significant infrastructure, aside from regular maintenance activities. Notwithstanding this, the designation of the infrastructure at this time provides better opportunities for long term planning associated with the land use activities in proximity to the flood protection assets on the Lower Waitaki. In turn, this provides for greater reliance on the ability of the Council's assets to effectively mitigate the effects of flood events. Accordingly, the proposed designation of these works is consistent with this policy.

***EIT-INF-P13 – Locating and managing effects of infrastructure***

*When providing for new infrastructure outside the coastal environment:*

- (1) avoid, as the first priority, locating infrastructure in all of the following:*
  - (a) significant natural areas,*
  - (b) outstanding natural features and landscapes,*
  - (c) natural wetlands,*
  - (d) outstanding water bodies,*

- (e) *areas of high or outstanding natural character,*
- (f) *areas or places of significant or outstanding historic heritage,*
- (g) *wāhi tapu, wāhi taoka, and areas with protected customary rights, and*
- (h) *areas of high recreational and high amenity value...*

The existing infrastructure and flood protection assets are not located within any of the areas identified in EIT-INF-P13 (1). While the Waitaki River is a statutory acknowledgment under the Ngai Tahu Claims Settlement Act 1998, this matter is not identified as being of any specific relevance in respect of this policy. Some of the Council's existing assets along the Waitaki River are located within the Rural Scenic Zone in the operative Waitaki District Plan, however the zone alone does not confer any outstanding status on this landscape. The defined regionally significant wetland at Te Hua Taki wetland (located at the north western end of Gibson Road) is not included in the proposed designation.

***EIT-INF-P15 – Protecting nationally or regionally significant infrastructure***

*Seek to avoid the establishment of activities that may result in reverse sensitivity effects on nationally or regionally significant infrastructure, and/or where they may compromise the functional or operational needs of nationally or regionally significant infrastructure.*

This policy is at the heart of the Council's NoR for this infrastructure. By designating its flood protection assets, the Council is seeking to ensure that the establishment of activities that may result in reverse sensitivity effects are avoided, and that the integrity of the Council's flood protection assets is maintained. The proposal directly accords with this outcome.

***Objective***

***HAZ-NH-O1 – Natural hazards***

*Levels of risk to people, communities and property from natural hazards within Otago do not exceed a tolerable level.*

***HAZ-NH-O2 – Adaption***

*Otago's people, property and communities are prepared for and able to adapt to the effects of natural hazards, including climate change.*

These objectives and their associated policies provide support for the proposed designation of the Council's flood protection assets within the Lower Waitaki. The assets are required to ensure that risk is appropriately managed, and to support resilience to climate change events.

***HAZ-NH-P4 – Existing activities***

*Reduce existing natural hazard risk by:*

- (1) *encouraging activities that reduce risk, or reduce community vulnerability,*

- (2) *restricting activities that increase risk, or increase community vulnerability,*
- (3) *managing existing land uses within areas of significant risk to people and communities,*
- (4) *encouraging design that facilitates:*
  - (a) *recovery from natural hazard events, or*
  - (b) *relocation to areas of acceptable risk, or*
  - (c) *reduction of risk,*
- (5) *relocating lifeline utilities, and facilities for essential and emergency services, away from areas of significant risk, where appropriate and practicable, and*
- (6) *enabling development, upgrade, maintenance and operation of lifeline utilities and facilities for essential and emergency services.*

Similarly, the proposed designation is well aligned with Policy HAZ-NH-P4. The flood protection assets reduce risk posed by natural hazards, and their designation will enable better management of activities that have reduced risk and vulnerability to flooding, and enable the requiring authority's management of land uses to better manage risk. Further, the assets provide protection for the lifeline utilities that are located on the Lower Waitaki Plain.

***HAZ-NH-P6 – Protecting features and systems that provide hazard mitigation***

*Protect natural or modified features and systems that contribute to mitigating the effects of natural hazards and climate change.*

The NoR will protect the ORC's existing flood protection assets with a designation. This approach is consistent with the outcomes advanced by Policy HAZ-NH-P6 of the PRPS.

***HAZ-NH-P9 – Protection of hazard mitigation measures***

*Protect the functional needs of hazard mitigation measures, lifeline utilities, and essential or emergency services, including by:*

- (1) *avoiding significant adverse effects on those measures, utilities or services,*
- (2) *avoiding, and only where avoidance is not practicable, remedying or mitigating other adverse effects on those measures, utilities or services,*
- (3) *maintaining access to those measures, utilities or services for maintenance and operational purposes, and*
- (4) *restricting the establishment of other activities that may result in reverse sensitivity effects on those measures, utilities or services.*

As set out above, the assets to which this NoR relates provide protection for lifeline utilities, and controls those activities that may occur in proximity to the assets themselves. The designation will serve to restrict the establishment of activities that do not complement the flood protection assets, whilst enabling the continued use of the land in accordance with the designation conditions.



**HAZ–NH–P11 – Kaitiaki decision making**

*Recognise and provide for the role of Kāi Tahu as kaitiaki over wāhi tūpuna, Māori reserves and freehold land that is susceptible to natural hazards by involving mana whenua in decision making and management processes.*

The ORC recognises Kāi Tahu as kaitiaki over the Otago area. While engagement with mana whenua has not yet occurred, it will commence in early 2022. The NoR will be updated to reflect the outcomes of that engagement prior to its lodgement. On the basis of the detail available at the time of preparation of this NoR, the requirement does not extend over any wāhi tūpuna, or Māori reserves and freehold land, however this is yet to be confirmed by engagement with mana whenua.

In addition to this, objectives HCV-WT-O1 – P2 and policies HCV-WT-P1 – P2 seek to ensure the protection of Kāi Tahu cultural landscapes, the recognition of rakatirataka of mana whenua over wāhi tūpuna, and the ability of mana whenua to exercise kaitiakitaka within those areas. On the basis of publicly available information, the proposed designation does not include these areas, and thus will not adversely affect wāhi tūpuna and their cultural values, nor the rakatirataka and kaitiakitaka of mana whenua. This will be confirmed via the consultation that occurs. On the basis of the currently available information, it is considered that the proposal fits comfortably within the policy framework applicable to heritage and cultural values.

**Objective LF–WAI–O1 – Te Mana o te Wai**

*The mauri of Otago’s water bodies and their health and well-being is protected, and restored where it is degraded, and the management of land and water recognises and reflects that:*

- (1) *water is the foundation and source of all life – na te wai ko te hauora o ngā mea katoa,*
- (2) *there is an integral kinship relationship between water and Kāi Tahu whānui, and this relationship endures through time, connecting past, present and future,*
- (3) *each water body has a unique whakapapa and characteristics,*
- (4) *water and land have a connectedness that supports and perpetuates life, and*
- (5) *Kāi Tahu exercise rakatirataka, manaakitaka and their kaitiakitaka duty of care and attention over wai and all the life it supports.*

As set out above, the proposal is considered to sit comfortably within the principle of Te Mana o te Wai. The relationship of Kāi Tahu with the water is recognised in that consultation and engagement with mana whenua will occur, and accordingly they will be able to exercise their functions in accordance with (5).

**Policy LF-WAI-P1 – Prioritisation**

*In all management of fresh water in Otago, prioritise:*

- (1) first, the health and well-being of water bodies and freshwater ecosystems, te hauora o te wai and te hauora o te taiao, and the exercise of mana whenua to uphold these,*
- (2) second, the health and well-being needs of people, te hauora o te tangata; interacting with water through ingestion (such as drinking water and consuming harvested resources) and immersive activities (such as harvesting resources and bathing), and*
- (3) third, the ability of people and communities to provide for their social, economic, and cultural wellbeing, now and in the future.*

This NoR is consistent with this Objective for the same reasons as outlined above for Objective 1 of the NPSFM 2020.

On the basis of this assessment, the NoR is considered to be consistent with the relevant provisions of the PORPS21.

## **PLANS OR PROPOSED PLANS**

### **Regional Plans**

The provisions of the Otago Regional Plans provide a part of the statutory framework applicable to this Notice of Requirement. In this instance, the provisions of the Regional Plan: Water for Otago, and the Regional Plan: Coast for Otago contain provisions that are directly relevant.

### **Regional Plan: Water for Otago**

The Regional Plan: Water for Otago (the RPW or the Water Plan) is relevant to the NoR as it provides the policy framework for the Regional Council's approach to water management.

Under the RPW, the true right bank of the lower reaches of the Waitaki River is subject to the following scheduled and mapped areas:

- The Lower Waitaki Plains Aquifer is valued for human consumption without treatment and stock drinking water supply and farm dairy water (Schedule 3A).
- Group 2 for receiving water numerical limits and targets for achieving good quality water (Schedule 15).
- Discharge Threshold Area 2 Catchments – Permitted activity thresholds for water quality by discharge threshold area (Schedule 16A).

These values are not of direct relevance to the proposed designation of the ORC's flood protection assets on the Lower Waitaki Plains.

Most relevantly, Objective 5.3.8, from Chapter 5 of the RPW (relating to Natural and Human Use Values of Lakes and Rivers), seeks to avoid the exacerbation of any natural hazard or the creation of a hazard associated with Otago's rivers. The NoR will enable the effective management of an existing hazard associated with the Lower Waitaki Plains area. The proposed designation sits comfortably within this policy outcome.

The following objectives and associated policies also from Chapter 5 of the Water Plan are relevant to the consideration of the NoR:

- Objective 5.3.3 seeks to protect the natural character of Otago's rivers and their margins from inappropriate subdivision, use and development.
- Objective 5.3.4 seeks to maintain or enhance the amenity values associated with Otago's rivers and their margins.
- Objective 5.3.5 seeks to maintain or enhance public access to and along the margins of Otago's rivers.
- Objective 5.3.6 provides for the sustainable use and development of Otago's water bodies, and the beds and margins of Otago's rivers.

The proposed designation of the Council's assets across the Lower Waitaki will not result in adverse effects on natural character, and will maintain amenity values along the Lower Waitaki River. Public access to and along the margins of the river will be unchanged. The implementation of this NoR will continue to provide for the protection of the existing rural land use activities in the area from inappropriate activities, and thus provides directly for the sustainable use and development of the existing rural area. Accordingly, the proposal is consistent with the objectives and policies contained in Chapter 5 of the Water Plan.

Chapter 8 of the Water Plan relates to the beds and margins of lakes and rivers. This section of the Water Plan contains two objectives (and associated policies) that are particularly pertinent to the NoR.

Objective 8.3.1 seeks to maintain the stability of the bed and bank of any river, and the flood and sediment carrying capacity of any river. The existing flood protection assets have been designed specifically to ensure that bank stability and flood carrying capacity is available, while mitigating the effects of flood water and high flows. On this basis, the proposed designation is considered to be consistent with the outcomes promoted by this objective and the associated policies.

Objective 8.3.3 (and the relevant associated policies) seeks to maintain the integrity of existing defences against water. The proposed designation of the existing flood protection assets along the Lower Waitaki River accords with this approach. The designation will provide an additional layer of protection for the existing assets, and will thus maintain their integrity. No additional works are proposed, and thus any disturbance will be avoided.

Chapter 10 of the RPW relates to wetlands, and objective 10.3.2 seeks to recognise and sustain the values and uses of Otago’s Regionally Significant Wetlands, along with the wetlands themselves. Despite the Te-Hua-Taki wetland (a Regionally Significant Wetland) being located in close proximity to the Waitaki River, none of the assets included in this NoR adjoin the Wetland. Accordingly, the setback achieved between the Council’s assets and the wetland is such that no impacts will result, and the proposal is thus considered acceptable within the context of this section of the Water Plan.

Overall, the proposed designation of the Council’s flood protection assets on the Lower Waitaki Plain is consistent with and supported by the policy framework contained in the RPW.

### Regional Plan: Coast for Otago

The Regional Plan: Coast for Otago (the RPC or the Coastal Plan) is relevant to the designation of the works located at the mouth of the Waitaki River. Schedule 1-1 of the Coastal Plan contains maps that delineate where the boundary of the coastal marine area lies with respect of river mouths, and figure 1 below demonstrates the location of the boundary at the Waitaki River Mouth. As a result of this definition, a cross bank is located within the coastal marine area, to which the RPC applies.

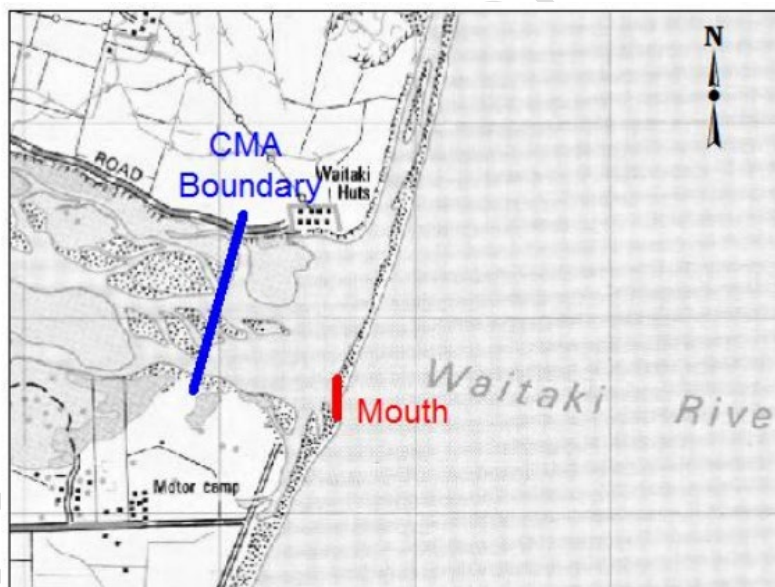


Figure 1: Location of the coastal marine area boundary at the Waitaki River mouth.

Objective 5.3.1 of the RPC seeks to provide for the use and development of the coastal marine area while maintaining its natural character, outstanding natural features and landscapes, and its ecosystem, amenity and historical values. The cross bank has been long established, and is therefore imperceptible within this coastal environment. The braided nature of the Waitaki River is such that the cross bank is not readily identifiable,

and accordingly it will not impact on the character, amenity, landscape ecosystem or historical values. As such it is considered that the cross bank is appropriate within the context of this objective and its associated policies.

Objective 6.3.1 and its associated policies are focussed on avoiding, remedying or mitigating the adverse effects of activities crossing the boundary line of mean high water springs. The proposed designation will not impact on the key considerations of natural coastal processes, landscapes and landforms and coastal ecosystems. As such it is considered that the NoR is consistent with the outcomes sought in this section of the Coastal Plan.

It is relevant to note that Policy 6.4.4 provides as follows:

*To recognise the following coastal hazard areas, as identified in Schedule 3.3:*

*CHA 1 Waitaki River – Oamaru...*

While this policy does not specify an outcome, it does clearly indicate that the natural hazard characteristics within this area have been recognised by the RPC.

Policy 6.4.6 provides as follows:

*To recognise the action of natural physical coastal processes within the coastal marine area which could have the potential for adverse effects on adjacent land.*

The NoR is consistent with this policy, as it provides mitigation for the natural processes that occur within the coastal marine area and protects the ORC's existing interventions within this area. The Council's assets will in turn protect the adjacent land from adverse effects associated with flooding. Accordingly, the NoR is considered to be consistent with this policy outcome.

The objectives and policies found in sections 7.3 and 7.4 of the Coastal Plan seek to address continued public access to and along the coastal marine area, while recognising that some activities require occupation of this area. The existing works provide for continued safe access to and along the coastal marine area located at the mouth of the Waitaki River. The designation of these works will have no impact on the ability to access the coastal marine area in this location. The NoR is considered to be consistent with the outcomes sought by this chapter of the Coastal Plan.

Chapter 9 of the Coastal Plan deals with alteration of the foreshore and seabed in the coastal marine area. The objectives and policies of that section are directed towards the preservation of the natural character of the coastal marine area, while taking natural processes that alter the foreshore and seabed into account. They also seek to restrict the disturbance of the foreshore and seabed to those activities that require coastal location. The cross bank is appropriate within the context of these policies, as it is necessary within the coastal marine area to enable its functionality. Additionally, as identified above, and

further discussed below, the Council’s assets fit appropriately within the context of the environment, and thus do not adversely impact upon natural character. On this basis, the NoR is considered to be consistent with the objectives and policies of this section.

The objectives and policies of the Coastal Plan as it relates to the taking, use, damming or diversion of coastal water are also relevant to the NoR. The Coastal Plan contains a single objective, which enables these activities while protecting values associated with estuaries, inlets, harbours and embayments. In this instance, any diversion that results from the cross bank does not impact on estuaries, inlets, harbours or embayments, and as such the proposed designation is considered to be consistent with the objective and policies contained within this section of the Coastal Plan.

Objective 14.3.1 requires that the potential adverse effects of natural hazards within and adjacent to the Otago coastal marine area are taken into account in considering the use, development or protection of the area. This NoR seeks to designate existing hazard mitigation assets located within the coastal marine area to provide protection to adjoining land. The proposed designation is therefore considered to accord with the requirements of Chapter 14 of the Coastal Plan.

The proposal to designate the cross bank that is located within the Waitaki River mouth is considered to fit appropriately within the provisions of the Coastal Plan. As such, the proposal is considered consistent with the outcomes promoted by that Plan.

### **Waitaki District Plan**

The Waitaki District Plan (“**District Plan**”) was made operative on 31 May 2010.

This section includes district wide objectives and policies, which apply to all components of the NoR, and zone-specific objectives and policies, which apply to the Rural General and Rural Scenic zones respectively. In broad terms, the provisions of the Rural General Zone apply to the existing floodways, and the Rural Scenic provisions relate to the flood protection assets along the Waitaki River. Some additional annotations are also relevant to this NoR, including Appendix C(1) which identifies the Lower Waitaki River as an area of conservation merit (but which also notes that such areas do not have any formal legal protection under the District Plan). The description for this annotation is as follows:

*Lower Waitaki River*     *Important braided river and back-water habitat for a large range of native bird species. Also contains smaller stony river terrace areas of native flora and high entomological values. Rivermouth wetlands, including saltmarsh vegetation are important as feeding and breeding sites for both native fish and birds.*

Part II Chapter 1 of the District Plan deals with tangata whenua issues. Objective B of the chapter (and its associated policies) seeks to protect and enhance wāhi tapu, wāhi taoka, cultural property and mahinga kai. This NoR is consistent with this outcome, as it

recognises Kāi Tahu as kaitiaki over the Otago area. Engagement with mana whenua will commence in early 2022, and the outcomes of that engagement will be incorporated into the NoR that is lodged. On the basis of the detail available at the time of preparation of this NoR, the requirement does not appear to extend over any wāhi tupuna, wāhi taoka, cultural property or mahinga kai areas. This will be confirmed via engagement with mana whenua.

Part II Chapter 4 of the District Plan deals with natural hazards. Objective 4.2.1 seeks to:

*Avoid loss of life, and avoid or mitigate damage to assets, infrastructure, natural and physical resources, or disruption to the District's community, from natural hazards.*

The proposed NoR accords with this objective, as it provides a further layer of protection to the ORC's flood protection assets. In turn, the integrity of these assets will be maintained, enabling them to function as designed in high flow and flood events. As a result, it is anticipated that lifelines such as the transport network and power supply through the Lower Waitaki will be protected, and any flood damage minimised.

The relevant policies associated with this objective include:

- Informing the community of the potential risk of natural hazards (Policy 4.2.2.1)
- Ensuring that development is carried out in a manner that avoid or mitigates the adverse effects of natural hazards (Policy 4.2.2.3)
- Recognise that existing protection works may require continuing maintenance to protect existing assets (Policy 4.2.2.6)

The ORC will undertake consultation with the directly affected community in conjunction with this NoR, thus providing information as to the risk of natural hazards in the Lower Waitaki. The implementation of the NoR will ensure that development that occurs within the designated area will be carried out in a manner that avoids or mitigates the effects of natural hazards, given that the approval of the ORC will be required for any works that could prevent or hinder the flood protection assets, in addition to the existing bylaw controls. Further, the NoR will enable the ORC to undertake maintenance of its flood protection assets on the Lower Waitaki plain. As such, the proposed designation is considered complementary to the objectives and policies of the Natural Hazards section of the District Plan.

Part II Chapter 10 of the District Plan relates to Utilities. The ORC's flood protection assets fit within the definition of Utilities that is included in the District Plan:

*h) structures, facilities, plant, equipment and associated works for the protection of the community from natural hazards;*

Designations are a planning tool available for utility operators as they provide an essential service. The designation of the ORC's flood protection assets appropriately recognises

that they provide an essential service, and by designating this activity, the requiring authority is able to continue to provide this service in the most efficient and effective manner.

Objective 10.2.2.1 and its associated policies seek to avoid remedy or mitigate adverse effects on amenity values and the surrounding environment from the construction, installation, operation and maintenance of utilities. The ORC's existing flood protection assets do not impact on amenity values and the surrounding environment. As set out in the Assessment of Effects below, the existing assets sit comfortably within the existing environment. The floodways appear either as a creek bed or depression in the land, and are accordingly appropriate within the rural environment. The groynes and cross banks are largely within the Waitaki River bed, and cannot be readily discerned from natural landform and plantings. Should any maintenance or repair work be required to these assets, it is anticipated that conditions will control the visual and amenity outcomes of the works. The details of any works to be undertaken will be subject to the outline plan process which requires that any methods necessary to avoid, remedy or mitigate adverse effects on the environment are considered, where appropriate. On this basis, it is considered that the flood protection assets do not and will not result in adverse visual or amenity effects, and are accordingly consistent with this objective and the associated policies.

Objective 10.3.2.2 provides for the efficient and equitable establishment use and maintenance of utilities necessary for the well-being of the community. As set out above, the ORC's flood protection assets provide significant benefit to the community in periods of high and flood flows. Accordingly, they are considered necessary for the wellbeing of the community.

Part II Chapter 16 sets out the objectives and policies relating to the Rural General and Rural Scenic Zones. In large part, the floodways that are included in this NoR are within the Rural General Zone, and the other flood protection assets along the Waitaki River are within the Rural Scenic Zone.

Objective 16.2.2.1 seeks to retain the productive potential of the high class soils located within the Plains area. The District Plan maps provide guidance as to where these areas are located, and some of the ORC's flood protection assets are located within areas where high class soils are found, as shown in Figures 2 and 3 below.



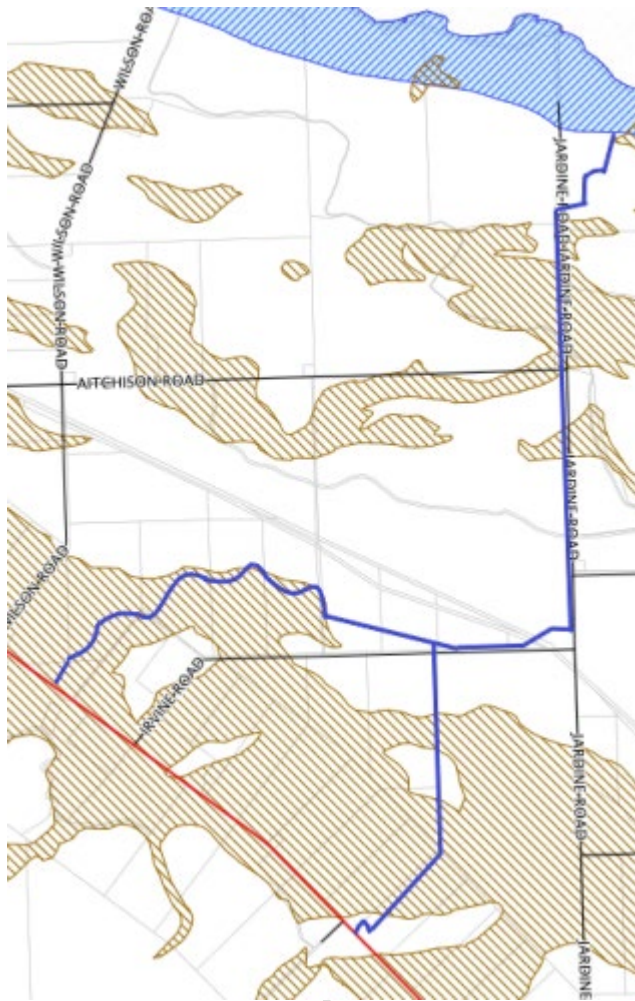
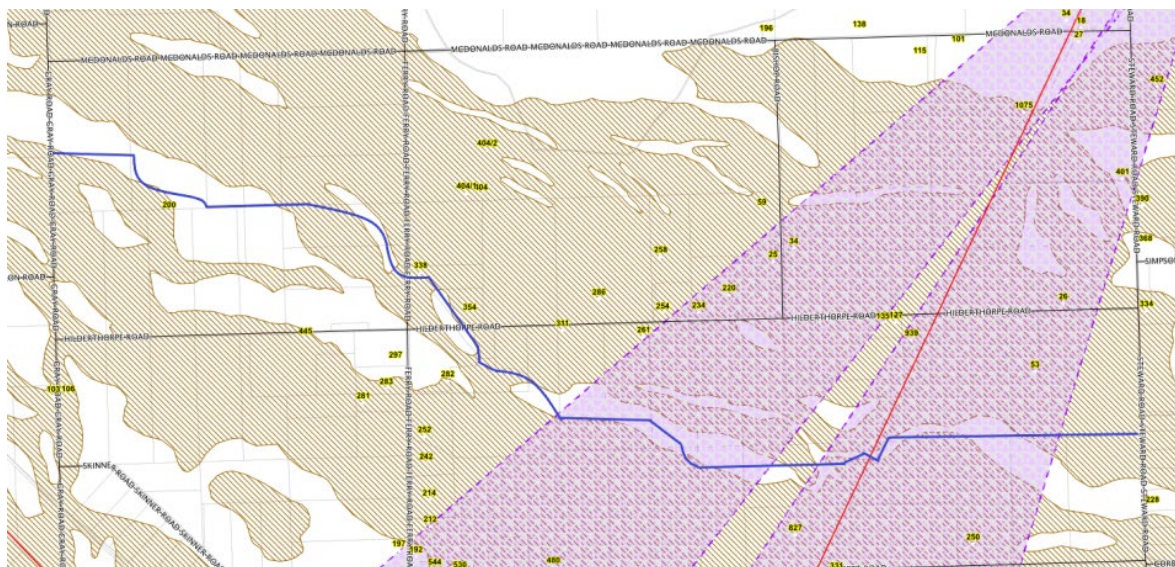


Figure 2: Showing approximate location of Waikoura and Henderson Creeks Floodway (in dark blue) in relation to areas of high class soils that are mapped within the District Plan



**Figure 3: Showing approximate location of Hilderthorpe Floodway (in dark blue) in relation to areas of high class soils that are mapped within the District Plan**

While these floodways cross portions of the high class soils on the Lower Waitaki plains, because they are existing, the proposed designation will not decrease the availability of these soils for productive activities. Much of the Henderson and Waikoura Creeks Floodway is creek bed, and is thus not available for productive farming activities. Along with the portions of that floodway that are not within creek bed, the Hilderthorpe floodway is available for farming activities when not required for high or flood flows. Additionally, the presence of the floodway and the proposed designation will restrict the ability to subdivide these properties for intensive residential purposes, and limit the potential for the establishment of hard surfaces within the floodway. On this basis it is considered that the NoR is consistent with the outcomes sought with regard to high class soils.

Objective 16.5.1.4 promotes a level of rural amenity that is consistent with the range of activities anticipated in the rural areas, but which does not create unacceptably unpleasant living or working conditions, nor a significant deterioration of the quality of the rural environment. Policy 16.5.2.4 applies specifically to the Rural General Zone, and seeks to encourage a wide range of rural land use and land management practices in the zone, without increasing the potential for conflict or the loss of rural amenity. The passive works that comprise the ORC's flood protection assets will not result in any challenge to the existing high level of rural amenity in the area. As set out above, the works are visually unobtrusive and are not readily discernible within this environment. In particular, the groynes and cross banks within the Rural Scenic Zone fit comfortably within its environment, as identified in the assessment of environmental effects below. Within the Rural General Zone, the floodways are visible, however do not result in any adverse visual or amenity effects, instead resembling a creek bed or depression in the topography across

the Plains. On this basis, the NoR is considered to fit comfortably within the applicable objectives and policies of the Plan.

The Rural section of the Plan also sets out specific objectives and policies that relate to landscape. The overarching objective provides for the management of development so that areas of landscape significance are protected, and that the overall landscape qualities of the Rural Scenic Zone are retained. None of the sites upon which the Council's flood protection assets are located are identified as outstanding or significant, and accordingly the NoR must be considered in light of whether the designation will prevent the retention of the overall landscape qualities of the zone.

As set out above, and within the Assessment of Environmental Effects, the visual effects of the groynes and cross banks within the Rural Scenic Zone will be less than minor. The existing works are not readily discernible within the receiving environment. Those assets that are within the coastal marine area at the mouth of the Waitaki River are similarly difficult to distinguish, within a highly active river bed. Should any maintenance or repair work be required to these assets, it is anticipated that conditions will control the landscape outcomes of the works, and the details of any works to be undertaken will be subject to the outline plan process which requires that any methods necessary to avoid, remedy or mitigate adverse effects on the environment are considered, where appropriate.

On this basis, it is considered that the existing flood protection assets do not result in adverse landscape effects, and any future works will be appropriately managed via the outline plan of works process. Accordingly consistent with this objective and the associated policies.

Policy 16.8.3.6 also requires that a number of sub-policies are considered in determining development applications. Those relevant to the Council's flood protection assets include:

- f) *Earthworks are encouraged to be located away from visually sensitive areas, and where practicable towards the edges of the landform and vegetation patterns;*
- g) *Earthworks should not compromise any rare or distinctive geological outcrops or any other values associated with an identified outstanding or significant natural feature;*
- h) *Earthworks, where possible, should be restored and finished to a contour sympathetic to the surrounding physiography and should also, where possible, be revegetated with a cover appropriate to the site and setting;*

The earthworks associated with the establishment of the Council's assets are complete, and the resulting landform has been vegetated in a manner consistent with its surrounding environment. As the works are not located within any outstanding or significant landscape or feature, they do not compromise any landscape values. Similarly, where revegetation has occurred, trees selected have not had wilding potential. Should further works be

proposed in the future, they will require consideration through the outline plan process, whereby their effects on the environment will be considered, and the Council would anticipate a condition regarding the finish of any earthworks to be imposed. On this basis, the proposed designation of the existing works is considered to be consistent with the outcomes advanced by these sub-policies.

In addition to the above considerations, the NoR will not impact on biodiversity on the Lower Waitaki Plains. The assets are not located in areas that are identified as having significant indigenous flora or significant habitats of indigenous fauna, and will not impact on wetland areas. The areas covered by the NoR do not include wetlands, alpine areas or any other areas with known conservation values. The work undertaken to date, which is now the subject of this NoR, maintains and enhances the quality of the coastal environment and the margins of the Waitaki River. It is therefore considered that the proposal is consistent with Objectives 16.9.2.1-2 and the associated policies of the District Plan.

#### Other designations

For completeness, it is appropriate to also record other existing designations in the vicinity of the NoR.

**Table 1: Other existing designations in the vicinity of the NoR**

District Plan Ref	Requiring Authority	Purpose	Impact on this NoR
None	Transit New Zealand, now Waka Kotahi NZ Transport Agency	State highway 1	None
None		State highway 83	None
None	New Zealand Railways Corporation	Main South Railway	None
62	Telecom NZ Limited	Hilderthorpe Exchange, telecommunication and radiocommunication and ancillary purposes	None

While the District Plan Maps identify the high voltage power lines that run to the east of Waitaki Bridge, they are not formally designated.

## FLOOD PROTECTION MANAGEMENT BYLAW 2012

The Flood Protection Management Bylaw 2012 (“**the Bylaw**”) seeks to manage, regulate and protect flood protection works belonging to, or controlled by the Otago Regional Council. Flood protection works are defined in the Bylaw as including drains, overland flow paths, defences against water, floodways, groynes and cross-banks as mapped in the Bylaw. The Bylaw includes all assets that are subject to this NoR.

All Council assets that are within the control of the Bylaw are mapped, and property owners are required to keep every fence and gate within floodways debris-free.

Under the Bylaw, the following activities undertaken in proximity to the scheduled Council assets require the Council’s approval, as outlined in the following table:

**Table 2: Activities requiring Council’s approval under the Bylaw**

	Groyne, cross bank or anchored tree protection	Floodway	Hilderthorpe, Henderson Creek or Waikoura Creek floodways
Alteration of	✓	✓	
Removal or interfere with machinery or equipment relating to	✓	✓	
Plant any tree in or on any	✓ <sup>a</sup>	✓	
Construct or put any structure in, over, through, or under	✓ <sup>a</sup>	✓	
Dump or deposit anything in or on any	✓ <sup>b-c</sup>	✓ <sup>b</sup>	
Obstruct any	✓		
Drive, take or operate any vehicle, machinery or equipment in or through any	✓		
Connect any pipe, channel or conduit to			✓
Remove or alter any structure in on over through or under	✓ <sup>a</sup>		
Carry out any excavation in on through or under	✓ <sup>d</sup>	✓	
Remove, alter, interfere with or add to any plantings in the Lower Waitaki			

<sup>a</sup> including within 7 metres of the top of a bank or asset.

<sup>b</sup> excluding materials for the maintenance of existing access or as a result of ditch maintenance.

- <sup>c</sup> including within 50 metres of these.
- <sup>d</sup> including within 50 metres of the landward side if it lowers the existing ground level by more than 300 millimetres, or between the bank of any river and associated groyne, cross-bank or anchored tree protection.

Providing an additional layer of protection for the ORC's assets on the Lower Waitaki will accord with the objectives of the Bylaw. For clarity, it is not proposed that the NoR will include the setbacks required by the Bylaw.

## **KĀI TAHU KI OTAGO NATURAL RESOURCE MANAGEMENT PLAN 2005**

The Kāi Tahu Ki Otago Natural Resource Management Plan (the Kāi Tahu Plan) was developed in 2005, and uses Otago's geographic boundaries, thus consistent with the Waitaki District Council's boundary along the Lower Waitaki River.

It is relevant to note that the works are not considered to result in any impacts on known wāhi tapu, mahika kai, nohoaka, or tōpuni sites.

Part 3 of the Kāi Tahu Plan sets out the objectives and policies for the Otago Region. Those considered directly relevant to the NoR include:

### **5.3.3 Wai Māori General Objectives**

- i. The spiritual and cultural significance of water to Kāi Tahu ki Otago is recognised in all water management.*

### **5.3.4 Wai Māori General Policies**

- 4. To protect and restore the mauri of all water.*
- 54. To promote land use that suits the type of land and climatic conditions.*
- 58. To promote integrated riparian management throughout entire catchments.*

### **5.8.3 Taku Tai Moana Me Wai Māori Objectives**

- i. The spiritual and cultural significance of taku tai moana me te wai māori is recognised in all management of the coastal environment.*
- ii. Te Tai o Arai Te Uru is healthy and supports Kāi Tahu ki Otago customs.*

### **5.8.4 Taku Tai Moana Me Wai Māori Policies**

- 2. To require Kāi Tahu ki Otago input into any artificial openings or works in river mouths, estuary or lagoon systems.*
- 5. To discourage any further reclamation within the coastal environment.*

None of these objectives or policies explicitly recognise the need to manage natural hazards, however they do raise other matters for consideration. These matters will be further informed by the outputs of consultation with mana whenua, in particular in respect of the spiritual and cultural significance of water and the coastal environment, and mauri. Notwithstanding this, the designation of the existing works will accord with policies related

to land use suitability and riparian management, and the health of the coastal marine environment.

In addition, Chapter 6 sets out policies that are directly applicable to the Waitaki catchment; those considered to be of relevance to the proposed designation include:

**6.2.3 Wai Māori Policies for the Waitaki Catchments**

12. *To encourage the recognition of the defined river channel.*
13. *To encourage the use of buffer zones to protect the side braids and riparian wetlands.*

The existing works specifically seek to maintain the defined river channel and to protect the side braids. No riparian wetlands are impacted by the works. As such, the proposed designation of the flood protection assets in this location is considered to be consistent with the outcomes advanced by the Kāi Tahu Plan.

## **ASSESSMENT OF ENVIRONMENTAL EFFECTS**

This section of the Notice of Requirement assesses the potential effects of the designations, including positive effects. The potential effects are considered with regards to the relevant provisions of national and regional policy statements and regional and district plans, including the district plan rules. While these rules do not apply to activities undertaken in accordance with designations, they are useful for providing a baseline for the type of activities and level of effects that can be expected and that are permitted within the respective land use zones.

The hard protection structures that are located across the Lower Waitaki Plain include:

- Hilderthorpe Floodway;
- Henderson and Waikoura Creek Floodway;
- Groynes adjacent to the Waitaki River bed; and
- Cross-banks adjacent to the Waitaki River bed.

## **EXISTING ENVIRONMENT AND STRUCTURES**

### **Waitaki River Catchment Description**

The Waitaki River catchment has an area of 11,860 km<sup>2</sup>. The Southern Alps form the north western boundary of the catchment. Several natural and man-made lakes feed the river system.

The Lower Waitaki extends from the Waitaki Dam, upstream of Kurow to the Pacific Ocean. The Lower Waitaki has a diverse topography with mountain ranges in the north west, hill country and extensive rolling downlands in the east and the gentle slopes of the plains near the mouth of the incised river.

Flows in the lower reaches of the Waitaki river are heavily influenced by the operation of the reservoirs located in the upstream parts of the catchment.

Part of the Lower Waitaki River catchment lies within the Otago Region. This section of the catchment is bounded by the right bank of the Waitaki River, downstream of Goulding Road and extends across the plains towards Pukeuri in the south. The area is characterised by a gently graded floodplain that falls about 90 metres between Georgetown and the coast. Major tributaries flowing through this area are Awamoko Stream, Waikoura Creek and Henderson Creek.

Irrigation schemes are a feature the Lower Waitaki plains. Irrigation development commenced in the 1930s. The Lower Waitaki Irrigation Scheme now serves about 14,500 ha.



Where the Waitaki River meets the Otago Region boundary, the river is incised and flows within braided channels. The Waitaki River floodplain within the Otago Region is narrow, being defined by low cliffs. Direct flooding affects only small areas of marginal land.

Bank erosion is active on this section of the Waitaki River. ORC and Environment Canterbury (Ecan) manage bank protection work (groynes, cross-bank and anchored tree protection) on the lower Waitaki River floodplain.

The land use is mainly agricultural with limited residential properties. There are some holiday houses situated at Waitaki Bridge on State Highway 1 and immediately to the north of McPherson Road.

### **Lower Waitaki Plains Floodplain Description**

The lower Waitaki floodplain generally slopes towards the coast and away from the Waitaki River. Problems with surface water not draining away are reasonably common on the floodplain. Flooding is typically associated with overland flow paths: runoff from paddocks is intercepted and conveyed by swales or remnant channels that crosses the plain.

Because of the relatively gentle topography of the floodplain and the lack of well-defined channels, local features, such as small-scale earthworks, bunds, fences, shelterbelts roads, driveways and buildings can influence the flow direction and the depth and extent of flooding. Those features can impede natural-downslope drainage and locally divert water on the floodplain, modifying the flood hazard.

Construction of the Lower Waitaki Irrigation Scheme began in 1974 and was completed in 1978. Irrigation channels now serve about 14,500 hectares of farmland on the south bank of the Waitaki River. The scheme introduced new races that provided new routes – and obstructions -for floodwaters.

Outside of irrigation channels and floodways, medium velocities (generally less than 1m/s) and depth of inundation of generally up to 1m are likely. This combination of depth and velocity is sufficient to result in potential risks to safety (e.g. wading becomes unsafe). In the irrigation channels and floodways deeper water can be expected.

Flooding can make some sections of SH 1 impassable during heavy rainfall events.

Waikoura Creek and Henderson Creek drain small catchments upstream of State Highway 83, of areas approximately 18km<sup>2</sup> and 6km<sup>2</sup> respectively. The catchments lie parallel to and east of the Awamoko Stream catchment. Historically, the creeks flowed in a north-easterly direction across the Waitaki plains to discharge directly to the Pacific Ocean.

A scheme to reduce flood damage was completed in 1981/82 by the Waitaki Catchment Commission. The scheme involved the construction of a trapezoidal channel to collect flood flows on the north-eastern side of Georgetown-Pukeuri Road (SH83) and to convey

the combined flows of Waikoura and Henderson Creeks directly to the Waitaki River, rather than have them meander across the plains to the coast south of Hilderthorpe. The diversion generally runs parallel to Jardine Road and discharges into the Waitaki River some 7 km north of Peebles.

The Hilderthorpe Floodway is another flood alleviation channel, combining natural and artificially constructed sections and designed to convey overland flow from Gray Road to the Hilderthorpe Race alongside Steward Road during significant rainfall events. The natural sections of the channel follow the course of a paleochannel.

Both the Waikoura and Henderson Creeks floodway and the Hilderthorpe floodway are managed by ORC and are protected by the ORC Flood Protection Management Bylaw (2012).

### POSITIVE EFFECTS

In combination, the existing floodways, groynes and cross banks provide a comprehensive network of flood protection mechanisms for the Lower Waitaki area. In turn, this provides positive outcomes for the social, economic and cultural wellbeing of both the immediately affected community. Further, the ability to rely on the continued efficacy of the existing flood protection assets enables lifeline utilities within this area to operate with a degree of confidence.

In 2017, an economic assessment of the Lower Waitaki River Control Scheme was undertaken on behalf of the ORC<sup>2</sup>. While the scope of that report related to an assessment of the benefit split between those within and outside of the control scheme zone and a review of the allocation of costs between Canterbury and Otago, this report also provides useful commentary as to the benefits provided by the existing scheme.

This assessment combines the benefits from preventing flooding and erosion and assesses them together, using a baseline where existing infrastructure is not in place to demonstrate the effectiveness of the works.

Type of Impact	Lower Waitaki River Scheme
<i>Loss of life</i>	<p><i>Net impact assessment: <b>Low</b></i></p> <ul style="list-style-type: none"> <li>➤ <i>The risk to lives is low in the event of a small flood.</i></li> <li>➤ <i>The risk to lives is higher in the event of a large flood...</i></li> </ul>

<sup>2</sup> Economic Assessment of the Lower Waitaki River Control Scheme, Report to the Otago Regional Council, February 2017, Castalie Advisors Limited (<https://www.orc.govt.nz/media/3291/castalia-report-2017.pdf>)

Type of Impact	Lower Waitaki River Scheme
	<ul style="list-style-type: none"> <li>➤ While the cost of losing lives is high, its low probability means the overall impact is low.</li> </ul>
Impaired health	<p>Net impact assessment: <b>Low</b></p> <ul style="list-style-type: none"> <li>➤ Injuries and illness from flooding events are likely to affect several people in the scheme, which will increase the longer the flooding persists.</li> </ul>
Damage to non-commercial property	<p>Net impact assessment: <b>High</b></p> <ul style="list-style-type: none"> <li>➤ May suffer aesthetic damage</li> <li>➤ Given the extent of the property (residential and farms) in the area, damage to this property is likely to be widespread (and severe in a large event).</li> <li>➤ River course change will destroy property on affected land.</li> </ul>
Loss of amenity	<p>Net impact assessment: <b>Negligible</b></p> <ul style="list-style-type: none"> <li>➤ Less recreational users in a flooding event (This includes campers, trampers, people fishing etc)</li> <li>➤ Little or no effect on recreational users from erosion as they would move with the river bed.</li> </ul>
Loss of land or output on farms or businesses	<p>Net impact assessment: <b>High</b></p> <ul style="list-style-type: none"> <li>➤ Damage due to stock and ability to support them for several weeks (possibly longer, if the recovery time after the event is considered).</li> <li>➤ Lot business to those reliant on expenditure by farms. Significant impact given multiple service towns in schemes.</li> </ul>
The cost of emergency response and repairs	<p>Net impact assessment: <b>Moderate</b></p> <ul style="list-style-type: none"> <li>➤ A large flooding event would be more damaging than without the scheme because water would breach the river banks earlier. This would lead to higher cost of response and subsequent repair works.</li> <li>➤ Direct costs would be moderate in low level events as they require relatively little response (partly due to the ability to give some warning about the likelihood of flooding) and some repair costs</li> <li>➤ Cost to evacuate, house and provide welfare for residents in major event would be higher than with the scheme.</li> </ul>
Loss of road access	<p>Net impact assessment: <b>Moderate</b></p>

Type of Impact	Lower Waitaki River Scheme
	<ul style="list-style-type: none"> <li>➤ <i>The areas of State highway 1... that receive greater protection from the scheme fill face higher delays and greater loss of access in large events without the scheme.</i></li> <li>➤ <i>Residents and businesses (in and out-of-scheme) using road infrastructure in scheme would face greater delays and costs from taking alternative routes.</i></li> <li>➤ <i>There would be increased road maintenance costs from greater erosion.</i></li> </ul>
Loss of rail access	<p>Net impact assessment: <b>Moderate</b></p> <ul style="list-style-type: none"> <li>➤ <i>Businesses using rail infrastructure in the scheme (Main South Trunk Line) would face delays and costs from lost business in the event of a flood.</i></li> <li>➤ <i>There would be higher cost in repairing or maintaining the rail line with higher levels of erosion.</i></li> <li>➤ <i>Given the unique characteristics of rail freight, businesses are more likely to bear cost of delays then use more expensive alternatives, such as road freight.</i></li> </ul>
Transport transmission line damages	<p>Net impact assessment: <b>Moderate</b></p> <ul style="list-style-type: none"> <li>➤ <i>Flood impact likely to be low. Line redundancies allow the line to deal with some malfunctions from flooding and continue to operate. A more severe flood impact, such as the loss of line towers, would lead to power outages for up to three days in Oamaru, Studholme and Timaru, and for two large irrigation schemes. However, the 1995 Waitaki river flood event (a 1 in a 100 year event) did not lead to power outages in these regions, showing the line's towers remained intact in severe floods.</i></li> <li>➤ <i>Impact from river course change would be high. River course change without the scheme is expected to lead to land loss that would require Transpower to move the lines, incurring significant expense.</i></li> </ul>
Irrigation intakes	<p>Net impact assessment: <b>Moderate</b></p> <ul style="list-style-type: none"> <li>➤ <i>The irrigation companies taking water from the river will have increased costs of infrastructure.</i></li> </ul>

The designation of these assets offers an enhanced protection for the existing flood protection utilities. While these are presently protected by an Otago Regional Council Bylaw, the inclusion of the NoR within the Waitaki District Plan provides greater clarity for land owners and occupiers within the vicinity of the works regarding other works that may impact on the integrity and efficacy of these assets.

The designation of these sites recognises that the assets are an essential utility. The designations will provide an efficient and appropriately enabling planning framework for the continuation of the existing use and any changes to the established assets that may be required in the future.

The Council seeks to minimise any potential adverse effects on the environment resulting from the operation and maintenance of these flood protection assets, and the NoR includes conditions and advice notes to appropriately manage actual and potential environmental effects arising from these activities. Outline plan requirements will also apply to the existing assets, providing the Waitaki District Council with oversight of the environmental effects that result from any continuing works on these assets.

On this basis, the NoR is considered to have potentially positive effects on the community, and in respect of environmental outcomes.

## **LANDSCAPE AND VISUAL EFFECTS**

The landscape and visual effects of the Council's assets differ based on the nature of the asset to be designated, as reflected in the assessment below. The Floodways are located across the Lower Plains, however the other assets to which this NoR relates are located on the lower reaches of the river terrace, which is sparsely populated.

Both Floodways are located within the Rural General Zone. Aside from a groyne located near the northern end of Ferry Road, all cross banks and groynes that are the subject of this NoR are located within the Rural Scenic Zone. The assessment below notes and reflects this key difference.

### **Floodways**

The three floodways that are the subject of this NoR are located on the Waitaki Plains, within the Rural General Zone.

During dry periods, the **Hilderthorpe Floodway** appears as a grassed depression running through the landscape. Where the Hilderthorpe floodway crosses roads, crossings are typically low profile, relying on culverts beneath the road. There are no bridges along the alignment of the Hilderthorpe floodway.



Figure 4: Hilderthorpe Floodway; view west from State highway 1 bridge



Figure 5: Hilderthorpe Floodway; view east from State highway 1 bridge.



Figure 6: Hilderthorpe Floodway; view east from Gray Road crossing



Figure 7: Western view of the Hilderthorpe Floodway Gray Road crossing



**Figure 8: Eastern view of the Hilderthorpe Floodway Gray Road crossing**

Due to the very flat topography across the Waitaki Plains and the lack of planting along the margins of the floodway, visually the floodway is well integrated with, and almost indistinguishable from, the existing topography in the area. The only locations where it is visible is where it crosses roads and the railway line. Where visible, it appears very similar to the irrigation races that are located in the area, albeit largely dry.

The table below identifies residential activities in close proximity to the existing Hilderthorpe Floodway and provides a summary of the visual effect of the Floodway on these activities.

**Table 3: Residential activities in proximity to Hilderthorpe Floodway**

Property address	Mitigation
200 Gray Road	Established plantings provide visual separation from the Floodway, which is located approximately 60 metres from the dwelling.
354 Hilderthorpe Road	Established planting located both upon the site of the dwelling and along the edge of the Floodway provides screening. Floodway is located approximately 60 metres from the dwelling.



Property address	Mitigation
282 Ferry Road	Established planting surrounds the existing dwelling, which is set back from the Floodway by approximately 180 metres. The separation distance is occupied by a paddock.
311 Hilderthorpe Road	Some shelterbelts are located between the dwelling and the Floodway. The Floodway is located 280 metres from the dwelling, with paddocks lying between.
827 Hilderthorpe Pukeuri Road (SH1)	The farm sheds associated with this property are located between the dwelling and the Floodway, which is approximately 310 metres to the north. A shelterbelt also screens the Floodway from view.
250 Corbett Road	There is approximately 500 metres between this dwelling and the Floodway. Planting has been undertaken around the existing dwelling, however the distance between it and the Floodway appropriately mitigates the Floodway's visual effects.
53 Hilderthorpe Road	This dwelling lies approximately 340 metres to the north of the Floodway. Planting has been undertaken around the existing dwelling, and the setback from the floodway mitigates visual effects.
Steward Road	This dwelling is situated approximately 110 metres from the eastern end of the Floodway, across Steward Road. Hedging and an irrigation race are located between the dwelling and the Floodway.

The existing floodway results in visual and landscape effects that are less than minor in respect of these dwellings; it is not dominant within the existing landscape of the area.

As set out above, the Henderson and Waikoura Creek Floodways are complementary, and while visually separate at their commencement at their respective State highway 83 crossings, they converge at Irvine Road, continuing to the Waitaki River.

The **Henderson Creek Floodway** appears as a typical rural stream at its commencement at State highway 83. Slightly incised, it meanders naturally towards the north, with grassed banks, and occasional trees along its margins.



**Figure 9: Henderson Creek Floodway, viewed from State highway 83 looking towards the north.**

Once Henderson Creek is out of sight from State highway 83, it becomes more controlled, following comparatively direct lines towards its convergence with the Waikoura Creek Floodway, on the northern side of Irvine Road. State highway 83 is slightly elevated above the plains, however the fall towards the north is gradual, thereby offering no real views of the more confined alignment of the Floodway beyond the immediate visual catchment of the State highway. The views of the Floodway from Irvine Road are also relatively confined due to the topography of the area. On this basis, there is not considered to be anything present within the landscape that differentiates the Floodway from any other watercourse within this rural environment.

The table below identifies the single residential activity occurring in close proximity to the existing Henderson Creek Floodway and summarises the Floodway's effect on this dwelling.

**Table 4: Residential activities in proximity to Henderson Creek Floodway**

Property address	Mitigation
1357 Georgetown Pukeuri Road	This dwelling is located across SH83 from the commencement of the Floodway, with approximately 80 metres separation distance. This dwelling is oriented towards the north, and the State highway visually separates the Floodway from the dwelling. Established plantings also provide screening.

The existing floodway results in visual and landscape effects that are less than minor in respect of this dwelling.

Like Henderson Creek, at its commencement the **Waikoura Creek Floodway** appears much like any farm stream, noting that it is a more modified environment than Henderson Creek. The terrain in this area is also very similar, providing no views of the stream beyond approximately 200 metres from State highway 83.



**Figure 10: Waikoura Creek Floodway, viewed from State highway 83 towards the north east.**

As seen in Figure 10 above, the Creek carries very low flows (aside from during flood events), and the bed of the floodway is grassed. A concrete ford provides stock crossing in this location. Notably, on the true right bank of the floodway, an irrigation race is present. This Floodway takes a more natural route to its convergence with the Henderson Creek Floodway on the northern side of Irvine Road.

Like the Henderson Creek Floodway, there are not considered to be any landscape characteristics that differentiate the Floodway from other watercourses within this rural environment.

The table below identifies residential activity in close proximity to the existing Waikoura Creek Floodway, and provides a summary of the visual effect of the Floodway on that dwelling.

**Table 5: Residential activities in proximity to Waikoura Creek Floodway**

Property address	Mitigation
1571 Georgetown Pukeuri Road	This dwelling is located in an elevated position 220 metres from the end of the commencement of the Floodway. State highway 83 lies between the residential activity and the Floodway.

The existing floodway results in visual and landscape effects that are less than minor in respect of this dwelling.

From the convergence of the Henderson and Waikoura Creeks, the combined **Henderson and Waikoura Creeks Floodway** exhibits a more modified character, flowing towards the east, where it meets Jardine Road. The combined floodway then runs along the western side of Jardine Road before deviating from this alignment towards the river.



**Figure 11: Henderson and Waikoura Creeks Floodway, viewed from near the intersection of Irvine and Jardine Roads, looking towards the northwest. Note: the water visible at the left side of the image is within the irrigation race, not within the Floodway itself.**

The length of the floodway that runs along Irvine Road (shown in the centre of the image above) results in no adverse visual effects. This area is significantly modified, and the Floodway runs partially adjacent to an irrigation ditch. Existing pasture and cropping in the area also restrict views into the waterway. As such, this portion of the Floodway is considered to have adverse visual effects that are de minimis.



**Figure 12: Henderson and Waikoura Creeks Floodway; viewed from opposite 550 Jardine Road, looking towards the south.**



**Figure 13: Henderson and Waikoura Creeks Floodway; viewed from opposite 550 Jardine Road, looking towards the north.**

The length of the Floodway that extends along Jardine Road is similarly considered to have effects that are de minimis. While the Floodway is visible, its presence is not an adverse effect, and its location alongside the road alignment ensures that infrastructure is co-located as far as practicable. The banks of the Floodway are grassed, and the floodway itself is also fenced.

The final portion of the Floodway meanders from Jardine Road and the Waitaki River. Its course is more typical of a natural rural watercourse, and is thus visually suitable within this receiving environment. It does not result in any adverse visual effects.

The table below identifies residential activities in close proximity to the existing Floodway and provides a summary of the visual effect of the Floodway on these activities.

**Table 6: Residential activities in proximity to Henderson and Waikoura Creeks Floodway**

Property address	Mitigation
1/367 Jardine Road	The dwelling is located approximately 90 metres from the Floodway. Some planting surrounding the house may provide some visual screening, and the low banks along either side of the floodway will obscure it from view.

Property address	Mitigation
2/367 Jardine Road	The dwelling is located approximately 40 metres from the Floodway. Low banks along either side of the floodway will obscure it from view.
460 Jardine Road	The dwelling is located approximately 80 metres from the Floodway, with planting providing screening of the Floodway from view from the dwelling. Jardine Road also reduces any visual prominence of the Floodway.
464 Jardine Road	While the dwelling is located 40 metres from the floodway, the banks running alongside the Floodway make it less visually dominant. Jardine Road also reduces any visual prominence of the Floodway.
550 Jardine Road	This dwelling is located behind a substantial shelterbelt that prevents the visibility of the Floodway. The house is set back 110 metres from the Floodway. The Floodway lies to both the west and north of this dwelling, due to the alignment of the watercourse. A second dwelling on the property benefits from similar screening achieved by plantings and shelterbelts.

Overall, no change in visual effects is anticipated to result from the designation of the existing Floodways for flood protection purposes. Beyond occasional maintenance activities, no works are proposed, however should works be undertaken at a future stage they will be subject to the Waitaki District Council's consideration via the outline plan process. Accordingly, the proposed designation of the existing Floodways is not considered to result in any adverse visual effects that are greater than minor.

### Cross Banks

The locations of the cross banks proposed to be designated via this NoR are shown in **Appendix C**, however include the following general areas:

- Mouth of the Waitaki River
- Two areas at the Waitaki Bridge, either side of State highway 1, including a small portion beneath the highway and the railway line
- A small portion of cross bank beyond the Welcome Creek groyne
- Two areas beyond the northern termination of Wilson Road.

The cross bank that is located at the **mouth of the Waitaki River** runs along the true right bank, for approximately 500 metres. The cross bank is vegetated in a manner that is



consistent with the surrounding area. The cross bank is virtually indistinguishable from the surrounding environment, and thus results in adverse visual effects that are de minimis. The closest residential activities are located at the Motor Camp, approximately 580 metres to the south west. The cross bank in this location is not visible from this distance. No works to this cross bank are proposed in conjunction with this NoR. On this basis, the existing cross bank is considered to have visual effects that are less than minor.

The two cross banks located on either side of State highway 1 at Waitaki Bridge are similarly indistinguishable. The cross bank which lies **beneath the railway line** is accessible via a formed vehicle track, and the railway abutment forms the cross bank (approximately 100 metres in length). The area is vegetated with trees and shrubs, and while visible for users of the access road, it is not easily visible from State highway 1 or from any residential activities.

On the **western side of State highway 1**, the longer cross bank is located in a heavily vegetated area, predominantly of willows. Accordingly, it is not visible from State highway 1, or from the nearest residential activity, located at the Waitaki Bridge village. This cross bank is approximately 200 metres in length.

Due to the inability to readily identify these cross banks, they are considered to have no adverse visual effects. Two groynes are also located in this area, and these are discussed further below.

The short length of cross bank **beyond the Welcome Creek groyne** (discussed below) is approximately 40 metres in length. Due to the extensive planting along the true right bank of the Waitaki River in this location, the cross bank is indistinguishable and therefore has no visual impact.

There are also two cross banks located beyond the northern termination of Wilson Road. The longer of the two cross banks is located to the **east of the northern end of Wilson Road** and is approximately 550 metres in length. Its location is not readily accessible, and the area is heavily vegetated, resulting in the cross bank not being visible in this area. As such, it is considered to have no visual effects.

Similarly, the cross bank located on the **western side of Wilson Road** is approximately 375 metres in length and is not visible from adjoining areas. It is also heavily vegetated, and thus has no adverse visual effects.

The cross banks near Wilson Road are supported by three groynes, the visual effects of which are considered below.

None of the existing cross banks located along the true right bank of the Waitaki River result in adverse visual effects. No specific works are proposed for these cross banks under this NoR; should works be contemplated they will be subject to consideration through the outline plan process prescribed by the RMA.



## Groynes

The locations of the groynes proposed to be designated via this NoR are shown in **Appendix C**, and includes the following areas:

- Waitaki Bridge (either side of State highway 1 – one of 250 metres and one of 480 metres)
- Between Welcome Creek and the Waitaki River (approximately 160 metres in length)
- East of the northern most extent of Ferry Road (600 metres in length)
- Three groynes of varying lengths are located beyond the northern termination of Wilson Road.

The visual assessment relating to the cross banks located at **Waitaki Bridge** is also applicable to the groynes located within this area. No additional adverse visual effects result from these existing assets.

The groyne located **between Welcome Creek and the River** is partially located within the Waimate District and the Canterbury Region. Only the portion that is located within the Waitaki District and Otago Region is proposed to be included in this designation. The groyne is grassed and in pastoral use. It results in no adverse visual effects, and is not visible from any nearby residential activity (the closest dwelling is more than a kilometre to the south west of the groyne). Accordingly, it is considered that the existing groyne has no visual effects.

The groyne at the **northern end of Ferry Road** is grassed and in pastoral use, and is located below the edge of the terrace. It results in no adverse visual effects, and is not visible from any nearby residential activity (the closest dwelling is more than a kilometre to the south west of the groyne). Accordingly, it is considered that the existing groyne has no visual effects.

There are three groynes broadly described as being at the **northern end of Wilson Road**. Two of these groynes intersect with the cross banks described above (the eastern groyne is 400 metres in length, with the central groyne being approximately 150 metres in length), and the same visual assessment applies. On this basis, the visual effects of the two easternmost groynes are considered to be less than minor. The westernmost groyne in this location (approximately 140 metres in length) is also grassed and planted. It is not overlooked by any residential activities, and is appropriate within the landscape. As such, it will not result in any adverse visual effects.

As for the other Council assets included within this NoR, there are no works proposed to the existing groynes at this time, and any such works will of course be subject to consideration in accordance with the outline plan requirements set out in the RMA. The existing groynes do not result in any adverse visual effects.

## HYDROLOGY

The works that are subject to this Notice of Requirement were established by Environment Canterbury's predecessors in the early 1980s. Little data is available in respect of the works associated with the establishment of the scheme. The works are clear of the main stem of the Waitaki River and thus have no impact on the hydrological functioning of the river at normal flows.

Given that the existing works are not within the main stem of the Waitaki River, they similarly do not impact on the life supporting capacity of freshwater in this location.

## CULTURAL

The designation of the existing flood protection assets is considered unlikely to result in any effects that are of concern to mana whenua within this area. The NoR does not impact on any areas identified as holding particular cultural significance in the operative Waitaki District Plan, the Regional Plan: Water for Otago, or the Regional Plan: Coast for Otago. Notwithstanding this, the area does include the following features that are relevant from a cultural perspective:

- Statutory Acknowledgement for the Waitaki River under the Ngai Tahu Claims Settlement Act 1998
- Statutory Acknowledgement for Te Tai o Arai Te Uru (the Otago Coastal Marine Area) under the Ngai Tahu Claims Settlement Act 1998
- Nohoanga sites at Ferry Road and the Waitaki River Mouth, as described in Table 7 below.

Table 7: Nohoanga sites, Lower Waitaki Plains

Site No	Waterway	Site	Legal Description/ Allocation Plan
43	Waitaki River	Ferry Road	6000 square metres, approximately, being Part Waitaki Riverbed, Block VII, Papakaio Survey District. Subject to survey, as shown on Allocation Plan MN 527 (SO24800).
44	Waitaki River	Waitaki River Mouth	1 hectare, approximately, being part Section 53, Block VIII, Papakaio Survey.

Further engagement with mana whenua will inform a more detailed assessment of cultural effects resulting from the designation of these assets.

To address potential archaeological discoveries that result from any future works (including maintenance works), an accidental discovery protocol is volunteered as a condition for this requirement.

## **NOISE**

The flood protection assets are existing, and no specific construction work is proposed. Once in place, no noise will be generated by these assets. Accordingly, the only potential noise effect that could occur as a result of this NoR is related to maintenance works. Such works could include:

- Earthworks and re-grading
- Bridge and culvert replacements
- Weed spraying
- Clearing drains
- Raising bank heights

Should these works be required, they will be of a short duration, and will be undertaken in conjunction with the relevant standard for construction noise. On this basis, it is considered that any noise associated with these works would be consistent with noise resulting from any other construction activities. While less common in the rural environment, as the separation distance between any sensitive receivers and the works is significant noise will be attenuated.

To provide assurance that construction activities will be undertaken in accordance with the relevant New Zealand Standard, the requiring authority volunteers a condition for this NoR requiring adherence to NZS 6803:1999 Acoustics – Construction Noise. Compliance with this standard will ensure that adverse noise effects associated with construction works are no more than minor.

## **TRAFFIC EFFECTS**

The assets proposed to be designated are largely passive, which means that it is not necessary to regularly visit them to undertake work. General maintenance of these assets may be required however any increase in traffic during any future construction can be readily accommodated by the existing road network.

Access to the Floodways is available via defined crossings and gates. Access to the cross banks and groynes is largely via formed and unformed roads.

Effects will be temporary and of short duration and will accordingly be less than minor.

## **EFFECTS ON OTHER INFRASTRUCTURE**

The existing assets have positive effects on other infrastructure in the general vicinity, and the flood protection they afford provides for lifeline utility activities in particular.

Consultation will occur with the providers of this infrastructure, and this assessment will be updated by the resultant outputs.

## **SUMMARY**

Based on the assessment set out above, it is considered that there will be no more than minor adverse effects on the environment as a result of these designations and any works that would be provided for by the designations. For any future works, details of work to be undertaken within the designations will be provided via the outline plan process and section 176A of the RMA. At that stage, any additional measures required to be undertaken to avoid, remedy or mitigate effects on the environment will be undertaken.

Draft for Consultation



Draft for Consultation

# A

## **APPENDIX A**

Henderson/Waikoura Creeks  
Floodway

## HENDERSON/WAIKOURA CREEK FLOODWAY

### LEGAL DESCRIPTIONS AND OWNERSHIP DETAILS

Records of title will be attached to final version.

Street address	Title Reference	Legal Description	Ratepayer	Ratepayer Address
1531 Georgetown- Pukeuri Road	OT9A/648 OT2D/1078	Lot 1 DP 20381 Pt Lot B P 2358 Sec 62 Pt Sec 63 Blk I Secs 78-79 Blk IV Awamoko SD	Trevor Alan Lee, HGW Trustees Ltd, BCO Trustees (2011) Ltd	c/- 1531 Georgetown- Pukeuri Road RD 14K Oamaru 9494
Irvine Road Awamoko	126073	Secs 60-61 Pt Sec 59 Blk I Secs 10-11 Pt Secs 7-8 Blk VI Awamoko SD Lot 2 DP 25798	John Ross & Maree Robyn Skinner	100 McPhee Road RD 15 K Oamaru 9494
Jardine Road Peebles	724529 OT5A/909 OT257/112	Secs 80-81 Blk I Pt Secs 57-58 84- 85 Blk I Secs 55- 56 Blk I Awamoko SD	Lynley Joy & Lucien Bernhardt Verkerk & GCA Legal Trustee 2016 Ltd	179 Jardine Road RD 3K Oamaru 9494
1276 Georgetown- Pukeuri Road	OT190/136	Secs 19-21 24-26 Pt 23 Blk IV Awamoko SD Sec 25 Pukenui Settlement	Strachan Farms Ltd	1276 Georgetown- Pukeuri Road RD 15K Oamaru 9494
179 Jardine Road Peebles	OT8C/443	Lot 1 DP 25796 Lots 1-2 DP 17195	Skinner Farms Ltd	179 Jardine Road RD 3K Oamaru 9494
195 Aitchison Road Awamoko	272206 603662	Lot 1 DP 25797 Lot 1 DP 25798 Lot 1 DP 316736 Secs 1 2 SO 360321 Sec 18A Steward	Cornelis & Donna Maree Smit, Sharp Tudhope Trustee Services No 3 Ltd, Corona Trust	Otakiri Road RD 2 Whakatane 3192

Settlement Blk I Awamoko SD				
195 Aitchison Road Awamoko	OT16B/1004 OT13C/646	Lots 1 2 DP 24473 Lots 2 3 418232 Secs 14A19A Steward Settlement	Smit Dairies Ltd	74 Aitchison Road RD 3K Oamaru 9494
1 Jardine Road Peebles	OT10C/1198	Lot 1 DP 324337 Lot 1 DP 19347	Isa Holdings Ltd	c/- Grant & Rebecca Isbister 36 Homestead Road RD 1D Oamaru 9492
Waitaki District Council Roading				

## PHOTOGRAPHS



Figure 1: Henderson Creek at State highway 83



Figure 2: Henderson Creek from State highway 83 (downstream)





Figure 3: Henderson Creek from State highway 83 (downstream)



Figure 4: Waikoura Creek at State highway 83



Figure 5: Waikoura Creek at State highway 83



Figure 6: Waikoura Creek at State highway 83 (downstream)



Figure 7: Waikoura Creek at State highway 83 (downstream)



Figure 8: Waikoura Creek at State highway 83 (downstream)



Figure 9: Waikoura Creek at State highway 83 (downstream). Note irrigation channel to the right of image



Figure 10: Henderson/Waikoura Floodway from Irvine Road (upstream)



**Figure 11: Henderson/Waikoura Floodway from Irvine Road (downstream)**



**Figure 12: Henderson/Waikoura Floodway from intersection of Irvine and Jardine Road. Note irrigation canal to left of image**



Figure 13: Henderson/Waikoura Floodway from Jardine Road (upstream)



Figure 14: Henderson/Waikoura Floodway from Jardine Road (downstream)

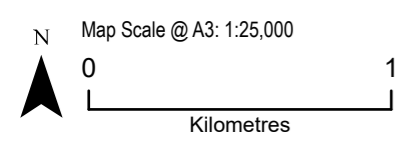
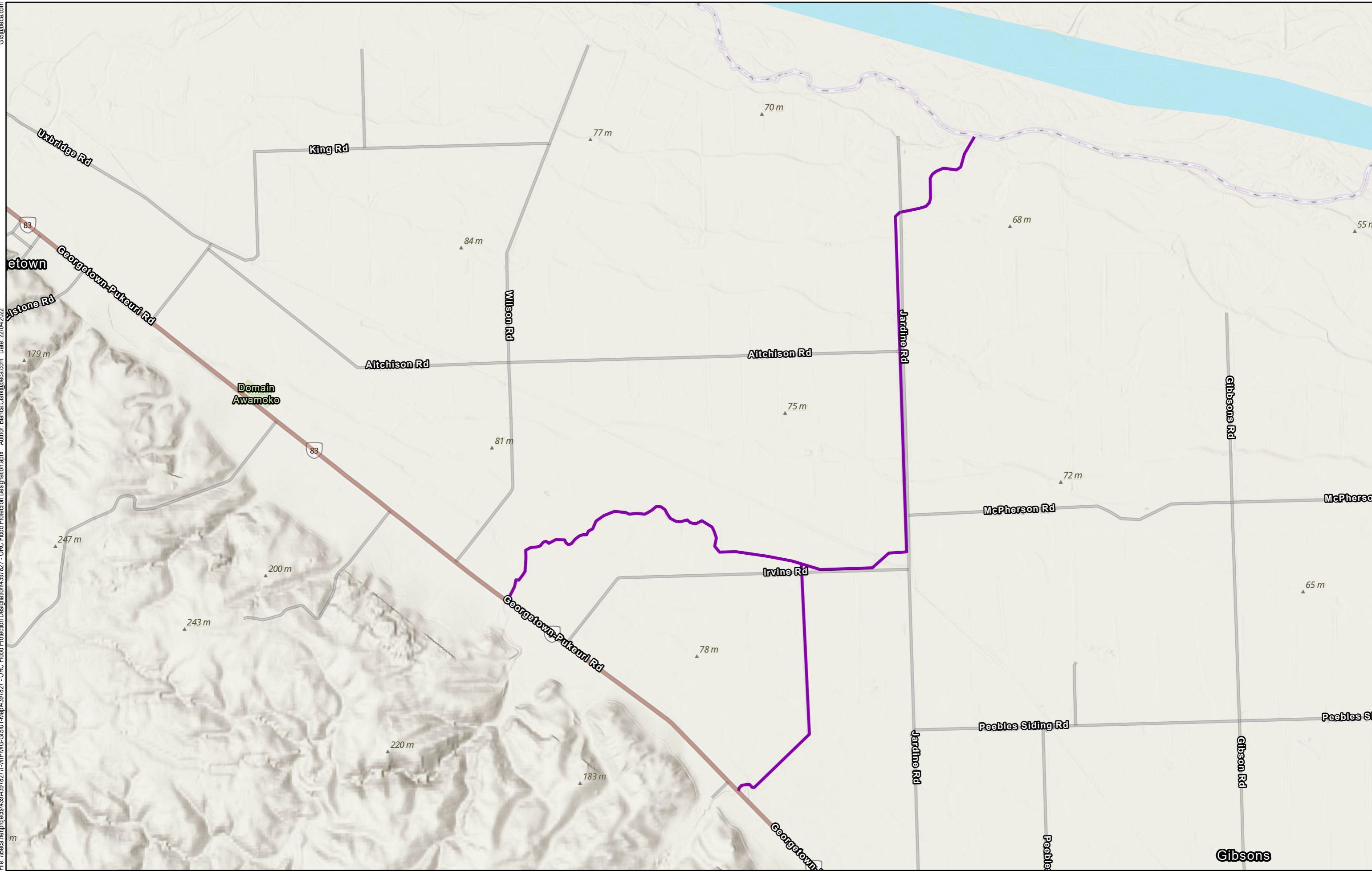


Figure 15: Henderson/Waikoura Floodway from Jardine Road(upstream). Note depth of channel.



## PLANS



File: \\Beca.net\projects\43978271-WIP\WIG-GIS\01-Map\4397827 - ORC Flood Protection Designation.aprx - Author: Bianca.Clark@beca.com Date: 22/04/2022



### Waitaki Designation Hendersons and Waikoura Creek Floodways

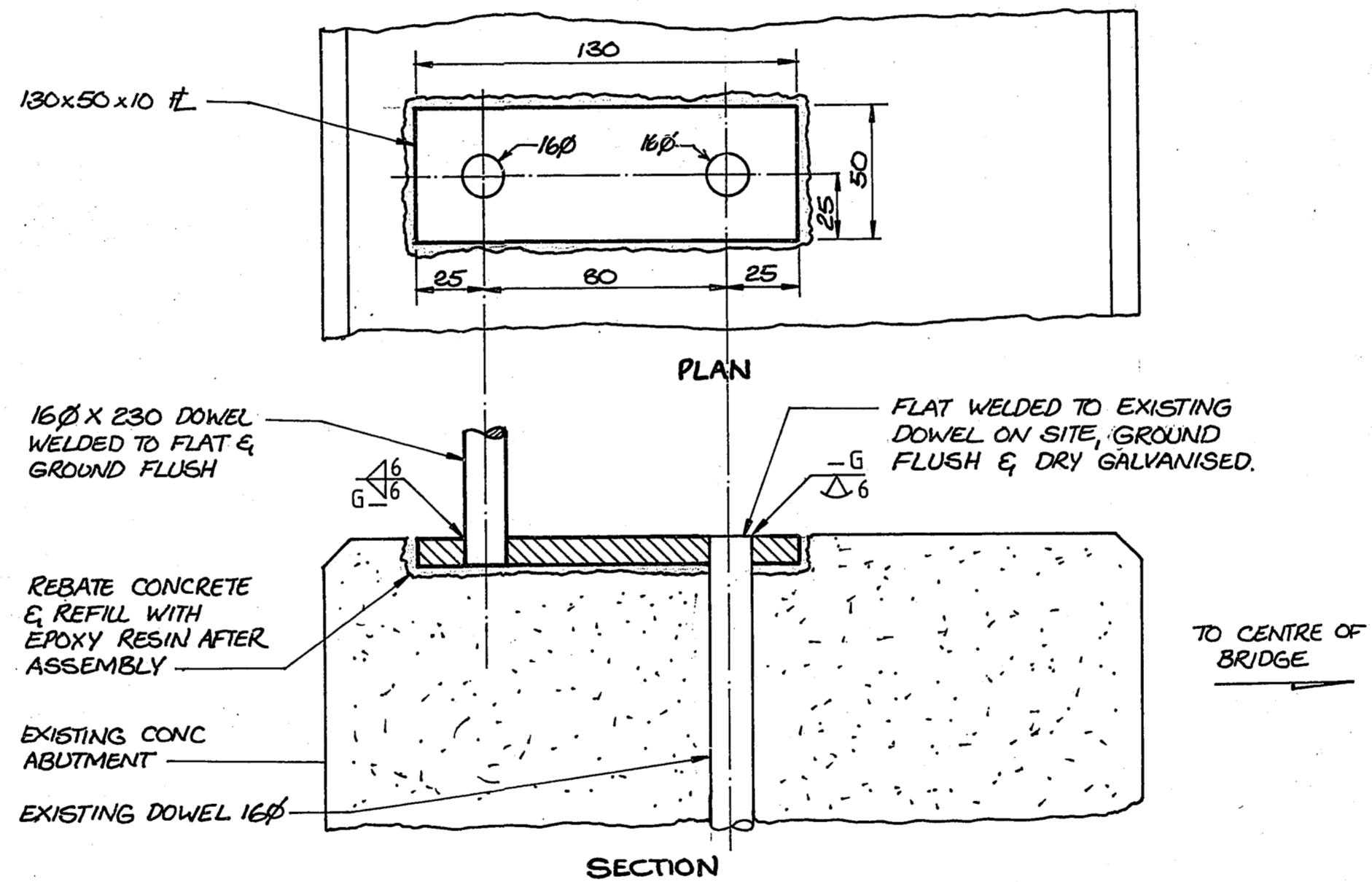
- Legend**
-  Hendersons and Waikoura Creek Floodway
  -  Regional Council Boundaries




Map created by Beca GIS. Contact: Bianca.Clark@beca.com. Contains data sourced from Otago Regional Council and Environment Canterbury. Contains Crown Copyright Data. Crown Copyright Reserved. This map contains data derived in part or wholly from sources other than Beca, and therefore, no representations or warranties are made by Beca as to the accuracy or completeness of this information. Map intended for distribution as a PDF document. Scale may be incorrect when printed. Basemap: Esri, NASA, NGA, USGS, LINZ, Stats NZ, Eagle Technology, Esri, HERE, Garmin, METI/NASA, USGS



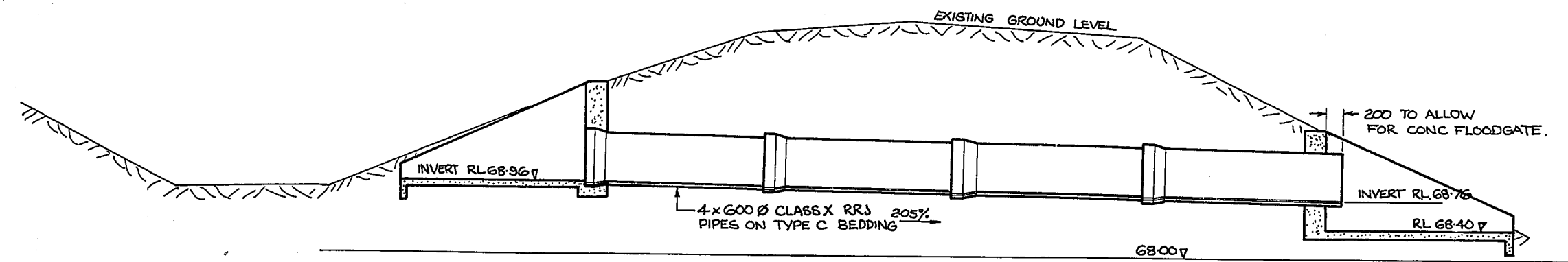
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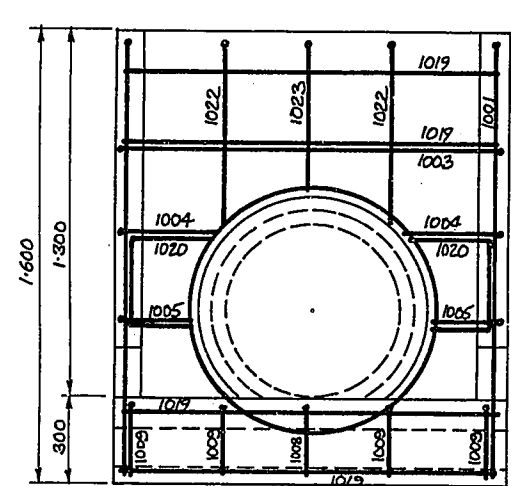
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DRAWN / DATE	MS. MAY 82

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TITLE	
WAIKOURA HENDERSON CREEK DIVERSION. STAGE I ADJUSTMENT OF LOCATING DOWELS - SMITHS BRIDGE	

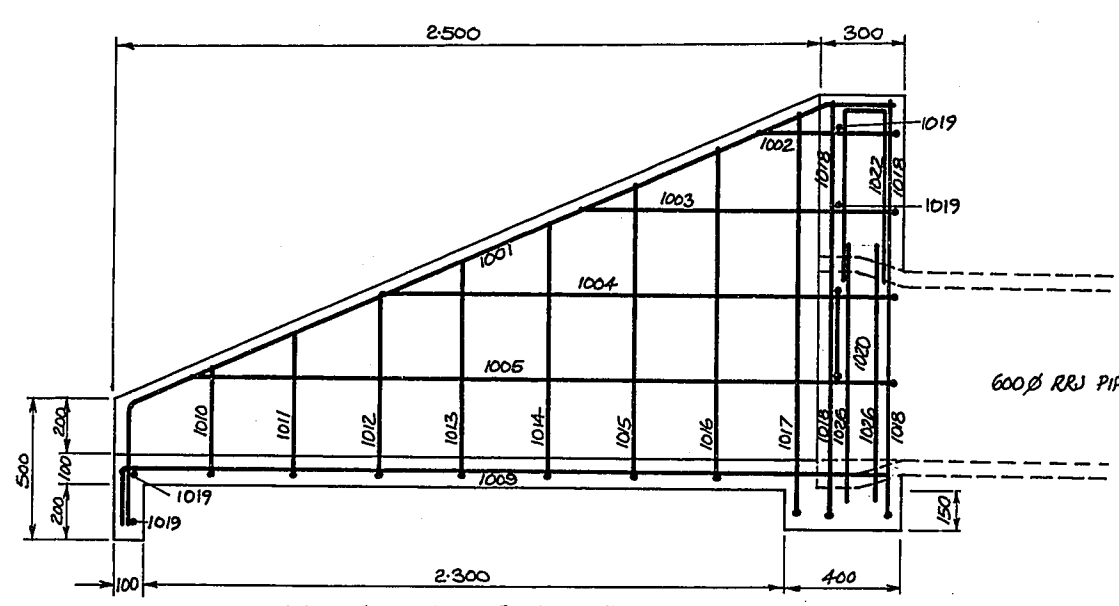
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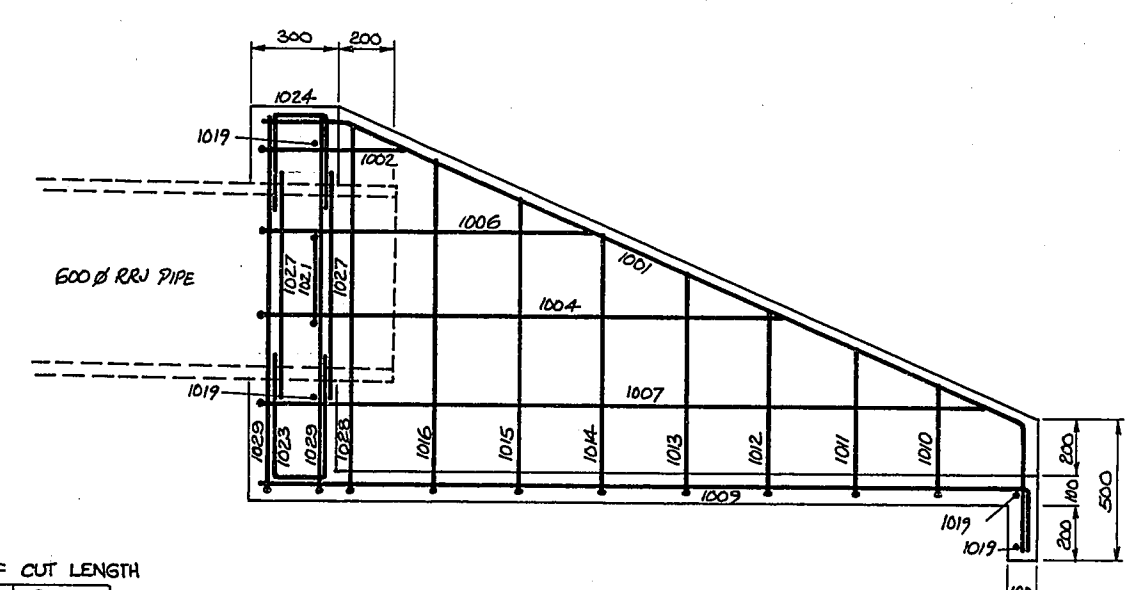


END ELEVATION

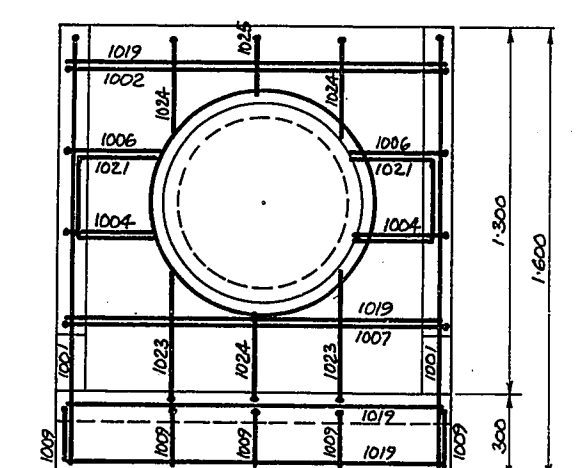


INLET FRONT ELEVATION  
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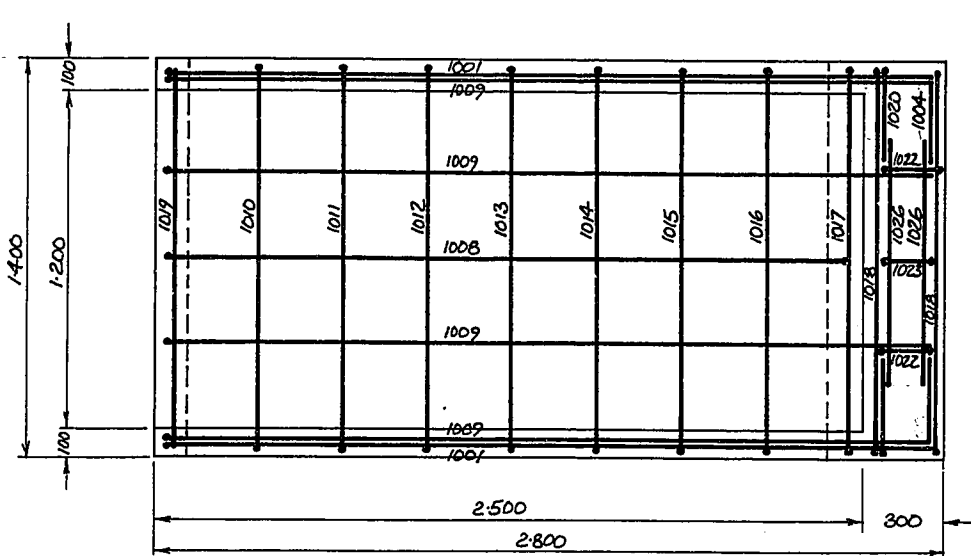
NOTE:  
1. ALL EXPOSED CORNERS TO HAVE A 25x25 CHAMFER  
2. MINIMUM COVER TO REINFORCEMENT TO BE 40mm  
3.



OUTLET FRONT ELEVATION  
SCALE 1:20



END ELEVATION



PLAN

STEEL SCHEDULE

MEMBER	a	b	c	Nº OFF CUT LENGTH	NO	LENGTH
1001	AS SHOWN	OPPOSITE		4	3107	
1002	500	1300	500	2	1755	
1003	1150	1300	1150	1	3555	
1004	1850	300	-	4	2128	
1005	2500	250	-	2	2728	
1006	1200	300	-	2	1478	
1007	2600	1300	2600	1	6455	
1008	200	2400	150	1	2705	
1009	2700	200	-	9	2878	
1010	350	1300	350	2	1955	
1011	500	1300	500	2	2255	
1012	600	1300	600	2	2455	
1013	750	1300	750	2	2755	
1014	850	1300	850	2	3015	
1015	1020	1300	1020	2	3295	
1016	1150	1300	1150	2	3555	
1017	1400	1300	1400	1	4055	
1018	1450	1300	1450	2	4155	
1019	1300	-	-	8	1300	
1020	300	300	200	2	755	
1021	300	300	300	2	855	
1022	600	200	600	2	1355	
1023	500	200	500	3	1155	
1024	350	200	350	3	855	
1025	200	200	200	1	555	
1026	320 Ø	-	-	2	3211	
1027	810 Ø	-	-	2	2865	
1028	1280	1300	1280	1	3815	
1029	1300	1300	1300	2	3855	

INLET & OUTLET TOTAL CONCRETE = 2.392 m³  
TOTAL STEEL = 169.006 m x 0.617 kg/m = 104.28 kg or 0.104 tonne

surveyed designed drawn traced approved amendments	by	date	catchment no. aerial photo ref. level book no.
	D.A. NOTTAGE	APRIL 82	
	N.A. STRANGE	MAY 82	

**WAIKOURA HENDERSON CREEK DIVERSION**  
**STAGE 1** CULVERT AT ch 1883m JARDINE ROAD

total area

file.

scale. AS SHOWN

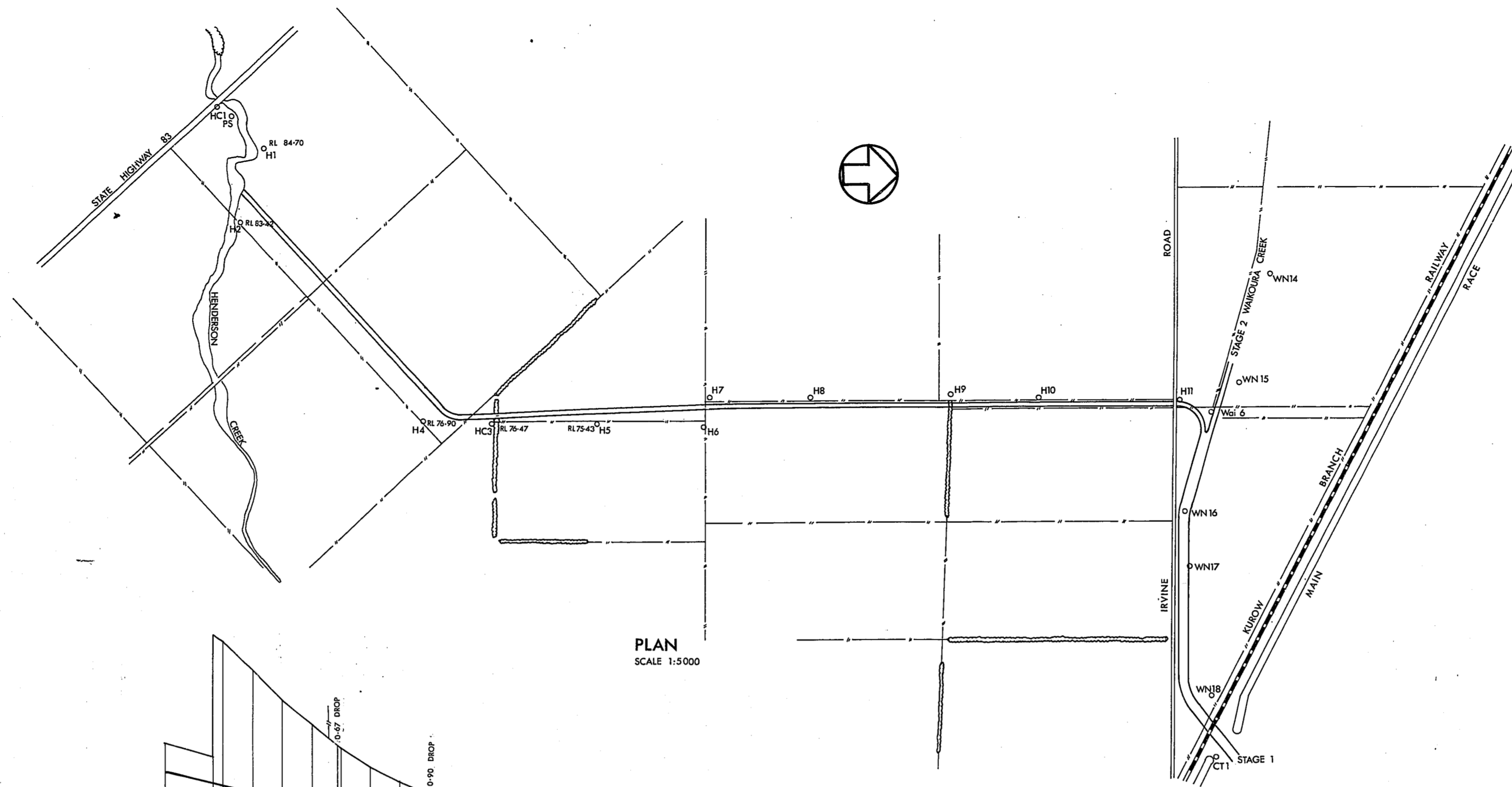
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sheet 10 of 10 sheets

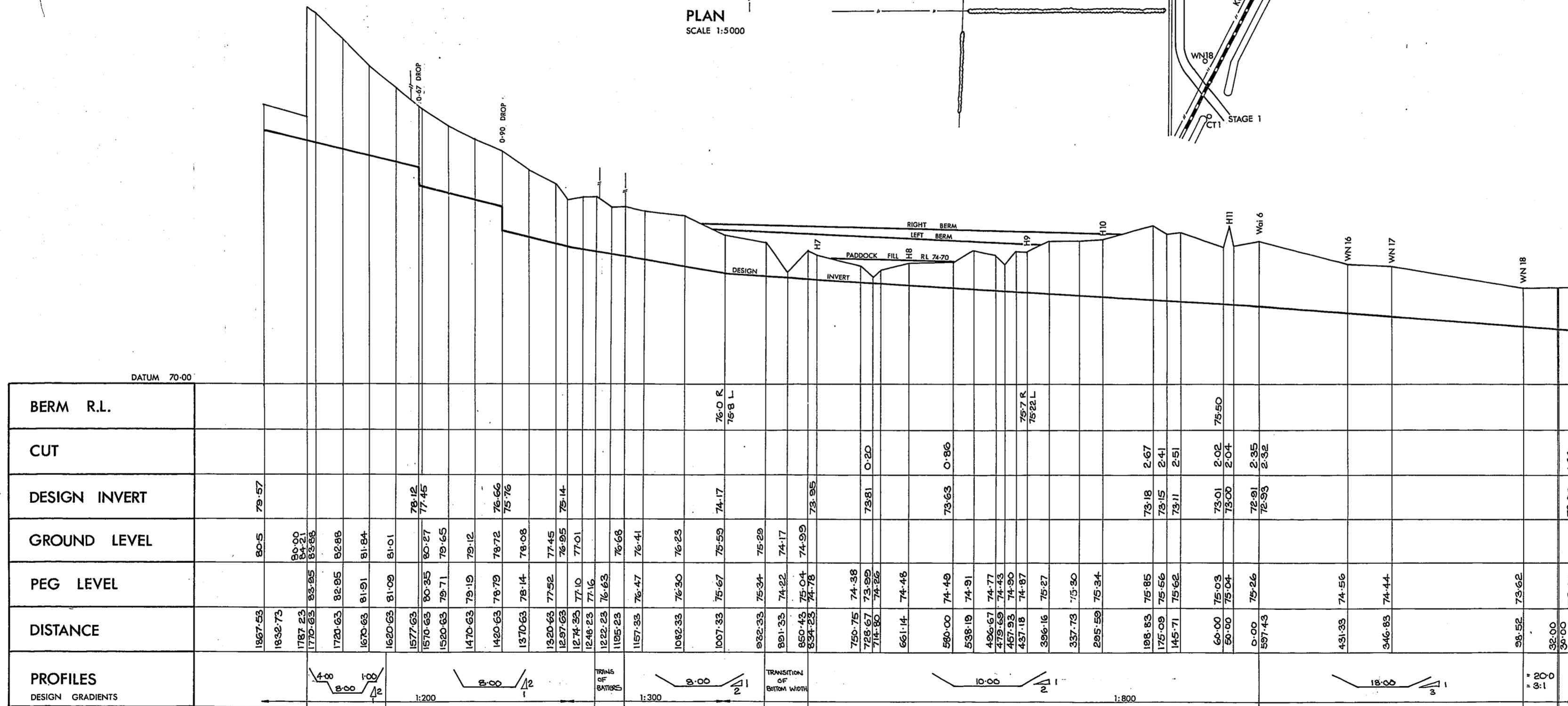
WAITAKI CATCHMENT COMMISSION AND REGIONAL WATER BOARD

KUROW



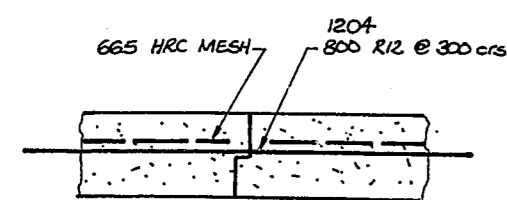


PLAN  
SCALE 1:5000

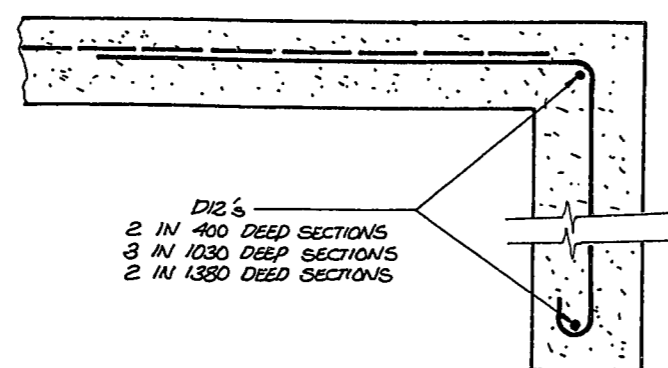


LONG SECTION SCALES  
HORIZ 1:5000  
VERT 1:100

BERM R.L.	CUT	DESIGN INVERT	GROUND LEVEL	PEG LEVEL	DISTANCE	PROFILES DESIGN GRADIENTS
		79.57	80.5	80.5	1867.53	4.00 / 8.00
			80.91	80.91	1832.73	1:200
			83.85	83.85	1787.23	1:200
			82.85	82.85	1770.63	1:200
			81.84	81.84	1720.63	1:200
			81.01	81.01	1670.63	1:200
			80.27	80.27	1620.63	1:200
			79.12	79.12	1577.63	1:200
			78.72	78.72	1570.63	1:200
			78.76	78.76	1520.63	1:200
			78.08	78.08	1470.63	1:200
			77.45	77.45	1420.63	1:200
			76.95	76.95	1370.63	1:200
			77.01	77.01	1320.63	1:200
			76.63	76.63	1274.53	1:200
			76.41	76.41	1248.23	1:200
			76.41	76.41	1222.23	1:200
			76.23	76.23	1185.23	1:200
			74.17	74.17	1157.35	1:300
			75.59	75.59	1082.33	1:300
			75.29	75.29	1007.33	1:300
			74.17	74.17	932.33	1:300
			73.85	73.85	891.33	1:300
			73.81	73.81	860.43	1:300
			73.85	73.85	834.23	1:300
			73.85	73.85	804.23	1:300
			73.85	73.85	769.75	1:300
			73.85	73.85	744.82	1:300
			73.85	73.85	714.82	1:300
			73.85	73.85	681.14	1:300
			73.85	73.85	651.14	1:300
			73.85	73.85	620.00	1:300
			73.85	73.85	598.19	1:300
			73.85	73.85	574.77	1:300
			73.85	73.85	549.67	1:300
			73.85	73.85	524.67	1:300
			73.85	73.85	499.67	1:300
			73.85	73.85	474.67	1:300
			73.85	73.85	449.67	1:300
			73.85	73.85	424.67	1:300
			73.85	73.85	399.67	1:300
			73.85	73.85	374.67	1:300
			73.85	73.85	349.67	1:300
			73.85	73.85	324.67	1:300
			73.85	73.85	299.67	1:300
			73.85	73.85	274.67	1:300
			73.85	73.85	249.67	1:300
			73.85	73.85	224.67	1:300
			73.85	73.85	199.67	1:300
			73.85	73.85	174.67	1:300
			73.85	73.85	149.67	1:300
			73.85	73.85	124.67	1:300
			73.85	73.85	99.67	1:300
			73.85	73.85	74.67	1:300
			73.85	73.85	49.67	1:300
			73.85	73.85	24.67	1:300
			73.85	73.85	-1.33	1:300
			73.85	73.85	-26.33	1:300
			73.85	73.85	-51.33	1:300
			73.85	73.85	-76.33	1:300
			73.85	73.85	-101.33	1:300
			73.85	73.85	-126.33	1:300
			73.85	73.85	-151.33	1:300
			73.85	73.85	-176.33	1:300
			73.85	73.85	-201.33	1:300
			73.85	73.85	-226.33	1:300
			73.85	73.85	-251.33	1:300
			73.85	73.85	-276.33	1:300
			73.85	73.85	-301.33	1:300
			73.85	73.85	-326.33	1:300
			73.85	73.85	-351.33	1:300
			73.85	73.85	-376.33	1:300
			73.85	73.85	-401.33	1:300
			73.85	73.85	-426.33	1:300
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			73.85	73.85	-626.33	1:300
			73.85	73.85	-651.33	1:300
			73.85	73.85	-676.33	1:300
			73.85	73.85	-701.33	1:300
			73.85	73.85	-726.33	1:300
			73.85	73.85	-751.33	1:300
			73.85	73.85	-776.33	1:300
			73.85	73.85	-801.33	1:300
			73.85	73.85	-826.33	1:300
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			73.85	73.85	-901.33	1:300
			73.85	73.85	-926.33	1:300
			73.85	73.85	-951.33	1:300
			73.85	73.85	-976.33	1:300
			73.85	73.85	-1001.33	1:300
			73.85	73.85	-1026.33	1:300
			73.85	73.85	-1051.33	1:300
			73.85	73.85	-1076.33	1:300
			73.85	73.85	-1101.33	1:300
			73.85	73.85	-1126.33	1:300
			73.85	73.85	-1151.33	1:300
			73.85	73.85	-1176.33	1:300
			73.85	73.85	-1201.33	1:300
			73.85	73.85	-1226.33	1:300
			73.85	73.85	-1251.33	1:300
			73.85	73.85	-1276.33	1:300
			73.85	73.85	-1301.33	1:300
			73.85	73.85	-1326.33	1:300
			73.85	73.85	-1351.33	1:300
			73.85	73.85	-1376.33	1:300
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			73.85	73.85	-1426.33	1:300
			73.85	73.85	-1451.33	1:300
			73.85	73.85	-1476.33	1:300
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			73.85	73.85	-1551.33	1:300
			73.85	73.85	-1576.33	1:300
			73.85	73.85	-1601.33	1:300
			73.85	73.85	-1626.33	1:300
			73.85	73.85	-1651.33	1:300
			73.85	73.85	-1676.33	1:300
			73.85	73.85	-1701.33	1:300
			73.85	73.85	-1726.33	1:300
			73.85	73.85	-1751.33	1:300
			73.85	73.85	-1776.33	1:300
			73.85	73.85	-1801.33	1:300
			73.85	73.85	-1826.33	1:300
			73.85	73.85	-1851.33	1:300
			73.85	73.85	-1876.33	1:300
			73.85	73.85	-1901.33	1:300
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			73.85	73.85	-1951.33	1:300
			73.85	73.85	-1976.33	1:300
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			73.85	73.85	-2076.33	1:300
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			73.85	73.85	-2126.33	1:300
			73.85	73.85	-2151.33	1:300
			73.85	73.85	-2176.33	1:300
			73.85	73.85	-2201.33	1:300
			73.85	73.85	-2226.33	1:300
			73.85	73.85	-2251.33	1:300
			73.85	73.85	-2276.33	1:300
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			73.85	73.85	-2326.33	1:300
			73.85	73.85	-2351.33	1:300
			73.85	73.85	-2376.33	1:300
			73.85	73.85	-2401.33	1:300
			73.85	73.85	-2426.33	1:300
			73.85	73.85	-2451.33	1:300
			73.85	73.85	-2476.33	1:300
			73.85	73.85	-2501.33	1:300
			73.85	73.85	-2526.33	1:300
			73.85	73.85	-2551.33	1:300
			73.85	73.85	-2576.33	1:300
			73.85	73.85	-2601.33	1:300
			73.85	73.85	-2626.33	1:300
			73.85	73.85	-2651.33	1:300
			73.85	73.85	-2676.33	1:300
			73.85	73.85	-2701.33	1:300
			73.85	73.85	-2726.33	1:300
			73.85	73.85	-2751.33	1:300
			73.85	73.85	-2776.33	1:300
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			73.85	73.85	-2826.33	1:300
			73.85	73.85	-2851.33	1:300
			73.85	73.85	-2876.33	1:300
			73.85	73.85	-2901.33	1:300
			73.85	73.85	-2926.33	1:300
			73.85	73.85	-2951.33	1:300
			73.85	73.85	-2976.33	1:300
			73.85	73		



CONSTRUCTION JOINT  
JOINTS AT CHANGE OF GRADE  
SCALE 1:100

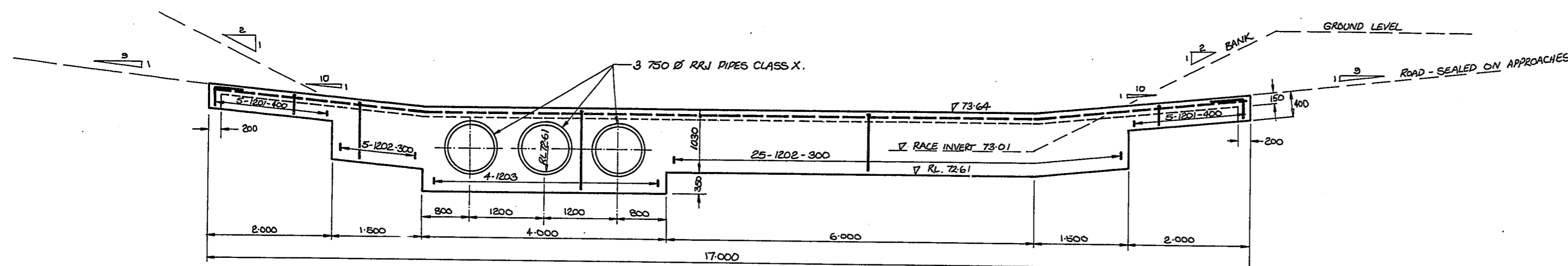


PERIMETER DETAIL  
SCALE 1:100

STEEL SCHEDULE

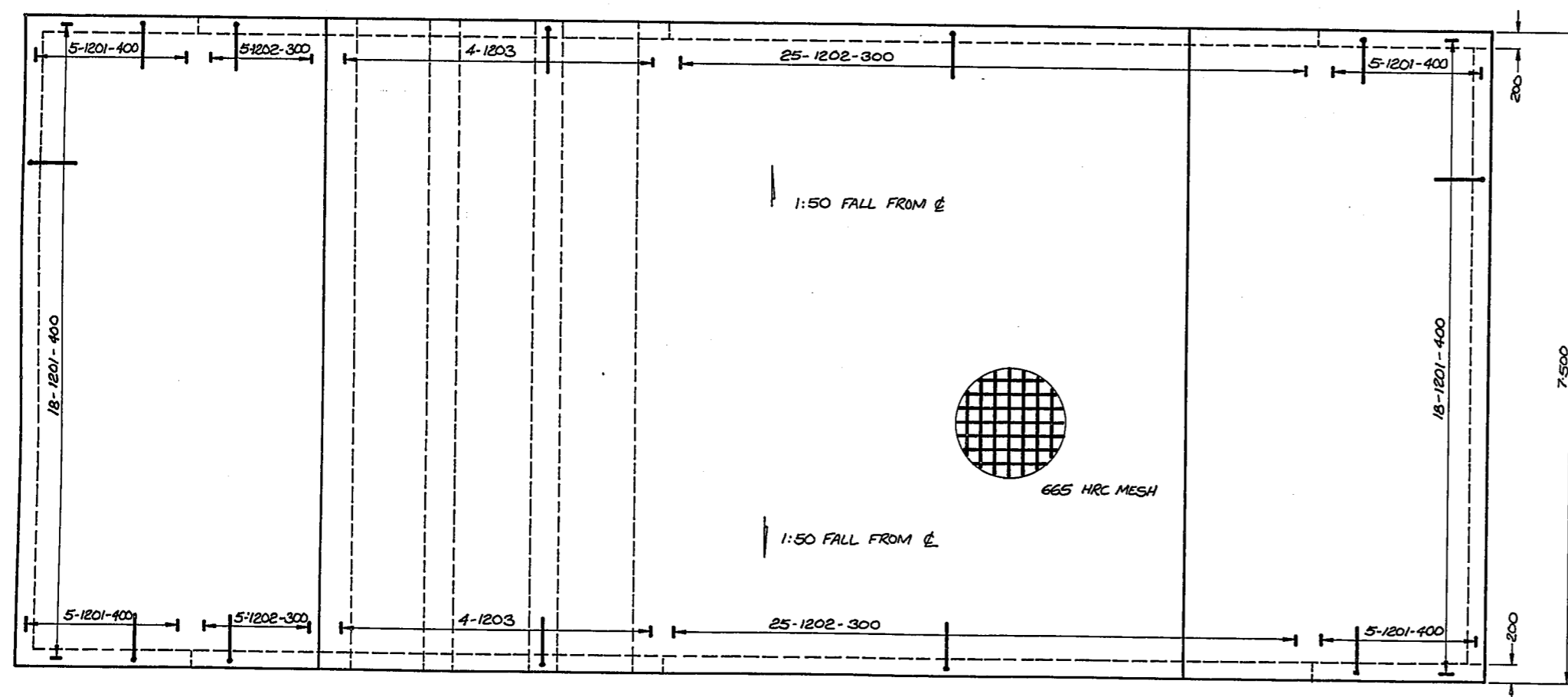
MEMBER	Nº OFF	SHAPE	CUT LENGTH	TOTAL LENGTH
1201	56	480	893	50008
1202	60	450	1-823	51380
1203	8	480	1-873	14984
1204	50	800	800	40000
AROUND PERIMETER				116000
665 HRC MESH				125.06 m <sup>2</sup>

TOTAL STEEL 312.372 m<sup>3</sup> or 0.275t  
TOTAL CONC 24.607 m<sup>3</sup>



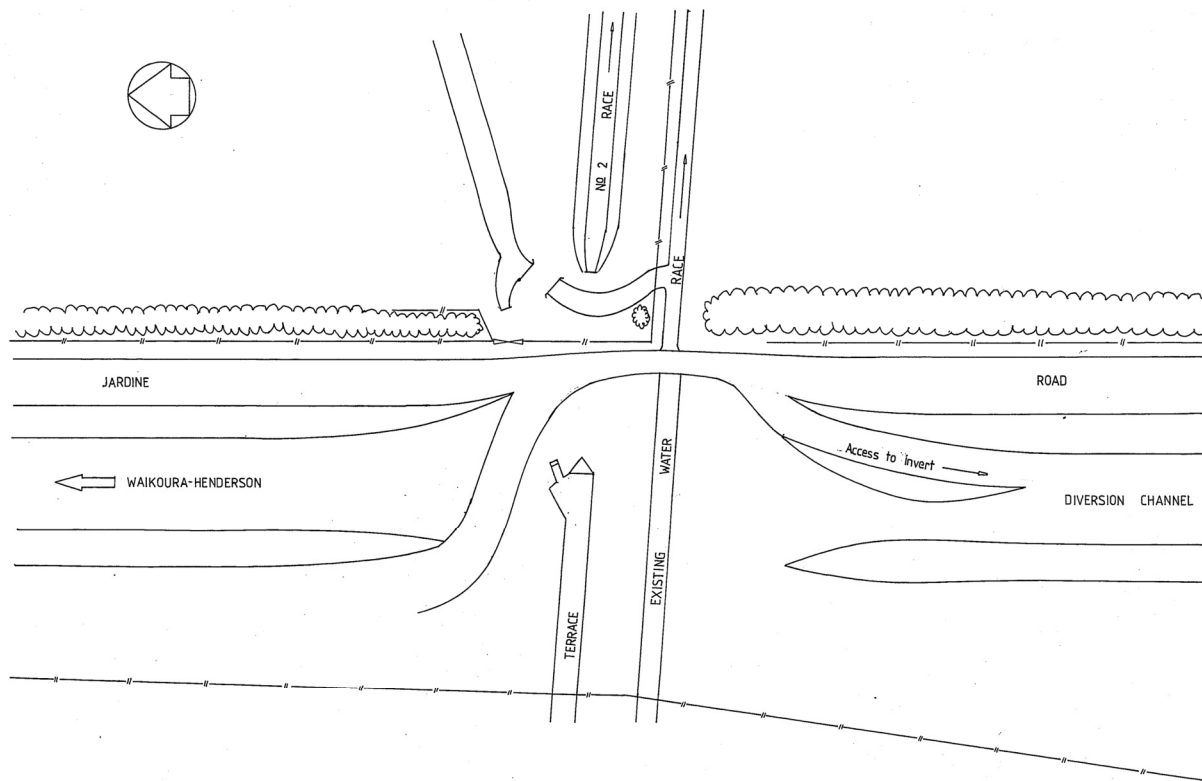
ELEVATION

NOTES:  
1. PIPES TO BE CONCRETE HAUNCHED.  
2. BACKFILL TO BE PLACED TO SLAB LEVEL IN LAYERS NOT EXCEEDING 150mm & THOROUGHLY COMPACTED.



PLAN  
SCALE 1:50

surveyed designed drawn traced approved amendments " "	by	date	catchment no. aerial photo ref. level book no.	<h2 style="margin: 0;">WAIKOURA HENDERSON CREEK DIVERSION</h2> <h3 style="margin: 0;">STAGE 3</h3> <p style="margin: 0;">WASHOVER FORD, IRVINE ROAD</p>	file.	WAITAKI CATCHMENT COMMISSION AND REGIONAL WATER BOARD  
	D.A.N.				scale. AS SHOWN	
	D.A.N.	3 JUNE 82			plan no. <b>802</b> rev <b>0</b>	
	D.A.N.	4 JUNE 82			sheet 13 of sheets	
	M.S.	9 JUNE 82				
total area				KUROW		



surveyed designed drawn traced approved amendments	by	date	catchment no. aerial photo ref. level book no.
	P.L.T. S.M.N	2-2-82	
	P.L.T.	5-2-82	
	P.L.T.	5-2-82	

**WAIKOURA-HENDERSON CREEK DIVERSION**  
**M.W.D Siphon; Terrace No 2 Race, Jardine Road**

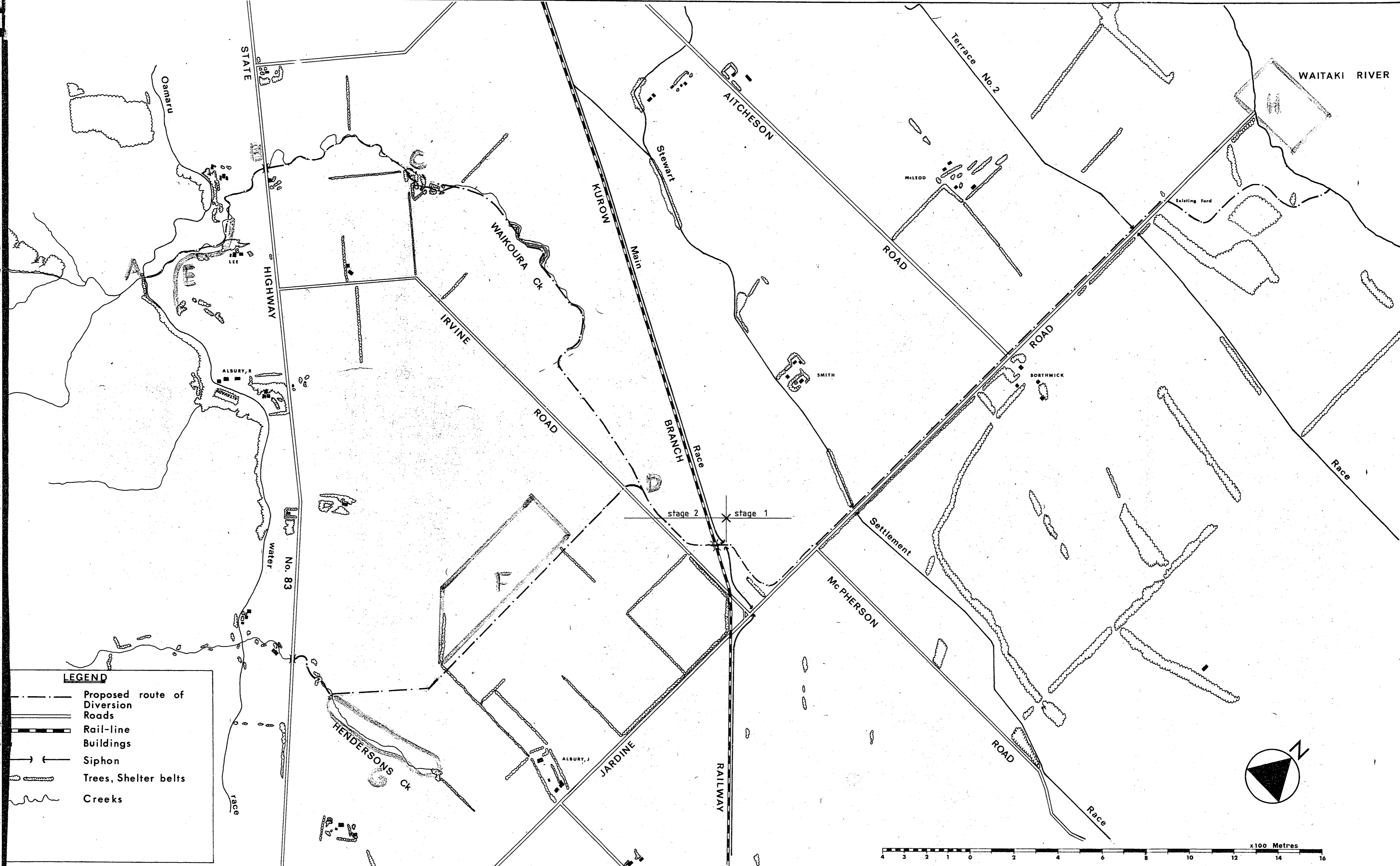
total area

file.	
scale.	1:400
plan no.	<b>619</b>
sheet	of sheets

WAITAKI CATCHMENT  
 COMMISSION AND  
 REGIONAL WATER  
 BOARD

KUROW





**LEGEND**

- Proposed route of Diversion
- Roads
- Rail-line
- Buildings
- Siphon
- Trees, Shelter belts
- Creeks

Surveyed signed on ced proved endments "	by	date	catchment no. aerial photo ref. level book no.
	C MacGeorge	4-81	
	<i>[Signature]</i>	22/10/81	

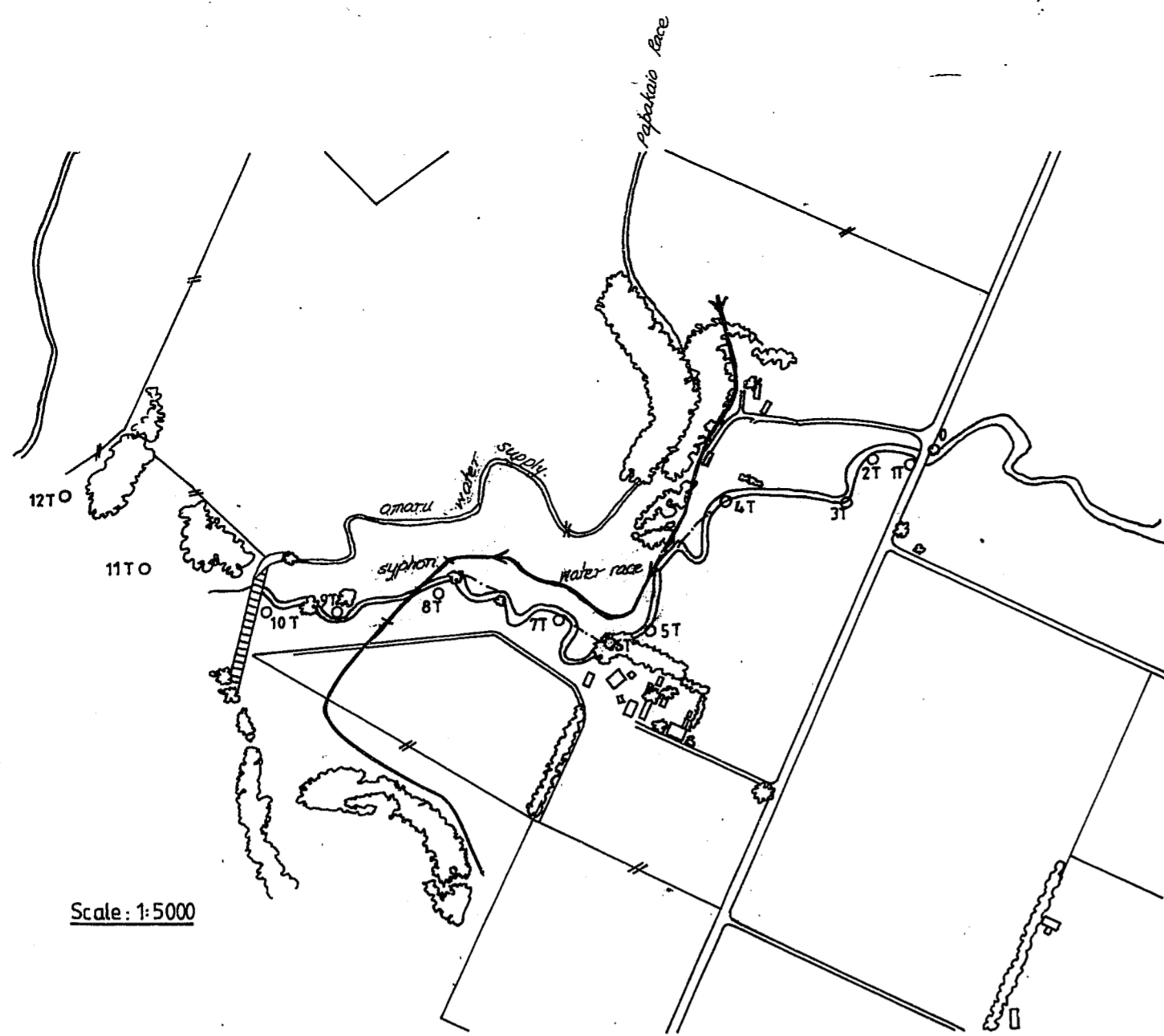
## WAIKOURA-HENDERSON CREEK DIVERSION

(STAGE 1)

### General Locality Plan

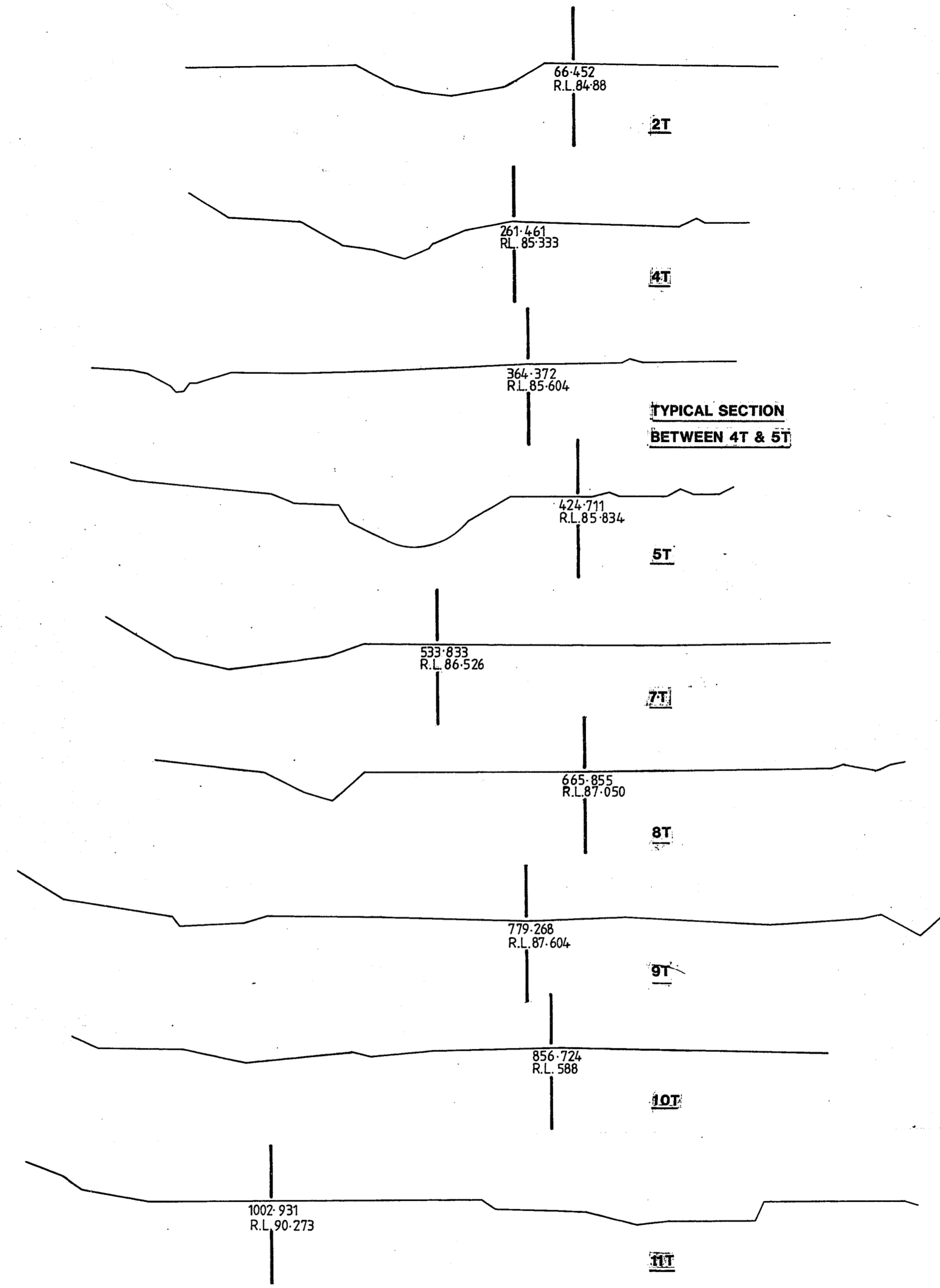
scale 1:7920		WAITAKI CATCHMENT COMMISSION AND REGIONAL WATER BOARD  KUROW
10 CHAIN : 1 INCH		
file	REVISION	
plan no. <b>802</b>		
sheet 1 of 8 sheets		

7290072



DATUM	80 m												
BERM LEVEL	12T	11T	10T	9T	8T	7T	6T	5T	4T	3T	2T	1T	0
CUT		0	0.35	0.40		1.43	1.44	0.80	0.72		0	1.20	
DES. INVERT		86.30	87.45	87.1	86.5	85.27	85.16	84.90	84.99	83.28	83.46	82.72	82.6
EXT. INVERT		86.20	87.60	87.60	88.00	88.7	88.33	88.14	88.40	87.80	87.25	86.80	86.6
LEVEL	92.76	90.27	88.59	87.60	87.00	86.6	86.33	86.30	86.14	85.68	85.15	84.92	84.80
DISTANCE	4529.3	4409.2	4463.0	4183.5	4072.1	4200	3960	3940.1	3976.9	3820.9	3730	3700	3420.6
DESIGN DATA	$Q = 42 \text{ m}^3/\text{sec}$ , $S = \frac{1}{200}$ , $n = 0.032$ , $d = 1.1 \text{ m}$ $Q = 42 \text{ m}^3/\text{sec}$ , $S = \frac{1}{350}$ , $n = 0.032$ , $d = 1.84 \text{ m}$												

Scale: 1:100 Vertical  
1:5000 Horizontal

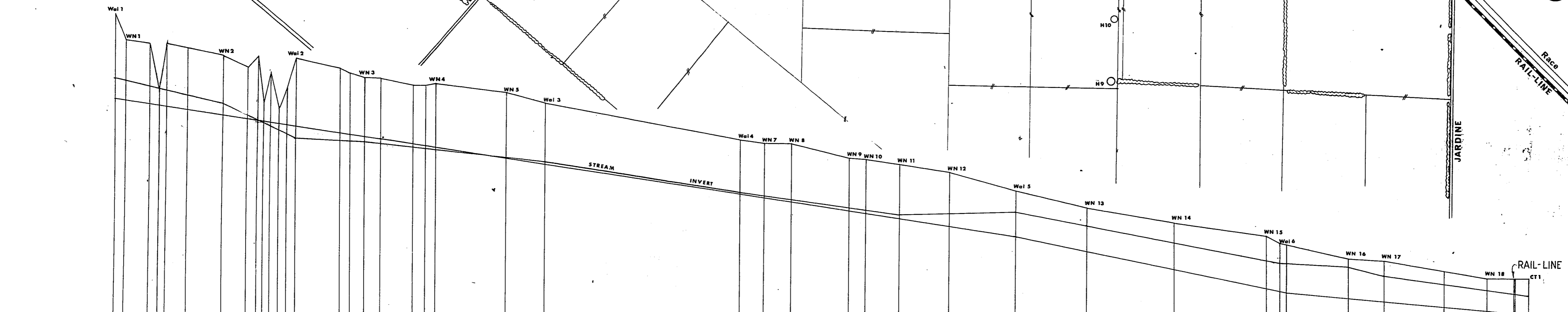


WAIKOURA - HENDERSON CREEK DIVERSION

Upper-Waikoura Traverse

SCALE	As shown	NUMBER	
FILE	3334/2		
DATE	JUNE 81		
DRAWN	J.O.H.		619
CHECK			

GABITES ALINGTON AND EDMONDSON  
ARCHITECTS & TOWNPLANNING CONSULTANTS



Datum 70m

DATUM: MEAN SEA LEVEL (LYTTELTON) - DATUM DIFF. 55 mm

	WN1	WN2	WN3	WN4	WN5	WN6	WN7	WN8	WN9	WN10	WN11	WN12	WN13	WN14	WN15	WN16	WN17	WN18		
FILL																				
CUT	0.94	2.99	2.39	0.73																
DES. INVERT	81.74	81.68	81.50	81.43	81.24	81.00	80.83	80.76	80.61	80.49	80.18	80.12	80.02	79.91	79.68	79.60	79.55	79.05	78.83	
EXT. INVERT	82.68	81.68	81.50	81.43	81.24	81.53	80.83	80.76	80.61	80.49	80.18	80.12	80.02	79.91	79.68	79.60	79.55	79.05	78.83	
LEVEL	85.83	84.67	84.39	84.40	84.19	83.83	83.29	82.85	82.49	82.27	82.00	81.87	81.82	81.82	81.82	81.82	81.82	81.82	81.82	81.82
DISTANCE	340.67	5384.55	3323.28	3300.28	3230.66	3148.14	3091.08	3165.69	3137.72	3104.39	2970.80	2863.06	2840.57	2808.72	2777.62	2687.62	2660.04	2636.21	2466.96	2371.99
DESIGN DATA	channel realign	channel realign																		

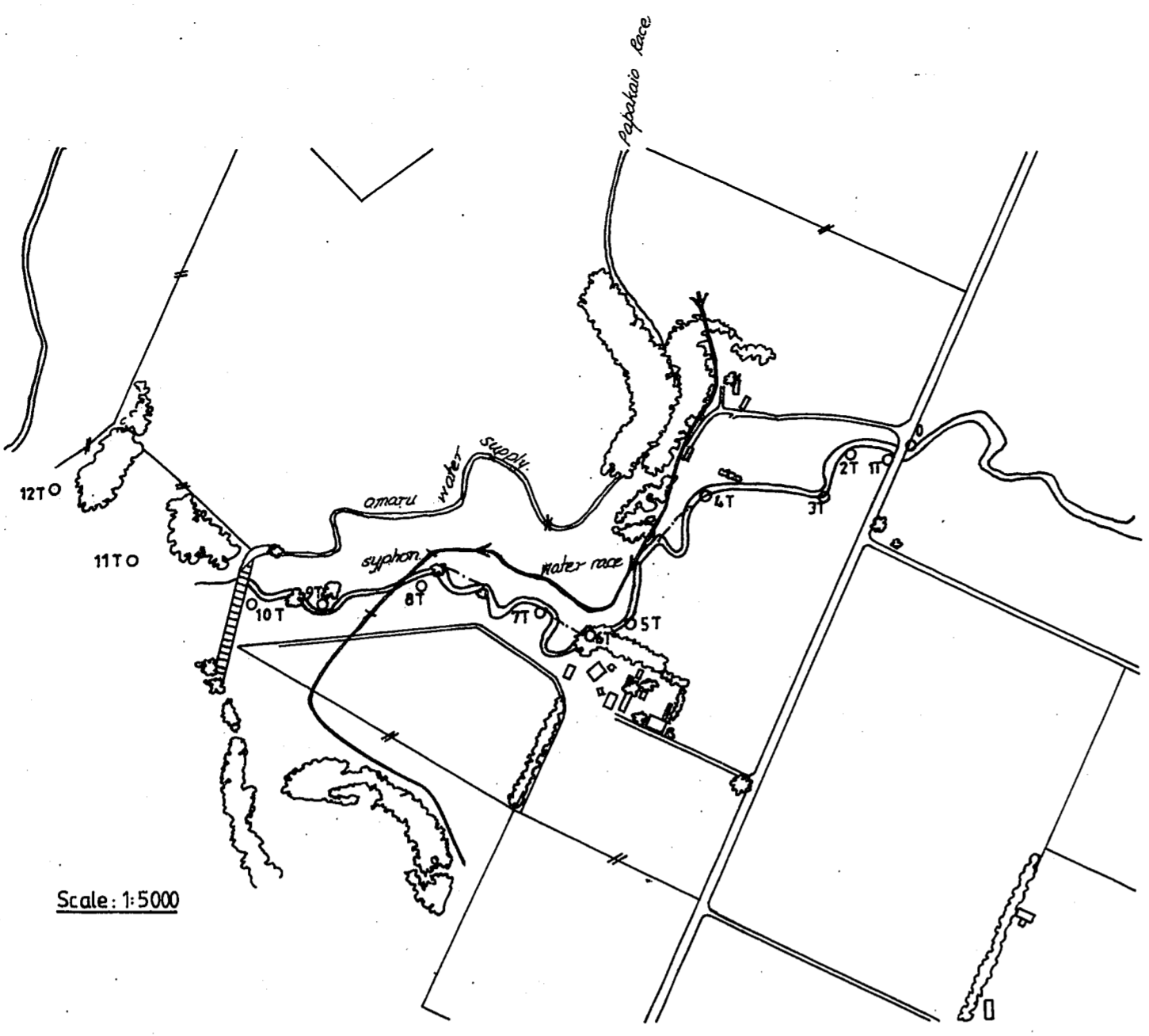
$s = \frac{1}{350}$     $n = 0.032$     $Q = 42 \text{ m}^3/\text{sec}$     $d = 1.83 \text{ m}$     $v = 2.1 \text{ m/sec}$

$s = \frac{1}{250}$     $n = 0.032$     $Q = 42 \text{ m}^3/\text{sec}$     $d = 1.84 \text{ m}$     $v = 19 \text{ m/sec}$

$s = \frac{1}{600}$     $Q = 60 \text{ m}^3/\text{sec}$     $d = 2.2 \text{ m}$     $v = 1.4 \text{ m/sec}$

surveyed designed drawn traced approved amendments	by	date	catchment no. aerial photo ref. level book no.	SN 5220 A/14.15; B/14	<h2>WAIKOURA-HENDERSON CREEK DIVERSION</h2> <h3>Waikoura Traverse</h3>	scale Horizontal 1:5000 Vertical 1:100 file plan no. 619 sheet 2 of 9 sheets	WAITAKI CATCHMENT COMMISSION AND REGIONAL WATER BOARD  KUROW
	C MacGEORGE	2-81					
	C MacGEORGE	4-81					
					total area		

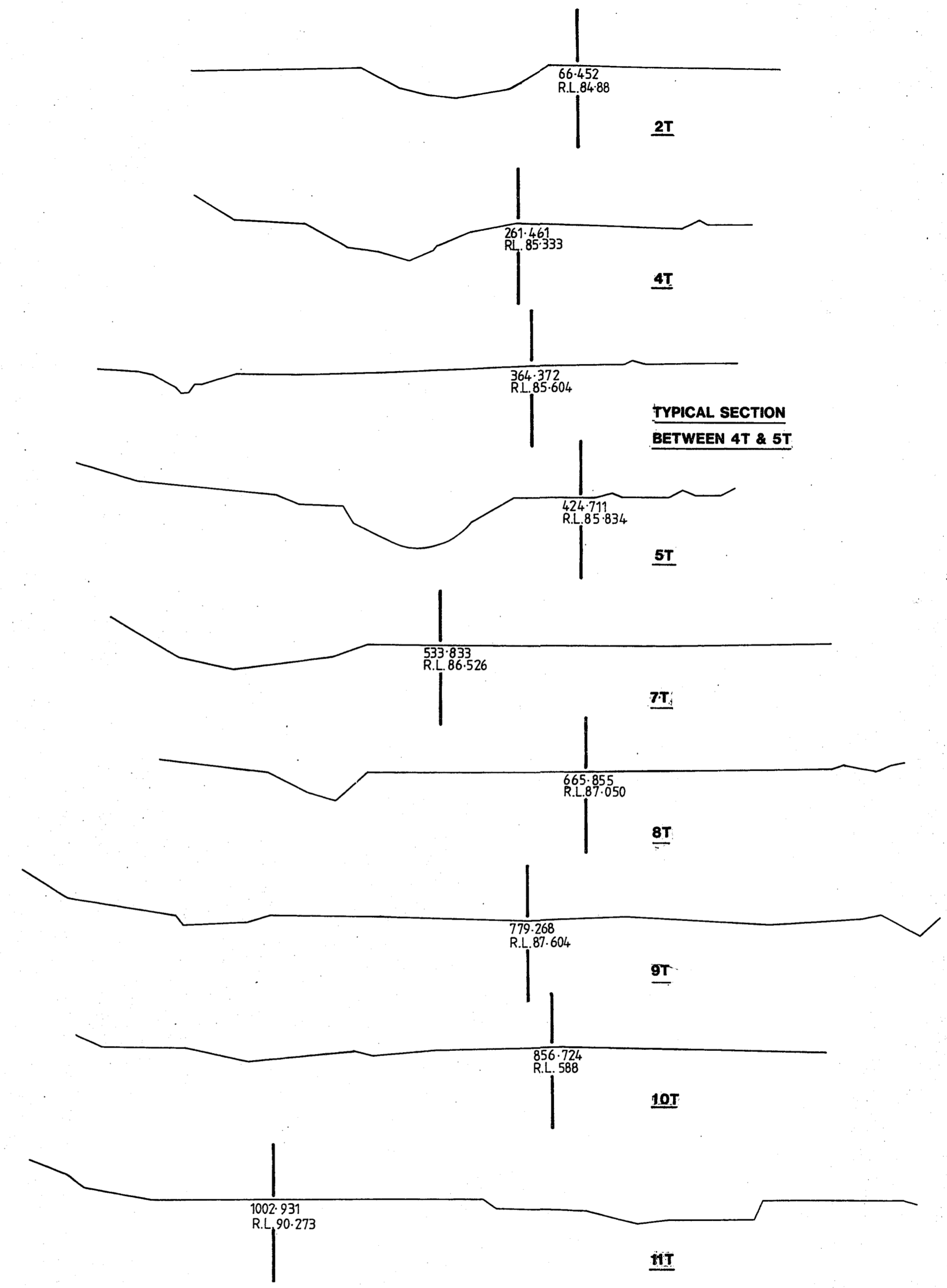
12882/4



Scale: 1:5000

DATUM 80m	12T	11T	10T	9T	8T	7T	6T	5T	4T	3T	2T	1T	0
<b>BERM LEVEL</b>													
<b>CUT</b>		0	0-35	0-40		1-43	1-54				0-1	1-20	
<b>DES. INVERT</b>		86-20	87-45	87-40	86-5	85-27	85-07	84-90	84-40	83-28	83-74	83-46	83-29
<b>EXT. INVERT</b>		86-20	87-60	87-60	86-00	85-27	85-07	84-90	84-40	83-28	83-74	83-46	83-29
<b>LEVEL</b>	92-76	90-27	88-09	87-60	87-05	86-7	86-5	86-30	86-14	85-85	85-25	85-10	85-03
<b>DISTANCE</b>	4529-3	4409-2	4163-0	4183-5	4072-1	4000	3960	3940-7	3905	3876-9	3830-3	3730	3700
<b>DESIGN DATA</b>	$Q = 42 \text{ m}^3/\text{sec}$ , $S = \frac{1}{200}$ , $n = 0.032$ , $d = 11\text{m}$						$Q = 42 \text{ m}^3/\text{sec}$ , $S = \frac{1}{350}$ , $n = 0.032$ , $d = 1.84\text{m}$						

Scale: 1:100 Vertical  
1:5000 Horizontal



TYPICAL SECTION  
BETWEEN 4T & 5T

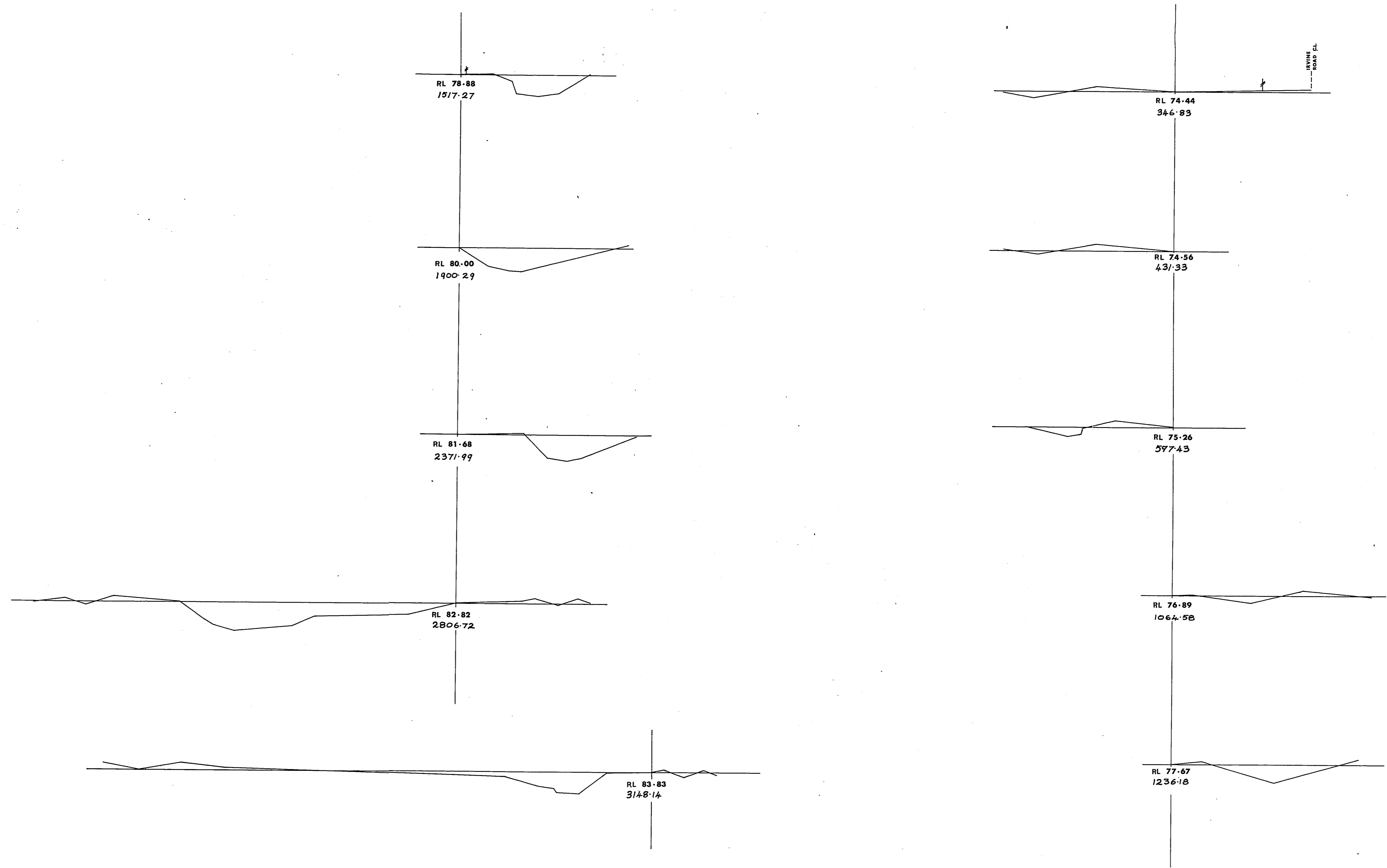
Scale 1:200

WAIKOURA - HENDERSON CREEK DIVERSION

Upper-Waikoura Traverse

SCALE	As shown.	NUMBER	619-3
FILE	333C/2		
DATE	JUNE 81		
DRAWN	J.O.H.		
GABITES ALINGTON AND EDMONDSON ARCHITECTS & TOWNPLANNING CONSULTANTS			
CHECK			

Re-Order Filemaster "D"  
SELF-ADHESIVE PLAN HANGER  
Form Number 13784



surveyed  
designed  
drawn  
traced  
approved  
amendments

by	date
C MacGEORGE	5-81
C MacGEORGE	5-81
"	"
"	"
"	"
"	"

catchment no.  
aerial photo ref.  
level book no.


## WAIKOURA-HENDERSON CREEK DIVERSION

### Waikoura Cross Sections

total area

scale 1:200

file

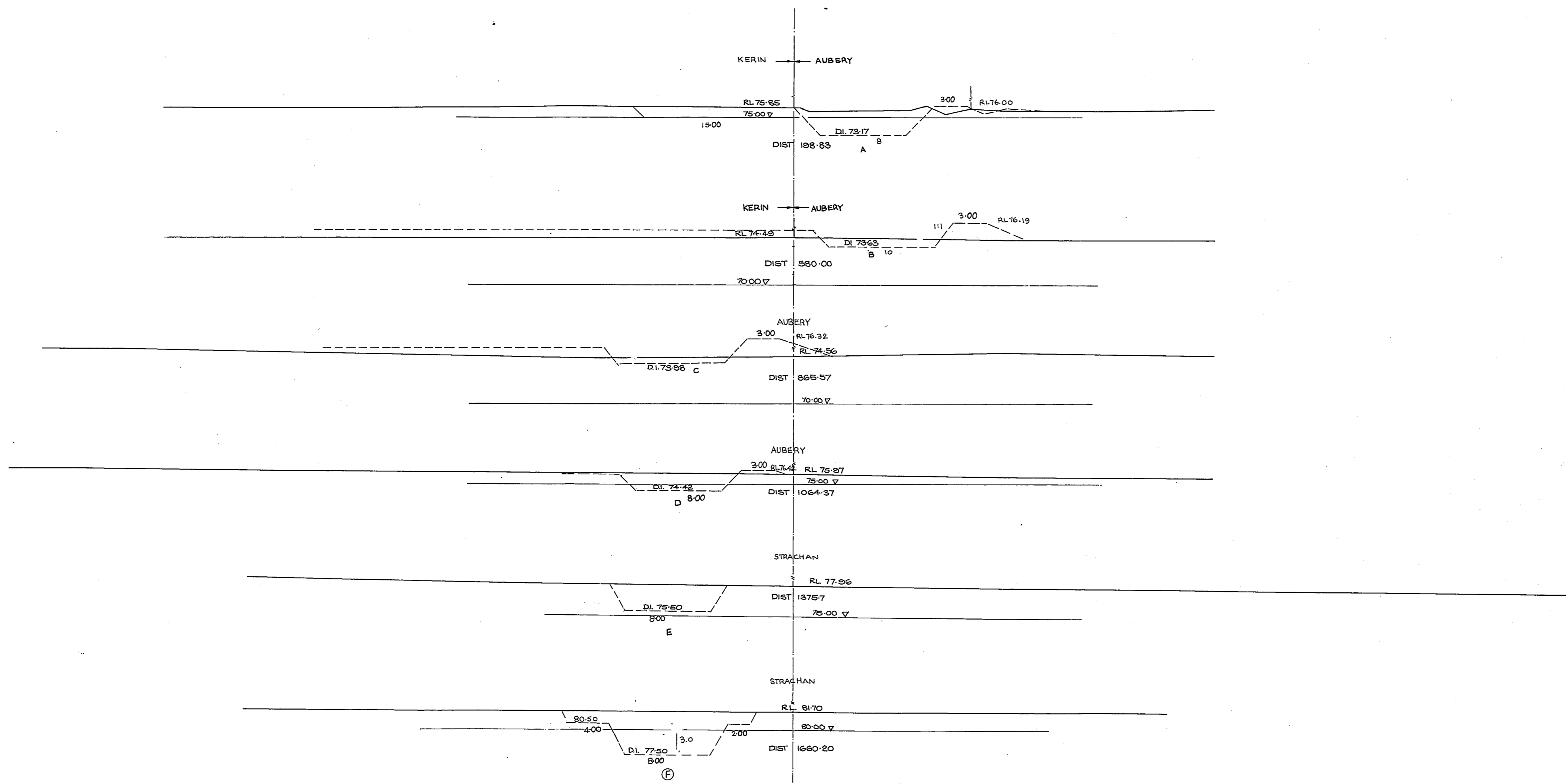
plan no. 619

sheet 3 of 9 sheets

WAITAKI CATCHMENT  
COMMISSION AND  
REGIONAL WATER  
BOARD

KUROW

Plan Number 127841



surveyed designed drawn traced approved amendments " "	by	date	catchment no. aerial photo ref. level book no.
	H.O. & S.N.	8 DEC 81	
	N.S.	11 DEC 81	

## WAIKOURA HENDERSON CREEK DIVERSION

### STAGE 3 HENDERSON DIVERSION

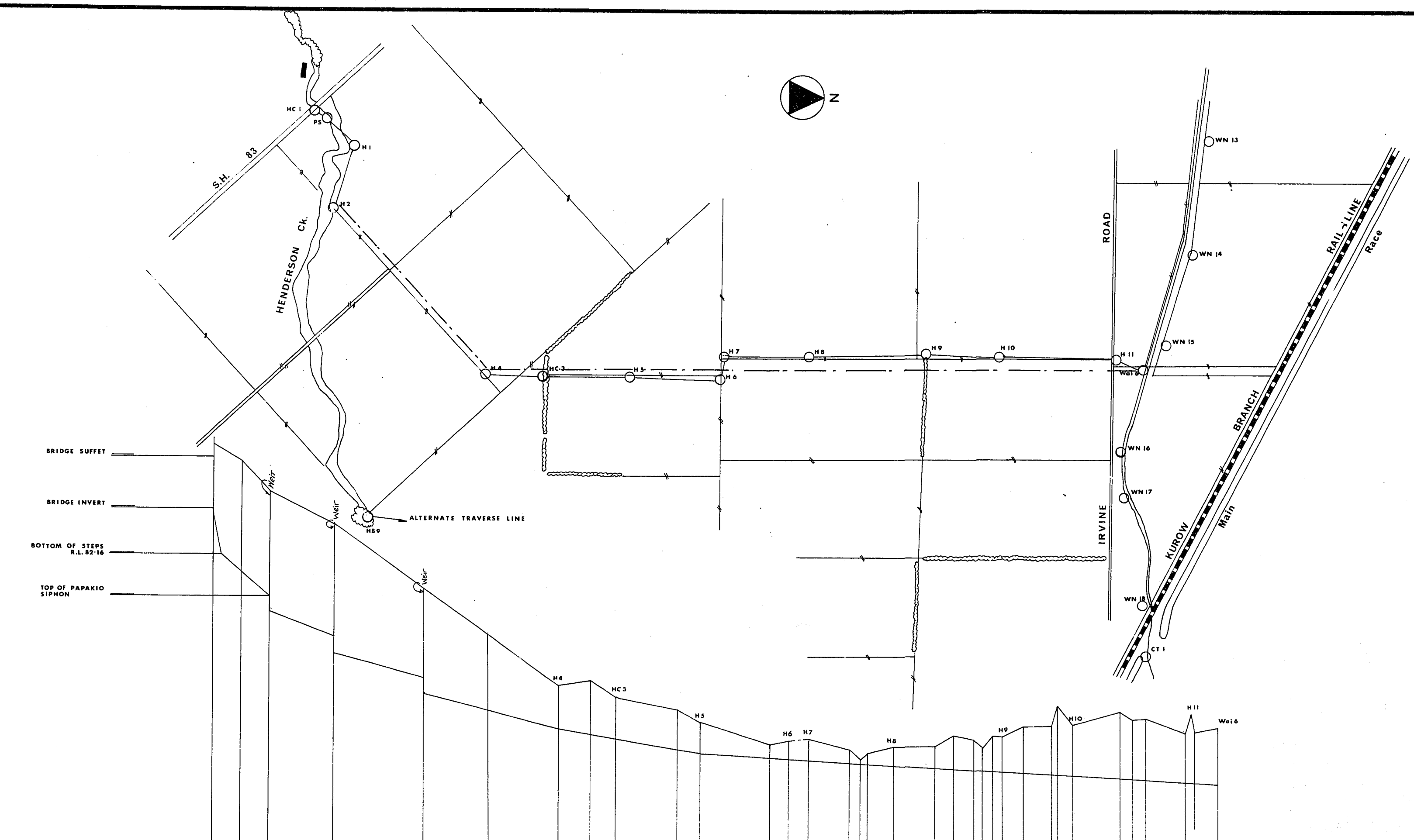
total area

file.	
scale.	1:200
plan no.	619
sheet 4 of	sheets

WAITAKI CATCHMENT  
COMMISSION AND  
REGIONAL WATER  
BOARD

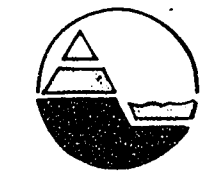
KUROW

1120021



DATUM 70m		DATUM: MEAN SEA LEVEL (LYTTLETON - DATUM DIFF. 55mm)	
BERM RL			
CUT		3.6 4.8	
DES. INVERT		80.50 79.76	
EXT. INVERT	86.02	80.46 79.91	
LEVEL	86.61 85.98 86.70	83.42 78.86	
DISTANCE	2.009 1949 1892	1760 16000	
DESIGN DATA	$Q = 16m^3/sec$ , $S = \frac{1}{200}$ , $n = 0.032$ , $v = 1.8m/sec$ , $d = 0.85m$		

SELF-ADHESIVE PLAN HANGER  
Sheet Number 137641

surveyed designed drawn traced approved amendments " " "	by	date	catchment no. aerial photo ref. level book no.	<h2 style="text-align: center;">WAIKOURA-HENDERSON CREEK DIVERSION</h2> <h3 style="text-align: center;">Henderson Traverse</h3>		scale Horizontal 1:5000 Vertical 1:100	WAITAKI CATCHMENT COMMISSION AND REGIONAL WATER BOARD  
	C MacGEORGE	5-81				file	
	C MacGEORGE	5-81				plan no. 619	
	..	..				sheet 4 of 9 sheets	











Draft for Consultation

# B

## APPENDIX B

Hilderthorpe Floodway

## HILDERTHORPE FLOODWAY

### LEGAL DESCRIPTIONS AND OWNERSHIP DETAILS

Records of title will be attached to final version.

Street address	Title Reference	Legal Description	Ratepayer	Ratepayer address
53 Hilderthorpe Road	OT237/88	Secs 98-100 143-144 Lot 2 DP 301558 Blk IV Papakaio SD	Corbett Road Farms Ltd	C/O Leonardo Bensegues 337 Morris Road RD 10 Waimate 7980
Hilderthorpe Road	OT233/195	Sec 94 Pt 95 Blk IV Papakaio SD	Neil Lyndon & Dorothy Nance Smith	1431 Glenavy-Hilderthorpe Road RD 5H Oamaru 9493
Corbett Road	OT358/123	Secs 101-102 Blk IV Papakaio SD	Corbett Road Farms Ltd	c/- I M Willans 125 Ben Loch Lane Road RD 2 Te Anau 9672
25 Bishop Road	OT233/220	Lot 1 DP 16402 Secs 90-93 103-105 Pt Sec 92 Blk IV Papakaio SD	Banarach Farm Ltd	c/- R A Plunket 77 Boundary Creek Road RD 1H Oamaru 9493
261 Hilderthorpe Road	OT10D/1132 161599 379566	Lot 2 DP 8942 Lot 1 DP 302081 Lot 2 DP 320416 Lot 2 DP 333749 Lots 1 2 DP393307 Secs 87-89 106-108 Blk IV Papakaio SD	Hilderlands Farms Ltd	23 Anderson Street RD 14O Oamaru 9495

Hilderthorpe Road	379567	Lot 1 DP 320416 Lot 3 DP 393307	Jane Rosemary & Erin Margaret Malcolm & Joshua Marc Soper	282 Ferry Road RD 1K Oamaru 9494
338 Ferry Road Richmond-Tawai	891753	Lot 1 DP 536044	Amber Marie Everett & Victoria Maree Littlejohn	338 Ferry Road RD 1K Oamaru 9494
445 Hilderthorpe Road	OT216/14	Lot 1 DP 21611 Lot 1 DP 25367 Secs 68-69 74 Pt Secs 70-73 75 Blk IV Papakaio SD on DP 3141	Inveraray Dairy Ltd	46 Flaxmill Road RD 1 Balclutha 9271
200 Gray Road	OT216/15	Secs 36-37 39-41 Pt Secs 38 71-73 75 Blk IV Papakaio SD	Dalziel Ag Ltd	C/- MJ and JJ Dalziel 200 Gray Road RD 15K Oamaru 9494
Kiwirail				
Waka Kotahi NZ Transport Agency				
Waitaki District Council Rooding				

## PHOTOGRAPHS



Figure 1: Hilderthorpe Floodway at State highway 1 (source: Google Streetview)



Figure 2: Hilderthorpe Floodway at Ferry Road (downstream). (Source: Google Streetview)



Figure 3: Hilderthorpe Floodway at Ferry Road (downstream). (Source: Google Streetview)



Figure 4: Hilderthorpe Floodway at Gray Road (downstream)



Figure 5: Hilderthorpe Floodway Culvert at Gray Road (downstream side)

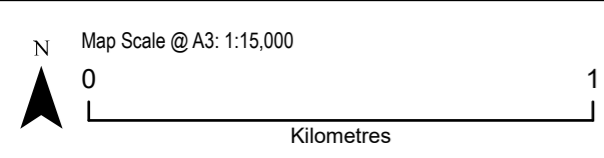


Figure 6: Hilderthorpe Floodway Culvert at Gray Road (upstream side)



## PLAN

File: \\Beca.net\projects\43978271-WIP\WIG-GIS\01-Map\4397827 - ORC Flood Protection Designation.aprx - ORC Flood Protection Designation\4397827 - ORC Flood Protection Designation.aprx - Author: Bianca.Clark@beca.com Date: 22/04/2022



### Waitaki Designation Hilderthorpe Floodway

- Legend**
- Hilderthorpe Floodway
  - Regional Council
  - Boundaries



Map created by Beca GIS. Contact: Bianca.Clark@beca.com. Contains data sourced from Otago Regional Council and Environment Canterbury. Contains Crown Copyright Data. Crown Copyright Reserved. This map contains data derived in part or wholly from sources other than Beca, and therefore, no representations or warranties are made by Beca as to the accuracy or completeness of this information. Map intended for distribution as a PDF document. Scale may be incorrect when printed. Basemap: Esri, NASA, NGA, USGS, LINZ, Stats NZ, Eagle Technology, Esri, HERE, Garmin, METI/NASA, USGS

# LOWER WAITAKI PLAINS DRAINAGE

## HILBERTHORPE HENDERSON CATCHMENT AREA

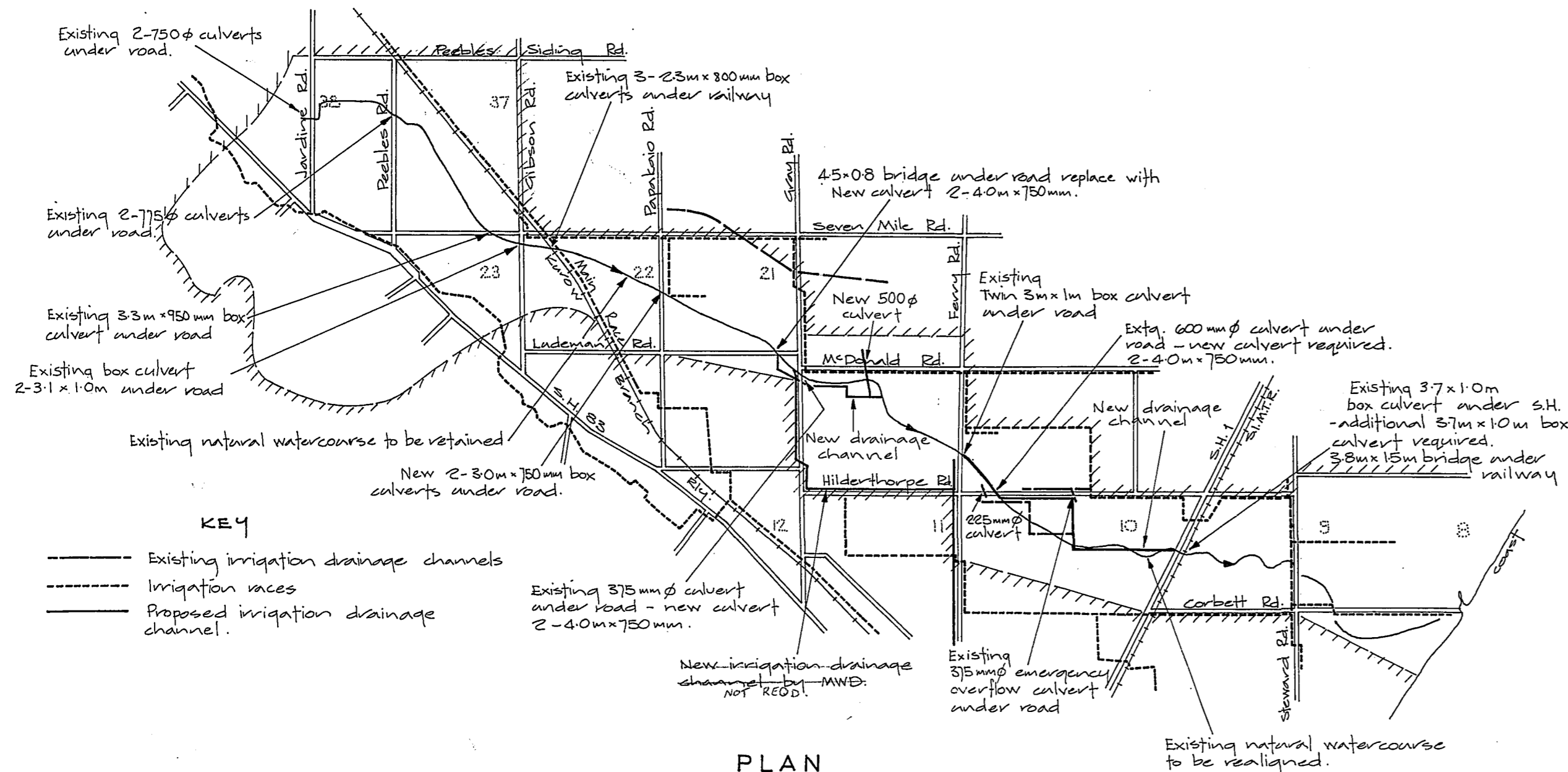
### CONTENTS

Culvert Details  
Aerial transparencies Shs. 8-12  
20-23  
37-38

LOCATION	CULVERTS			STORAGE (ha-m)		DRAINAGE CHANNELS														
	EXISTING	REQUIRED	MODIFIED or NEW	1 ha-m = 10,000 m <sup>3</sup>		UPSTREAM					DOWNSTREAM					MODIFICATION or (NEW)				
	Diam. Q <sub>max</sub>	Diam. Q <sub>max</sub>		EXTA	REQUIRED	MODIFIED	EXISTING	REQUIRED FOR RUN-OFF	EXISTING	REQUIRED FOR RUN-OFF	UP-SHM.	DN-SHM.								
	mm m <sup>3</sup> /s	mm m <sup>3</sup> /s			PEAK FLOW		AREA Q <sub>total</sub>	BASE FLOW	PEAK FLOW	AREA Q <sub>total</sub>	BASE FLOW	PEAK FLOW	AREA	Q	AREA	Q				
STATE HIGHWAY 83	2.6 0.9	2.12	2.12	NR	'A'	'A'			>22	2.12		2.12								
JARDINE RD.	2- 750	2.45	2- 750	2.45	NR	'A'	'A'		0.9	1.0	0.2	2.45	3.4	0.2	2.45	2.45	-	-	Improve channel	
PEEBLES RD. (H10)	2- 775	2.9	3500 750	2.9	New culvert	'A'	'A'		5.0	0.2	2.9	5.0	0.2	2.9	-	-	-	-		
SEVEN MILE RD.	3500 950	3.1	3.6	NR	'A'	'A'	Improve		5.0	-	3.6	2.4	-	3.6	-	-	3.6	3.6	Improve channel	
GIBSON RD.	3100 1050	3.9	3100 1050	3.9	NR	'A'	'A'		2.4	-	3.9	9.0	-	3.9	3.9	3.9	-	-	Channel needs cleaning out to increase capacity.	
KUROW RAILWAY LINE	3- 2500 800	5.5	4.2	NR	'A'	'A'			9.0			9.0							Railway to be removed	
PAPAKAIO RD. (H30)	-	Nil	2- 3000 750	5.7	New culvert	'A'	'A'		11.0	-	5.7	5.0	-	5.7	-	-	5.7	5.7	Improve channel	
LUDEMAN RD. (H40)	4500 800	4.5	2- 4000 750	7.6	New culvert	'A'	'A'		8.0		7.6	1.0		7.6	-	-	7.6	7.6	New channel	
GRAY RD. (H50)	375	0.24	2- 4000 750	8.2	New culvert	'A'	'A'		Not well defined		8.2	Not well defined		8.2	8.2	8.2	8.2	8.2	New channel	
FERRY RD.	2- 3000 1000	8.2	8.2	NR	'A'	'A'			Not well defined		8.2	1.5	1.2	-	8.2	8.2	8.2	8.2	New channel	
HILBERTHORPE RD. (H60)	600	0.67	2- 4000 750	8.2	New culvert	'A'	'A'		1.5	1.2	-	8.2	1.5	1.2	-	8.2	8.2	8.2	8.2	New channel
STATE HIGHWAY 1 (H61)	3700 1000	Approx 5.0	2- 3700 1000	8.2	Additional box culvert	'A'	'A'		Not well defined		8.2	10	10	-	8.2	8.2	8.2	-	-	New channel
NZ RAILWAYS (H62)	3800 1500	Approx 8.2	8.2	Req'd bed.	'A'	'A'			10	10	-	8.2	10.0	10.0	-	8.2	-	-	-	

NOTE :- 'A' only sufficient storage is required to ensure the necessary head over culvert is obtained to give design flow.

SCHEDULE OF CULVERTS, STORAGE AREAS & CHANNELS



# WAITAKI CATCHMENT COMMISSION & REGIONAL WATER BOARD

E. R. GARDEN & PARTNERS LTD  
CONSULTING ENGINEERS  
OAMARU DUNEDIN INVERCARGILL

DRG 837 SHT 1

12843/1



**Waitaki  
Catchment Commission  
& Regional Water Board**

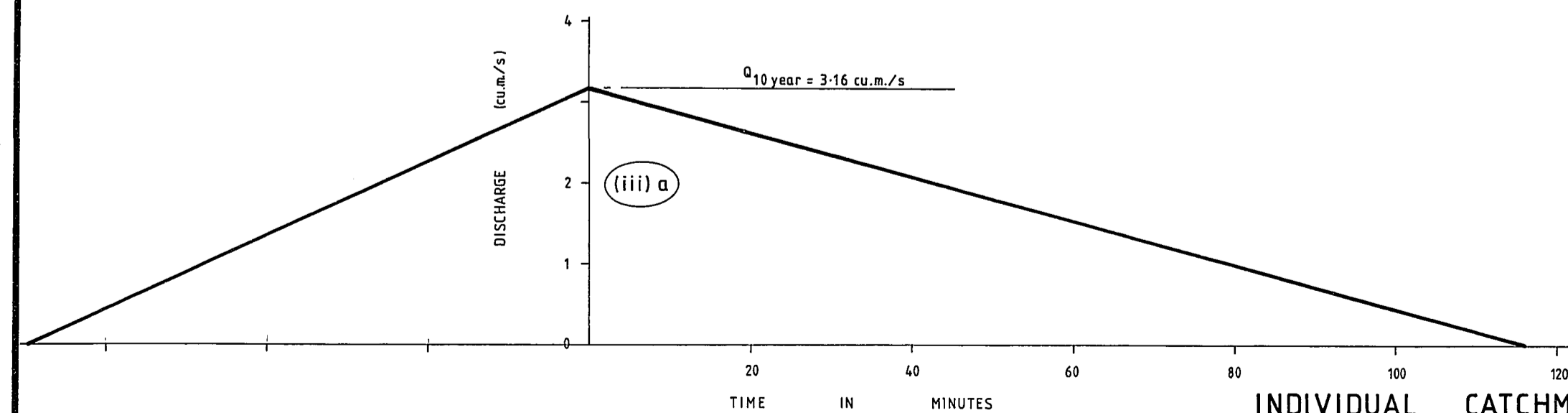
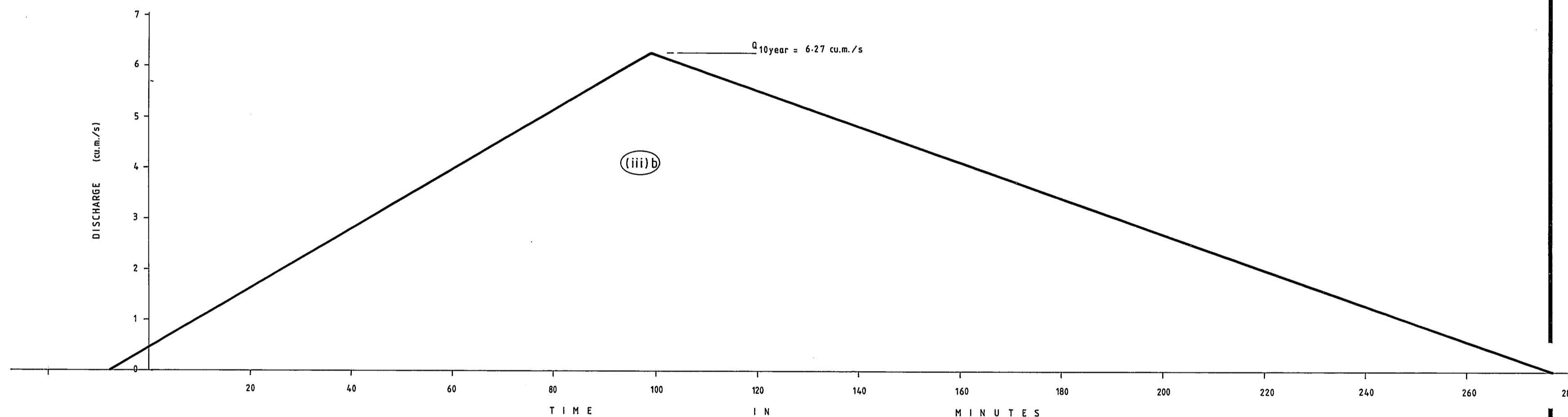
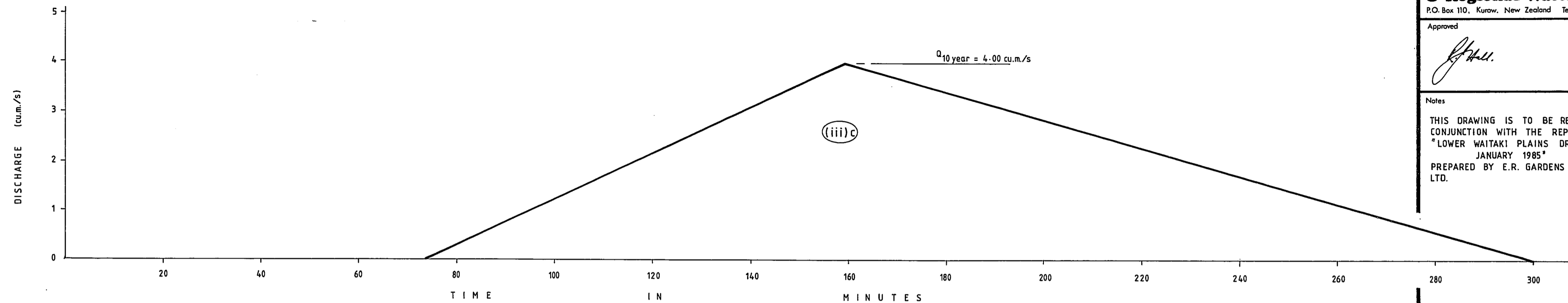
P.O. Box 110, Kurow, New Zealand Telephone KOW 819

Approved

*J. Hall*

Notes

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE REPORT "LOWER WAITAKI PLAINS DRAINAGE" JANUARY 1985\* PREPARED BY E.R. GARDENS & PARTNERS LTD.



*Hilderthorpe*  
Catchment (iii)a is ~~Old Henderson~~ *Hilderthorpe* Creek Catchment between S.H.83 and Old Kurow Branch Railway Line

*Hilderthorpe*  
Catchment (iii)b is ~~Old Henderson~~ *Hilderthorpe* Creek Catchment between Old Kurow Branch Railway Line and Gray Road

*Hilderthorpe*  
Catchment (iii)c is ~~Old Henderson~~ *Hilderthorpe* Creek Catchment between Gray Road and S.H.1

(iii)b HILL CATCHMENT NUMBER

NO	Revision	Del	Date
	Surveyed		
	Design P.L.L.		4/85
	Drawn P.L.L.		4/85
	Traced L.N.B.		8/85
	Checked P.L.L.		8/85

Job Title  
**LOWER WAITAKI PLAINS  
DRAINAGE SCHEME**  
*HILDERTHORPE* Catchment

Drawing Title  
**HYDROGRAPHS**

12843/2

Drawn Scale

Drawing No	837	Sht No	Rev	Set Of
	4940	1A	0	3

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INDIVIDUAL CATCHMENT HYDROGRAPHS



**Waitaki  
Catchment Commission  
& Regional Water Board**  
P.O. Box 110, Kurow, New Zealand Telephone KOW 819

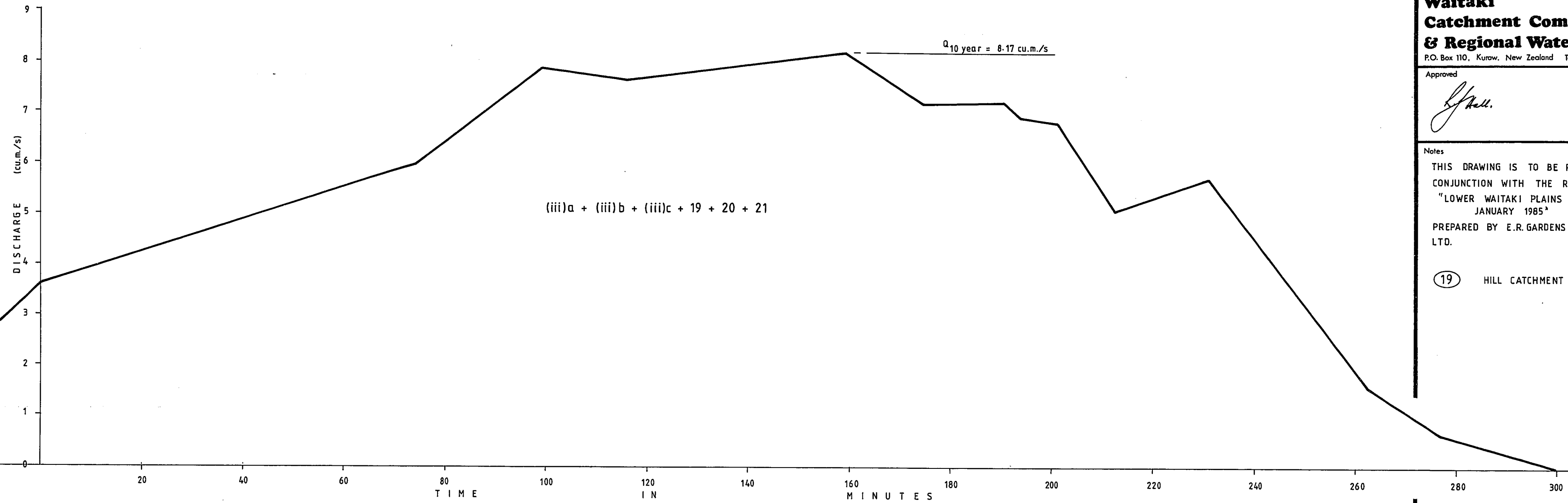
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*[Signature]*

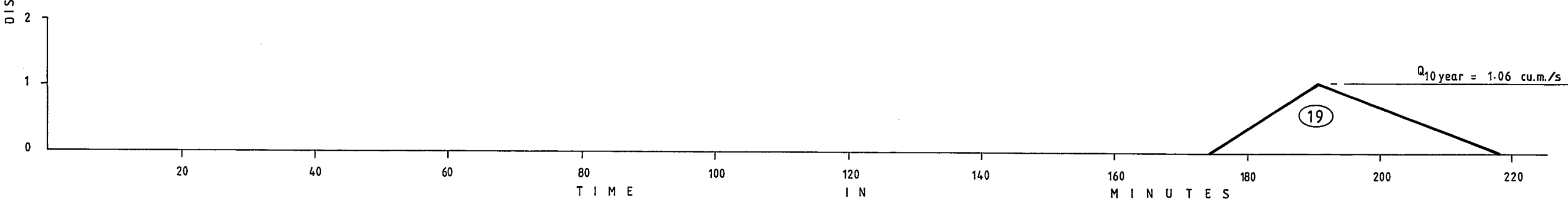
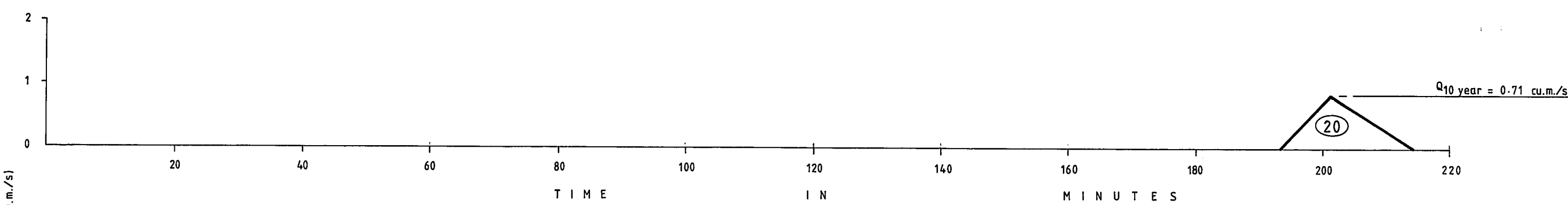
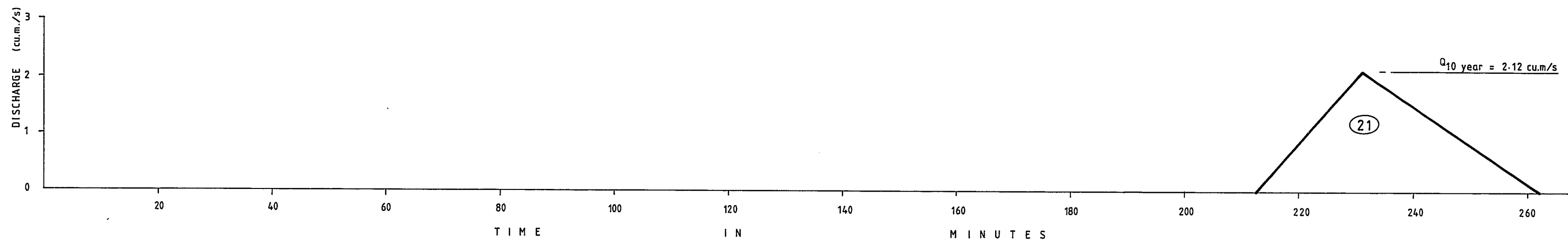
Notes

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(19) HILL CATCHMENT NUMBER



COMBINED HYDROGRAPH AT STATE HIGHWAY 1



INDIVIDUAL CATCHMENT HYDROGRAPHS

NO	Revision	Del	Date
	Surveyed		
	Design P.L.L.		4/85
	Drawn P.L.L.		4/85
	Traced L.N.B.		8/85
	Checked P.L.L.		8/85

Job Title  
**LOWER WAITAKI PLAINS  
DRAINAGE SCHEME**  
HILDERTHORPE Catchment


Drawing Title  
**HYDROGRAPHS**

12843/3

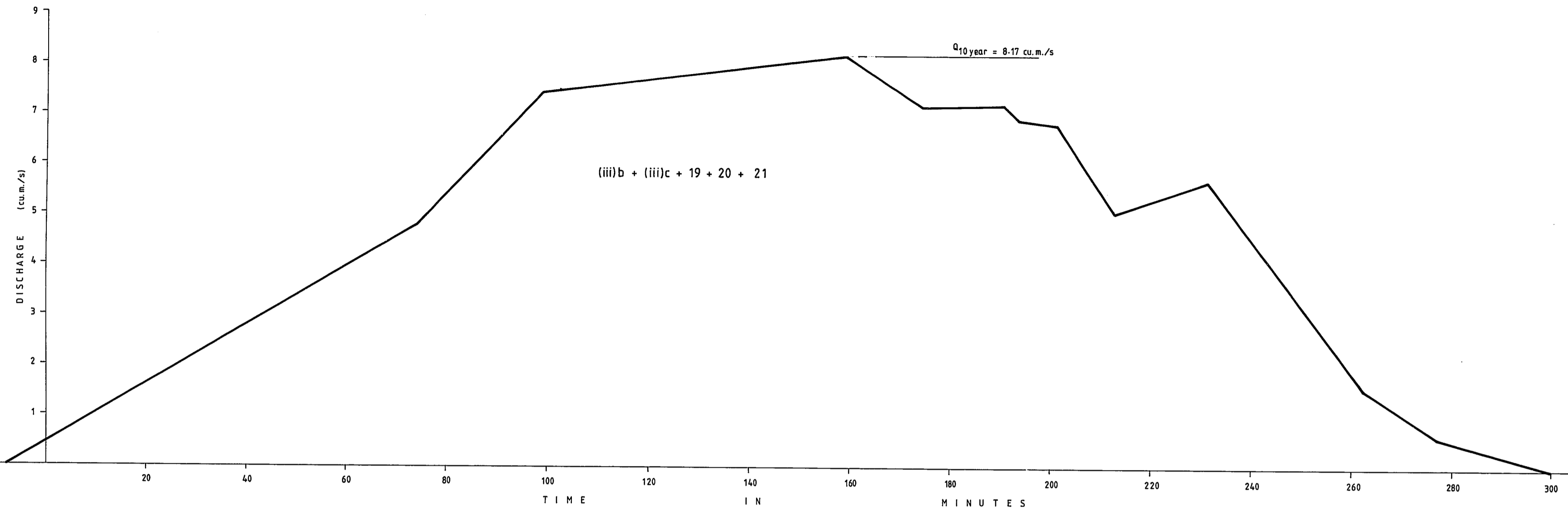
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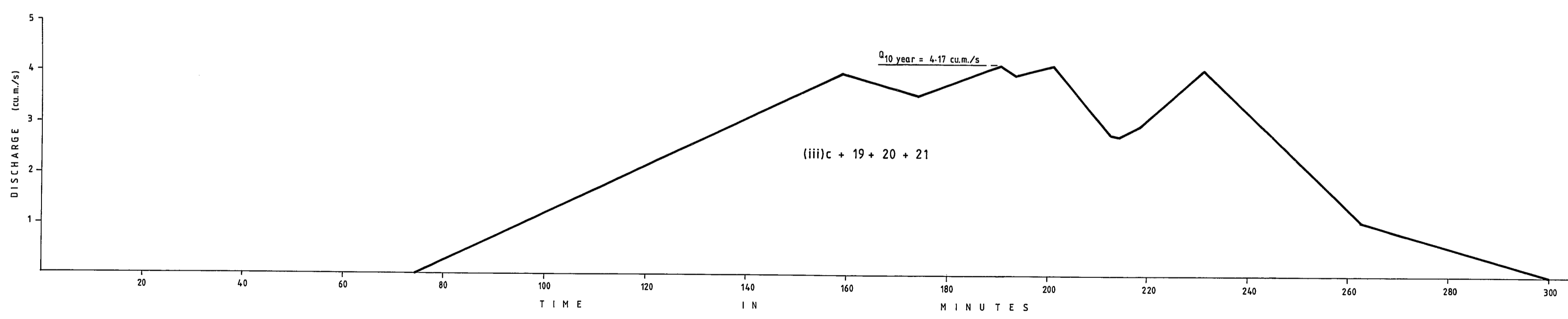
(A1)

Approved  


Notes  
 THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE REPORT "LOWER WAITAKI PLAINS DRAINAGE JANUARY 1985."  
 PREPARED BY E.R. GARDENS & PARTNERS LTD.



COMBINED CATCHMENTS HYDROGRAPH AT GRAY ROAD



COMBINED CATCHMENTS HYDROGRAPH AT OLD KUROW BRANCH RAILWAY LINE

No	Revision	Del	Date
	Surveyed		
	Design P.L.L.		4/85
	Drawn P.L.L.		4/85
	Traced L.N.B.		8/85
	Checked P.L.L.		8/85

Job Title  
**LOWER WAITAKI PLAINS DRAINAGE SCHEME**  
 HILBERTHORPE Catchment

Drawing Title  
**HYDROGRAPHS**  
 12843/4

Drawing No	Shi No	Rev	Set Of
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1

16

A2

A3

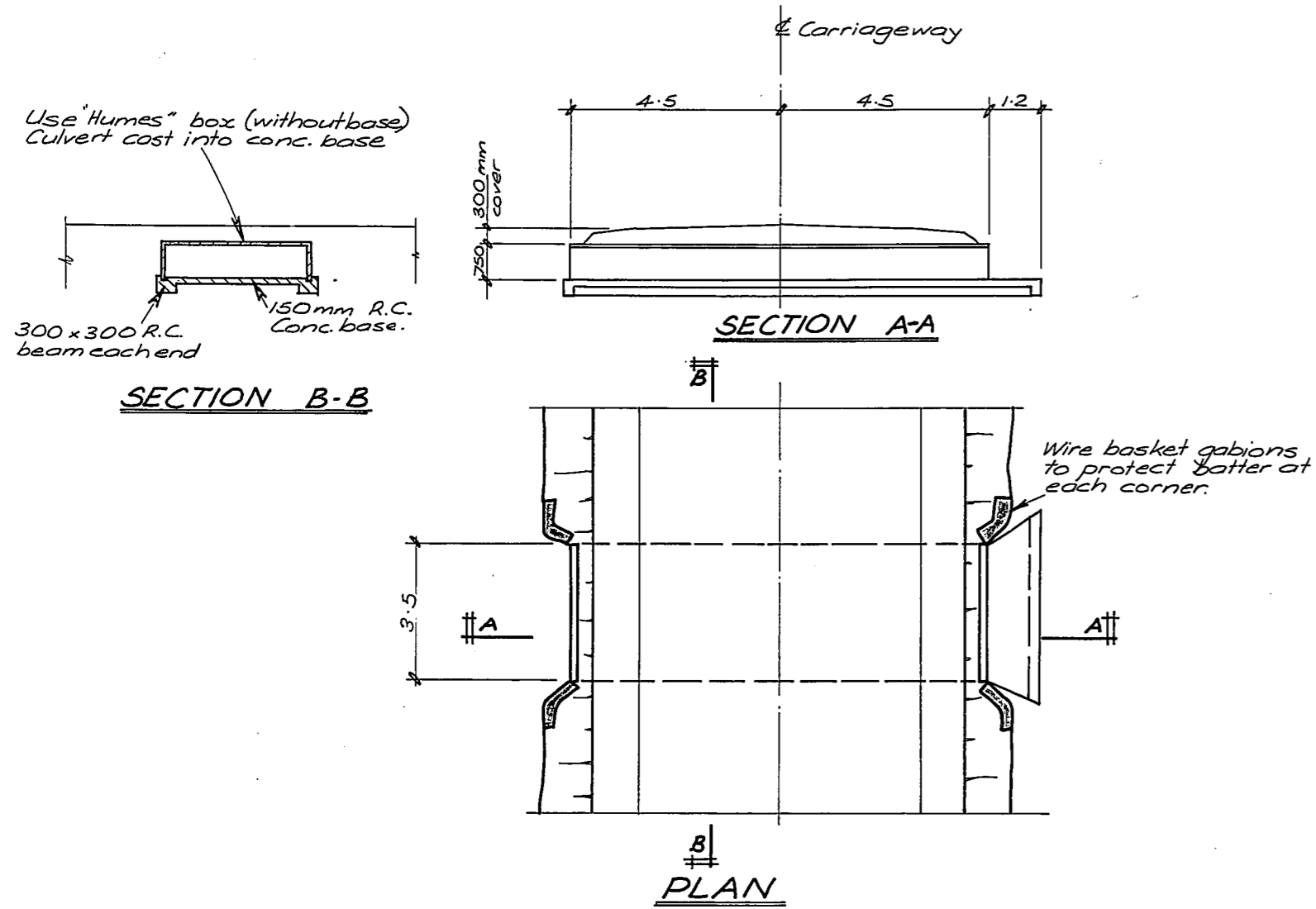
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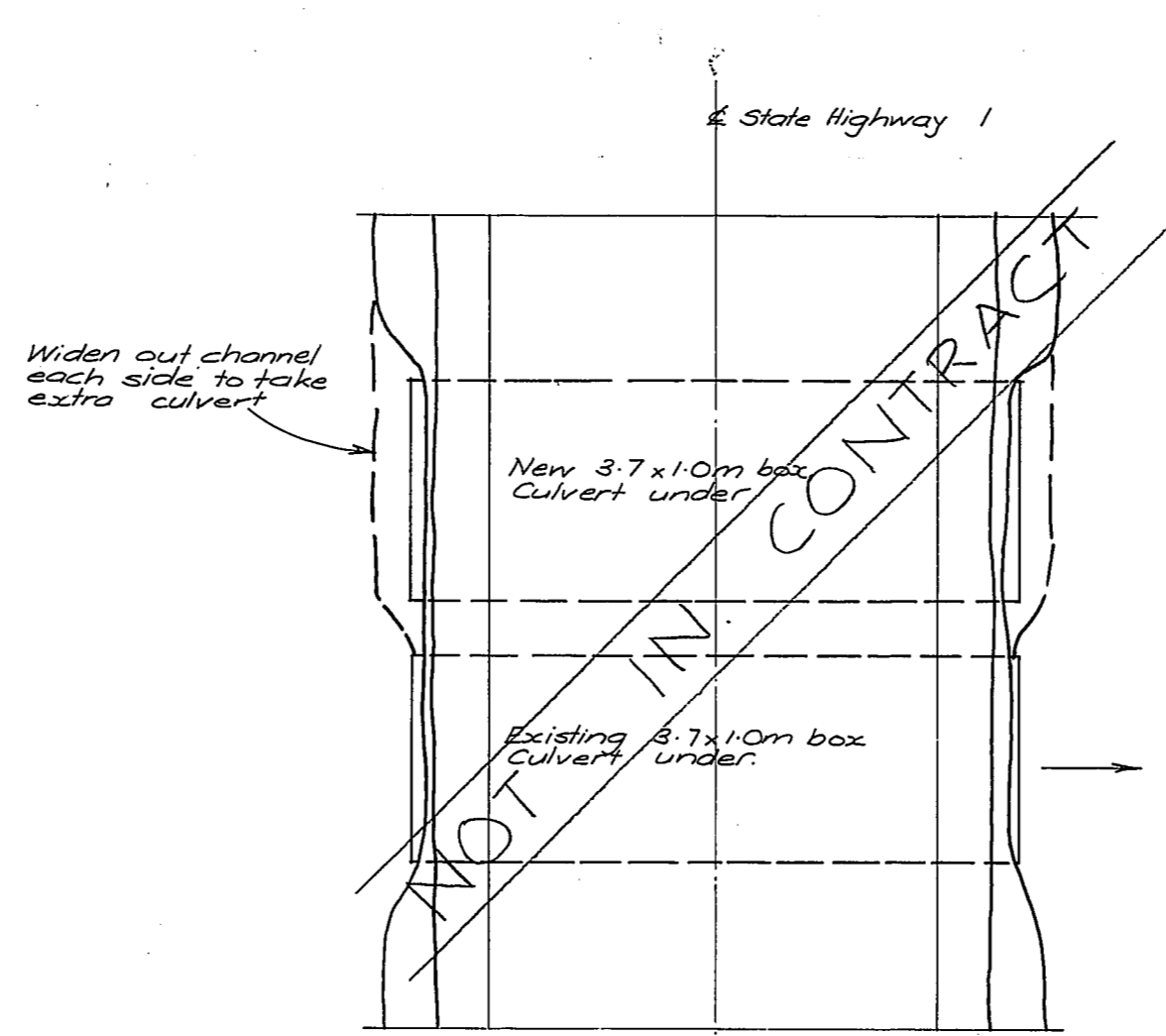
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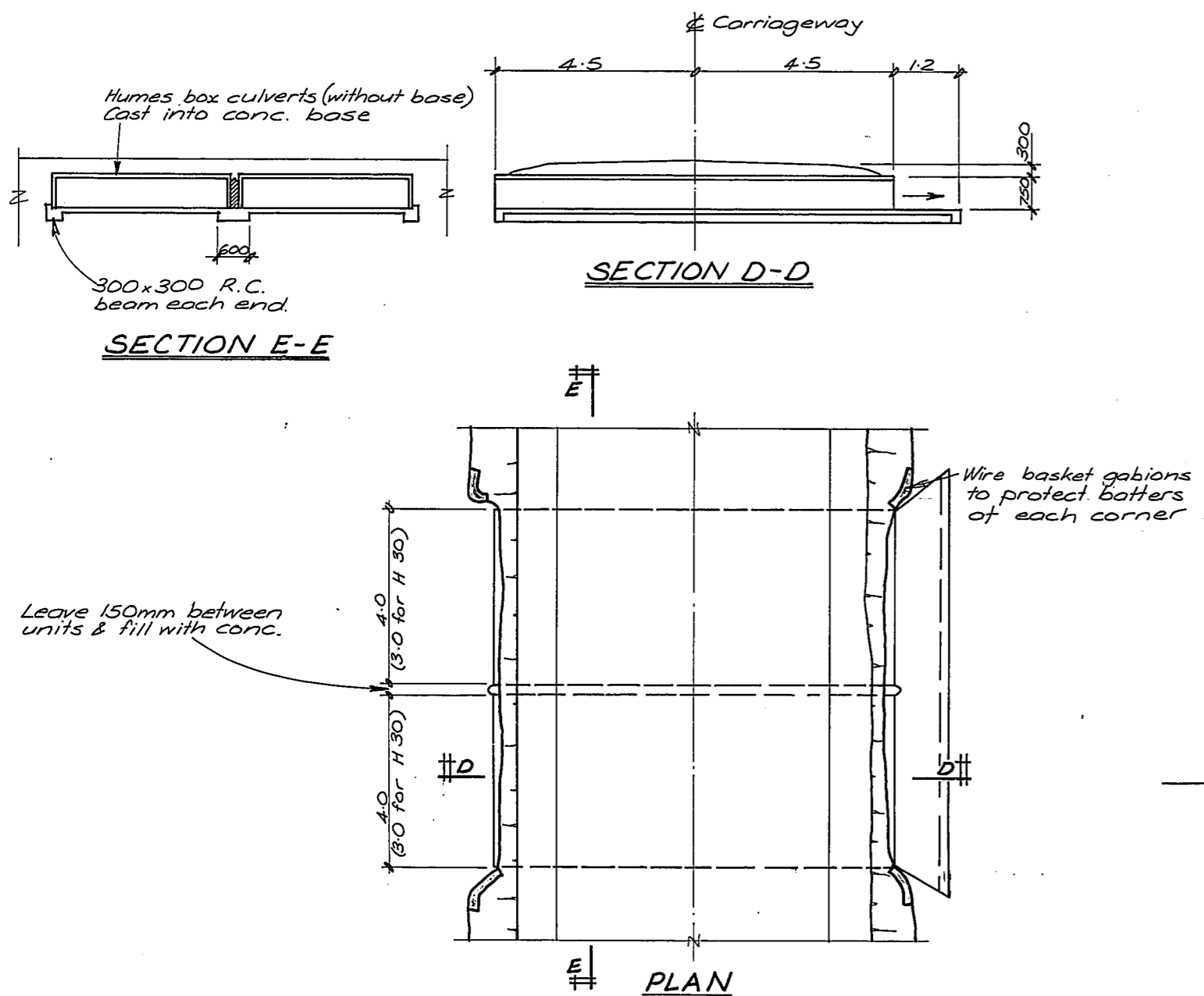
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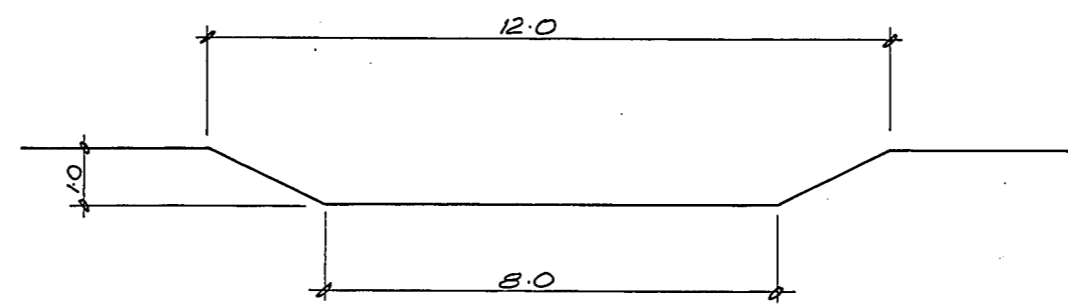
TYPICAL SINGLE BOX CULVERT  
AT PEBLES ROAD REF H10 (PROPOSED)



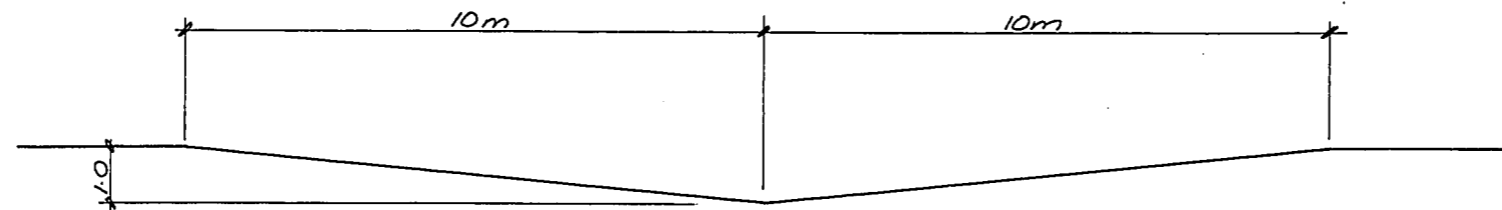
ADDITIONAL CULVERT UNDER STATE HIGHWAY 1



TYPICAL TWIN BOX CULVERT  
FOR REF. H30, H40, H50, & H60 (PROPOSED)



ALTERNATIVE B



ALTERNATIVE A

SHAPE OF NEW STORMWATER CHANNEL

**E R GARDEN & PARTNERS LTD**  
CONSULTING ENGINEERS  
DUNEDIN & INVERCARGILL NEW ZEALAND

A Additional culvert under S.H. 1 deleted July 85  
B Henderson changed to Hilderthorpe Oct 85  
C Proposed added to works not yet done

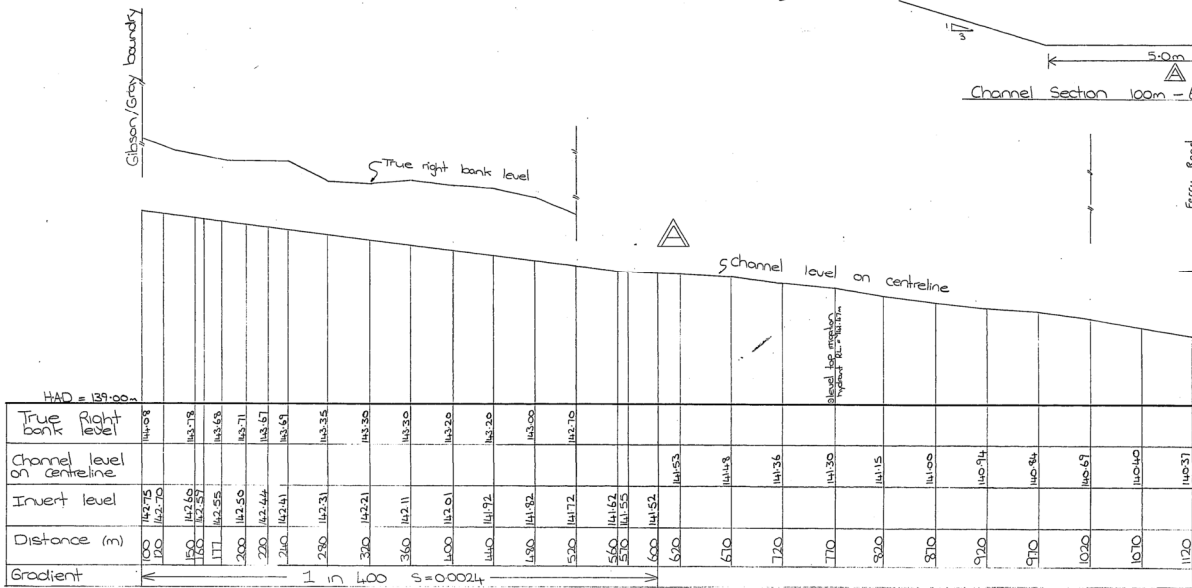
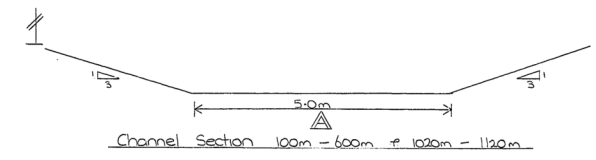
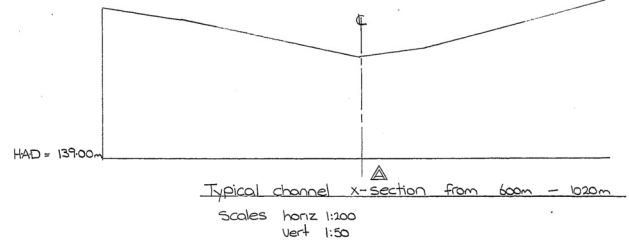
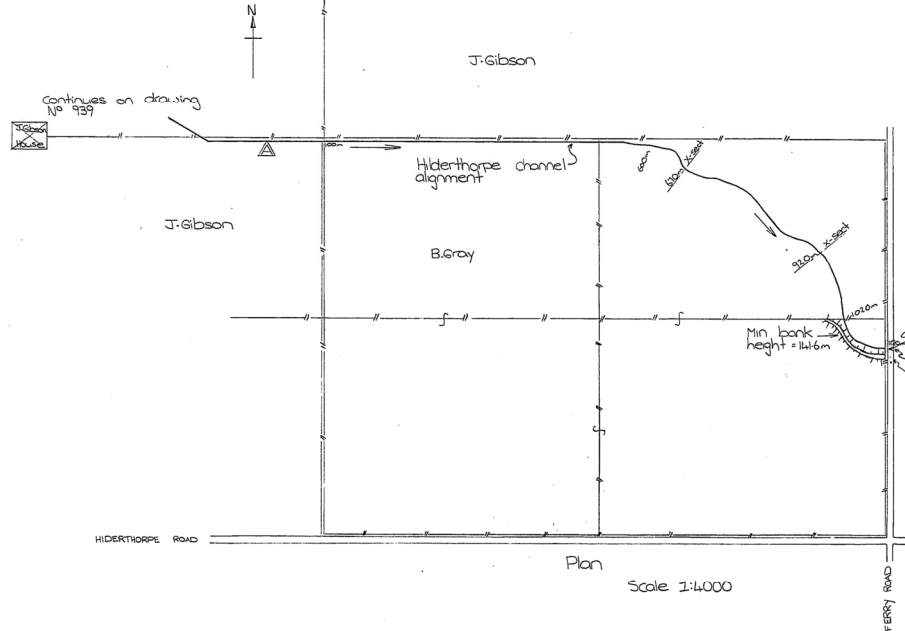
WAITAKI CATCHMENT COMMISSION			
DESIGNED R.D.E.	DATE Jan 85	SCALE	
DRAWN "	JOB No		1:100
TRACED K.W.	CHECKED R.D.E.	SURVEY REF	
APPROVED [Signature]	M.I.P.E.M.Z.	L.B. 212	

LOWER WAITAKI DRAINAGE  
HILDERTHORPE  
HENDERSON CATCHMENT  
CULVERT & CHANNEL DETAILS

DRG No	837/2
	4940/2
AMENDMENT	
A	B

12843/5

Refer to Lower Waitaki Plains Drainage  
Hilderthorpe (Henderson) Catchment.



LONGITUDINAL SECTION Scales 1:2500 Horiz 1:50 Vert



**Waitaki Catchment Commission & Regional Water Board**  
P.O. Box 110, Kurow, New Zealand Telephone 027 819 8197

Approved  
Notes  
Surveyed: PB. 11/9/86 + 30/10/86  
15/12/86  
Proposal: 86/62 B.Gray  
Level book: RP 16824  
Datum: obag metric  
o BM or reference mark

Amendments  
△ PM. 10/5/88  
- Job title changed from Henderson to Hilderthorpe.  
- long section altered to as built.  
- x-sections altered  
- old channel alignment removed.  
- NB. The existing Hilderthorpe channel from 600m - 1020m was adequate & not upgraded.

AS BUILT

NO	Revision	Del	Date
	Surveyed	PB.	9/86
	Design	PB.	
	Drawn	PB.	
	Traced	PB.	
	Checked	PB.	9/88

Job Title  
△ Hilderthorpe stormwater channel upgrading

Drawing Title  
B.Gray  
Proposal 86/62

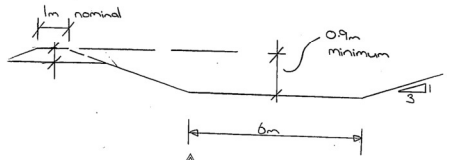
Drawn Scale AS SHOWN

Drawn No	Site No	Rev	Set Of
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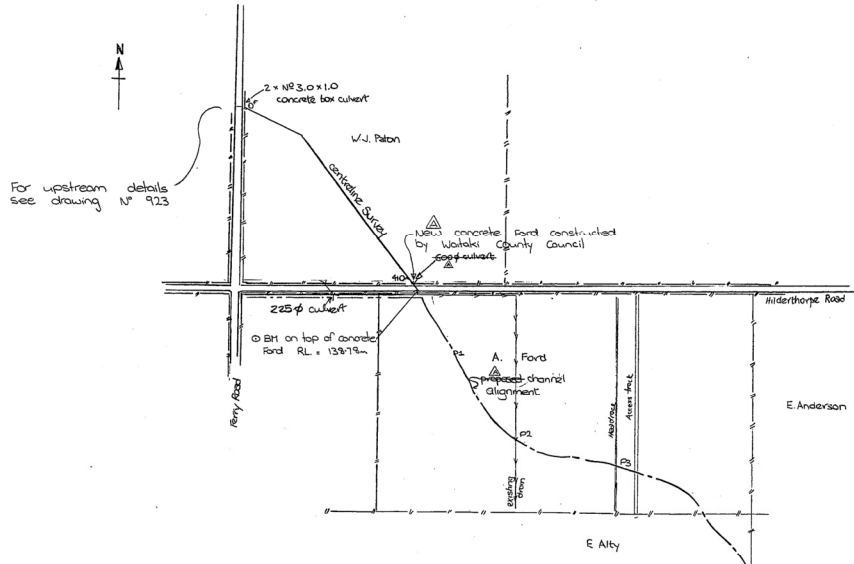


Refer to Waitaki Plans Drainage Hilderthorpe Catchment (Henderson)



PROPOSED MAIN CHANNEL SECTION  
On - 410m  
W.J. Paton, Proposal 87/11

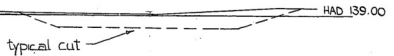
PROPOSED MAIN CHANNEL SECTION  
420-1160m



SITE PLAN SCALE 1:4000

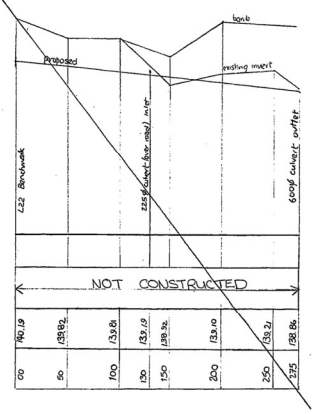
NOTES: Minimum topsoil cover to be 75mm.  
Channel to be grassed  
Cut to waste to be disposed in paddock as per instructions of Mr. A. Ford  
Minimum bend radius 25m on centreline

SECTION 840

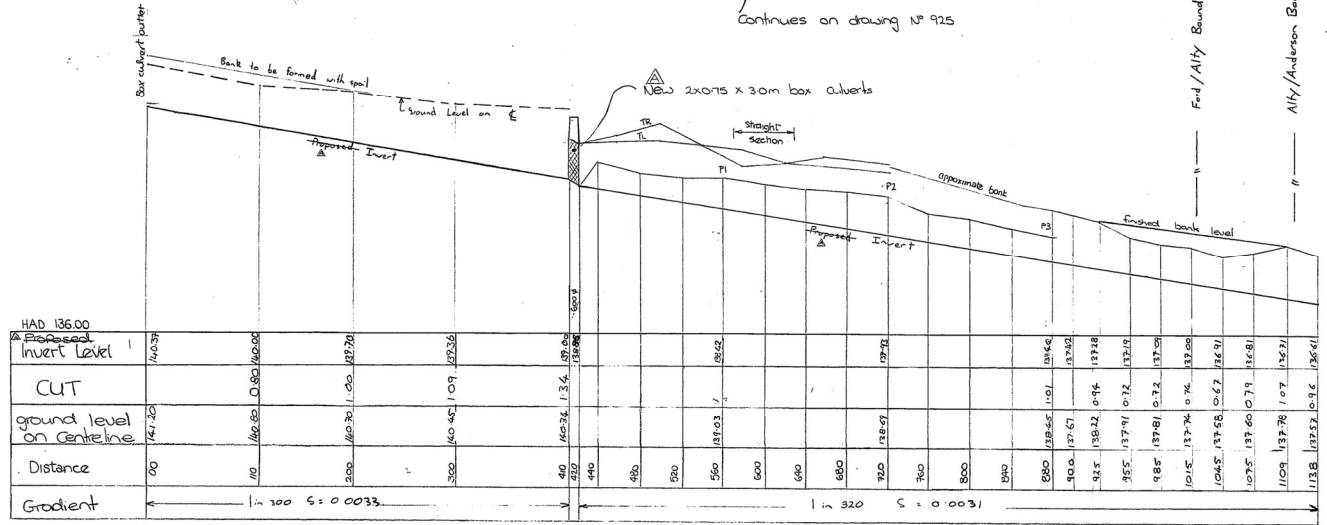


SECTION 560

SCALES 1:400



FERRY ROAD TO 600φ CULVERT



LONG SECTION FROM FERRY ROAD CULVERT TO FORDS' BOUNDARY

SCALES: 1:2500 HORIZ  
1:50 VERT.

**Waitaki Catchment Commission & Regional Water Board**  
P.O. Box 110, Kurow, New Zealand Telephone KOW 819

Approved *[Signature]*

Notes  
Level book N° 24  
Datum. obgo metric  
Surveyed 11.9.86

Alignment from P3 to Andersons Boundary to be confirmed with landowners Ford and Alty.

On - 410m  
W.J. Paton, Proposal 87/11

Amendments 16.6.87  
Alignment, ground levels and gradient from 900m - 1130m

1015m - 1130m  
E. Alty, Proposal 87/20

- PM. 5/5/93
- job title changed from Henderson to Hilderthorpe
- new concrete Ford added
- BM RL 138.79m added
- 600 φ culvert removed
- old channel alignment removed
- new box culvert added

**AS BUILT**

No	Revision	Del	Date
	Surveyed	PB	9/86
	Design		
	Drawn	PB	10/86
	Traced	PB	10/86
	Checked	WJ	5/88

**HILDERTHORPE STORMWATER CHANNEL UPGRADING**

Drawing Title  
**FORDS NURSERIES**  
Proposal 86/61  
W. J. PATON  
Proposal 87/11

Drawing No			
924	1	0	1

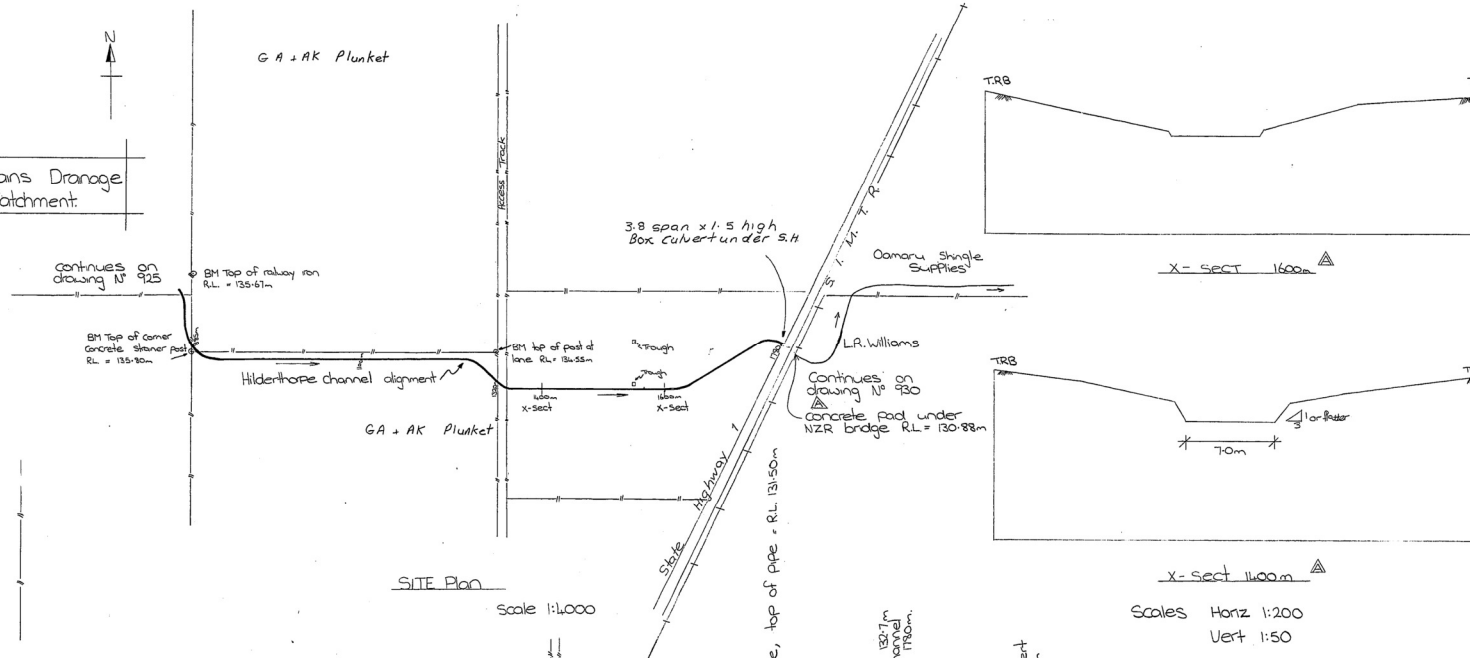
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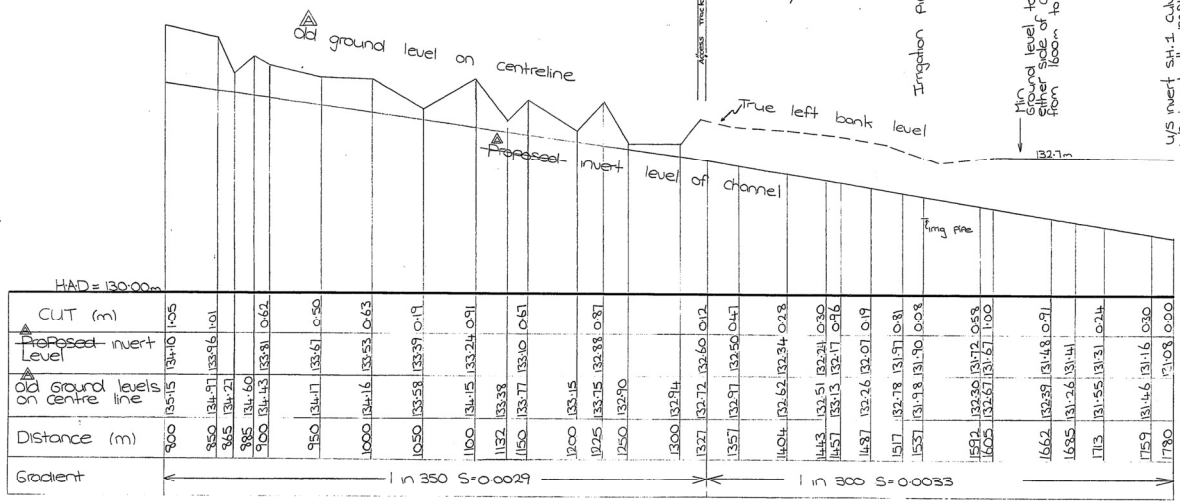
E M Anderson

GA + AK Plunket

Refer to Lower Waitaki Plans Drainage  
Hilderthorpe (Henderson) Catchment.



SITE PLAN  
Scale 1:1,000



LONGITUDINAL SECTION  
Scales 1:2500  
1:50

**Waitaki Catchment Commission & Regional Water Board**  
P.O. Box 110, Kurow, New Zealand Telephone KDW 819

Approved

Notes

Surveyed 15/12/86  
Proposal 86/63  
Level book N° 16  
Datum otago metric  
o BM or reference mark

Amendments

△ PM. 14/5/88

- Job title changed from Henderson to Hilderthorpe
- old channel alignment removed

AS BUILT

NO	Revision	Del	Date
	Surveyed P.L.		15/12/86
	Design		
	Drawn P.M.		19/12/86
	Traced P.M.		
	Checked		5-9-88

Job Title  
Hilderthorpe stormwater channel upgrading

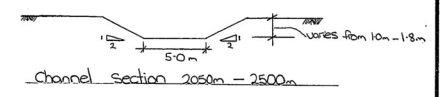
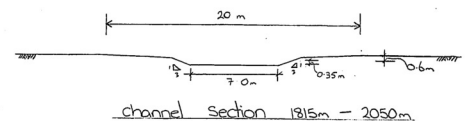
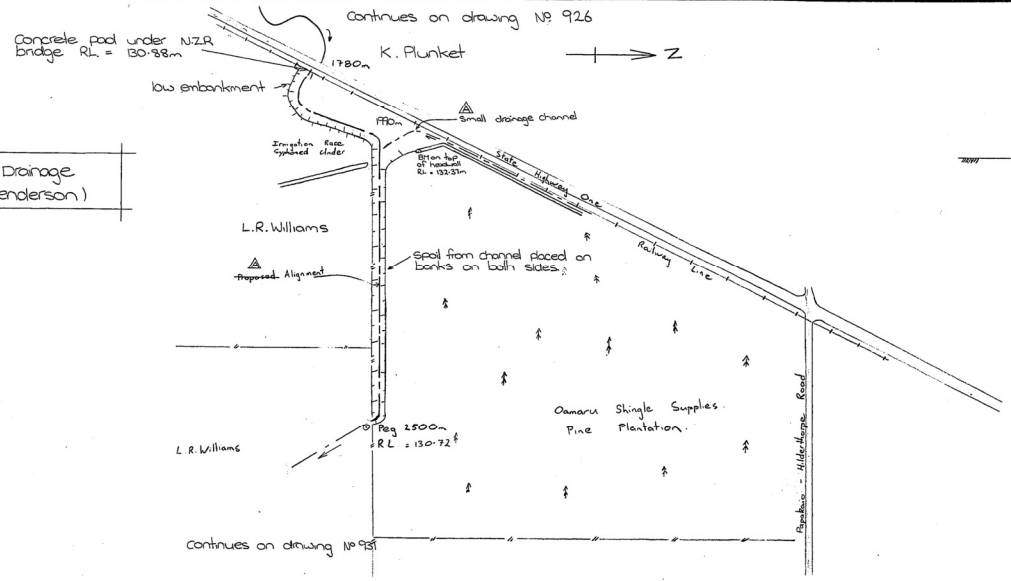
Drawn Title  
K. Plunket  
Proposal 86/63

Drawn Scale  
AS Shown

Drawing N°	Sh N°	Rev	Set Of
926	11	10	1

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Refer to Waitaki plans Drainage Hildershorpe Catchment (Henderson)



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 P.O. Box 110, Kowai, New Zealand Telephone KOW 819  
 Approved

Notes  
 LEVEL BOOK 16, PAGE 18 & 19  
 Datum - Otago Metric Datum  
 @ BM's or reference Bints

AMENDMENTS  
 PM. 6/9/98  
 Changed from Henderson to Hildershorpe  
 changed from 97/13 to 9012

all works completed to the alignment & grades shown 25.3.98  
 original bank levels removed, original bed levels removed, concrete invert under railway line altered.  
 Approx finished bank level added.  
 cross sections altered.  
 small drainage channel added.

AS BUILT

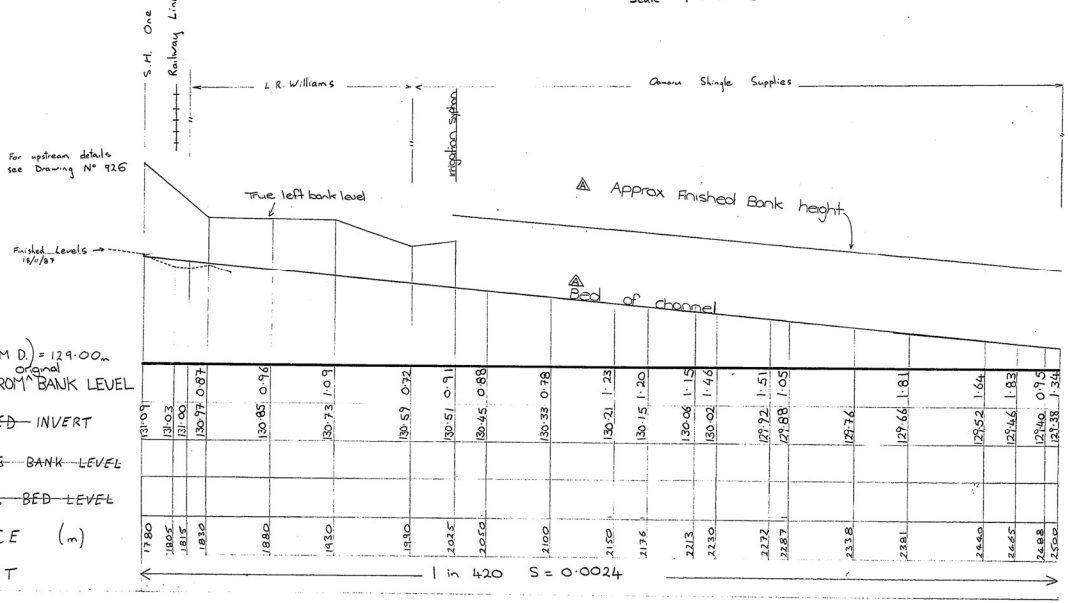
NO	Revision	Del	Date
	Surveyed P.L. & P.M. & G.B.		
	Design		
	Drawn		
	Traced		
	Checked <i>Mac</i> <i>ch/00</i>		

Job Title  
 HILDERTHORPE STORMWATER CHANNEL UPGRADING

Drawing Title  
 OAMARU SHINGLE SUPPLIES PROPOSAL 9012

Drawn Scale	AS SHOWN
Drawing N°	930/1/1
Shr N°	1
Rev	1
Set Of	1

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A1

1

16

A2

A3

A3

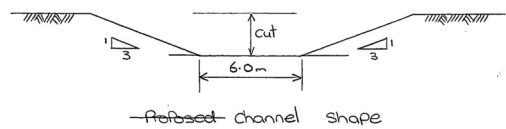
A2

16

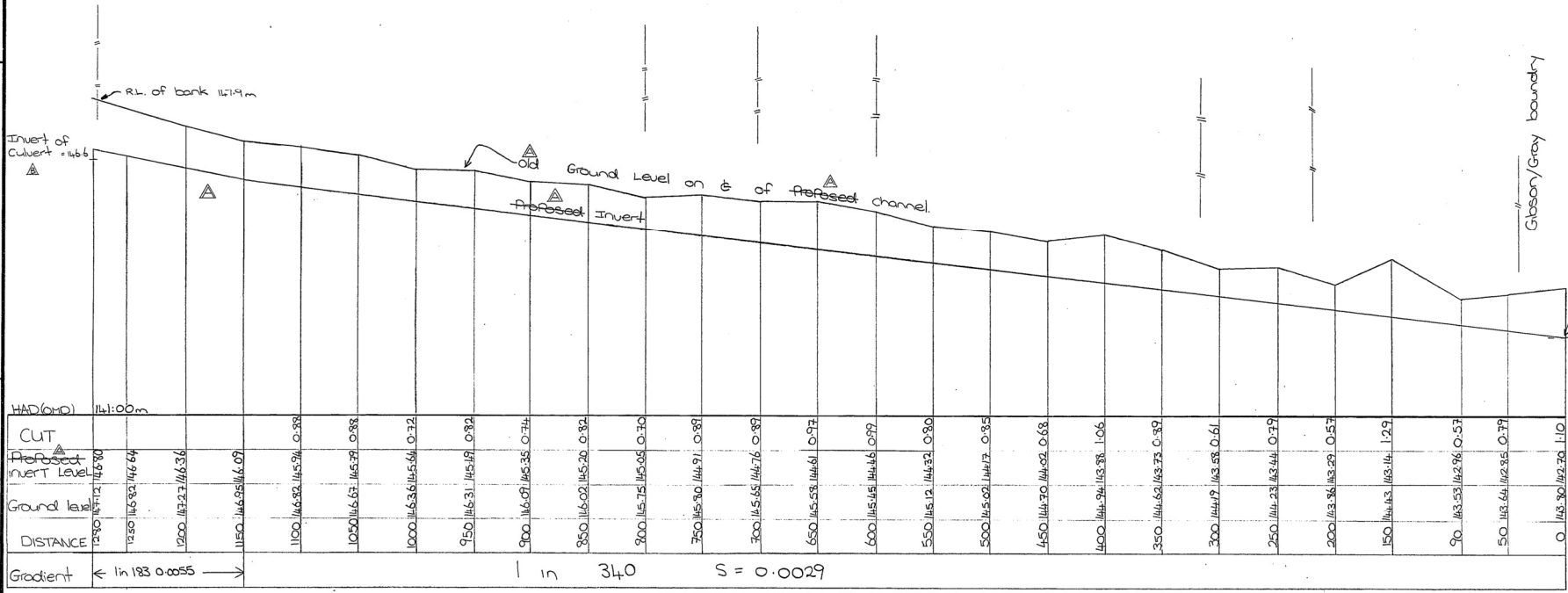
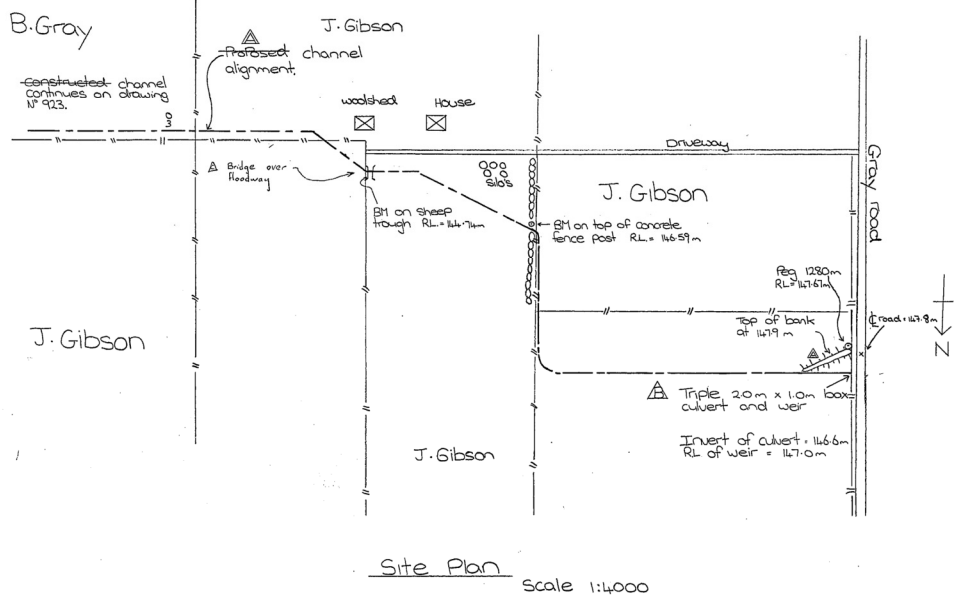
18

A1





Refer to 1. Lower Waitaki Plains Drainage Hilderthorpe (Henderson) Catchment.  
2. Plan N° 947 Grays Road Drainage channel.



LONGITUDINAL SECTION Scales Horiz 1:2000 Vert 1:50

**Waitaki Catchment Commission & Regional Water Board**  
P.O. Box 110, Kumara, New Zealand Telephone KOW 819

Approved

Notes  
Surveyed 17/9/87  
Proposal N° 87/24  
J. Gibson  
Level: Book N° 16  
Datum: Otago metric  
@ Peg or reference mark

Amendments  
PM. 6/5/88  
- old channel alignment removed  
- gravel pit levels filled to design grade  
PM. 5/9/88  
- Triple box culvert details added.  
P.C. 20-10-88  
Bridge over floodway added.

**AS BUILT**

Existing invert of channel in B.Grays Property.

Rev	Revision	Del	Date
1	Surveyed P. Lees		
2	Design		
3	Drawn P. Lees		
4	Traced P. Morland		
5	Checked Mike 6/4/88		

Job Title  
**HILDERTHORPE FLOODWAY J. Gibson 87/24**

Drawing Title  
**HILDERTHORPE STORMWATER CHANNEL UPGRADING**

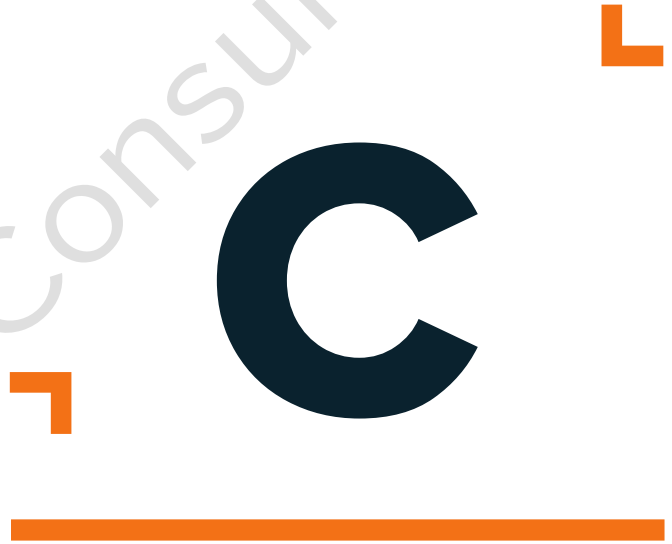
Drawn Scale  
**AS SHOWN**

Drawing N°	Sheet N°	Rev	Set Of
937	1/10	1	1

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Draft for Consultation



## **APPENDIX C**

Flood Protection Assets

Cross Banks and Groynes

## FLOOD PROTECTION ASSETS (GROYNES AND CROSS BANKS)

### LEGAL DESCRIPTIONS AND OWNERSHIP DETAILS

Records of title will be attached to final version.

#### Groynes

Street address	Title Reference	Legal Description	Ratepayer	Ratepayer Address
	Conservation Purposes Section 62(1), Conservation Act 1987 SO 22263 J41/27	Part Section 5 & 6 Block VIII Papakaio SD	Department of Conservation	PO Box 5244 Dunedin 9054
McPherson Road		LS 105 Pt Secs 65 43A Steward Sett Pt Bed of Waitaki River adj to Pt Sec 65 Blk VII Papakaio SD Pt Bed of Waitaki River	Department of Conservation	PO Box 5244 Dunedin 9054
498 McPherson Road	OT13A/827	Sec 66 Blk VII Papakaio SD	Andrew J & Barbara Joan Richardson, LW Nominees Ltd	Minus One Trust 498 McPherson Road RD 2K Oamaru 9494
Wilson Road	Protective Works New Zealand Gazette 1917 p 15 [Referenced] Conservation purposes Section 62(1), Conservation Act	Part Section 2A Steward Sett LGR 9 Pt Sec 2A Steward Settlement Blk I Awamoko SD	Department of Conservation	PO Box 5244 Dunedin 9054



1987 SO 22263 J41/11				
Wilson Road	Protective Works New Zealand Gazette 1917 p 15 [Referenced] Conservation purposes Section 62(1), Conservation Act 1987 SO 22263 J41/11	Part Section 1A Steward Sett LGR 4 Pt Secs 6 79 Blk I Pt Sec 1A Steward Settlement Awamoko SD	Invernia Holdings Ltd, Department of Conservation	c/- RGM and CJ Hurst 140 King Road RD 4K Oamaru 9494
Jackson Road	OT15C/485	Sec 1-3 SO 24138	Searle's Dairy Ltd	c/- MR and PL Searle 131 Jackson Road RD 5H Oamaru 9493
McPherson Road	OT304/37	Secs 8, 65, 66, Blk VII Waitaki Bridge Town, Papakaio SD	Houtimata Farm Ltd	72 McPherson Road, RD 6H Oamaru 9493
Waka Kotahi NZ Transport Agency				
Kiwirail				
Waitaki District Council Roding				

## Cross banks

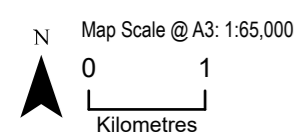
Street address	Title Reference	Legal Description	Ratepayer	Ratepayer Address
303 Kaik Road	9901	Lot 2 DP 414112 Lots 1-2 DP 302602 Sec 12 Blk VIII Papakaio SD Secs 58A 96A Stewards Settlement Sec 4 SO 24138	Willowview Pastures Ltd	C/- GNS & KJ Taylor 304 Kaik Road RD 5H Oamaru 9493
	Conservation Purposes Section 62(1), Conservation Act 1987 SO 22263 J41/27	Part Section 6 Block VIII Papakaio SD	Department of Conservation	PO Box 5244 Dunedin 9054
		Part Section 7 Block VIII Tn of Waitaki Bridge	Department of Conservation	PO Box 5244 Dunedin 9054
Wilson Road	Protective Works New Zealand Gazette 1917 p 15 [Referenced] Conservation purposes Section 62(1), Conservation Act 1987 SO 22263 J41/11	Part Section 2A Steward Sett LGR 9 Pt Sec 2A Steward Settlement Blk I Awamoko SD	Department of Conservation	PO Box 5244 Dunedin 9054
Wilson Road	Protective Works New Zealand Gazette 1917 p 15 [Referenced] Conservation purposes Section	Part Section 1A Steward SETT LGR 4 Pt Secs 6 79 Blk I Pt Sec 1A Steward	Invernia Holdings Ltd, Department of Conservation	c/- RGM and CJ Hurst 140 King Road RD 4K Oamaru 9494

	62(1), Conservation Act 1987 SO 22263 J41/11	Settlement Awamoko SD		
McPherson Road	OT304/37	Secs 8, 65, 66, Blk VII Waitaki Bridge Town, Papakaio SD	Houtimata Farm Ltd	72 McPherson Road, RD 6H Oamaru 9493
Waka Kotahi NZ Transport Agency				
Kiwirail				

## PLAN



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 GIS@beca.com



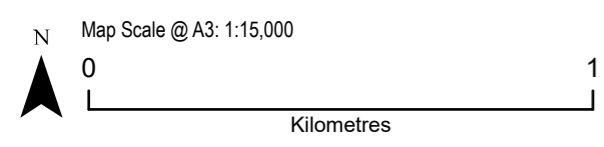
### Waitaki Designation Groynes and Cross-banks Overview

- Legend**
- Groynes
  - Cross-banks
  - Regional Council
  - Boundaries



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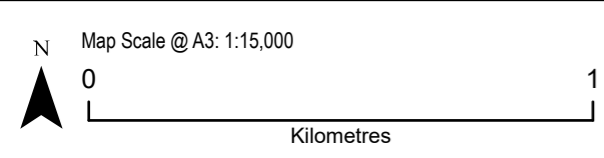
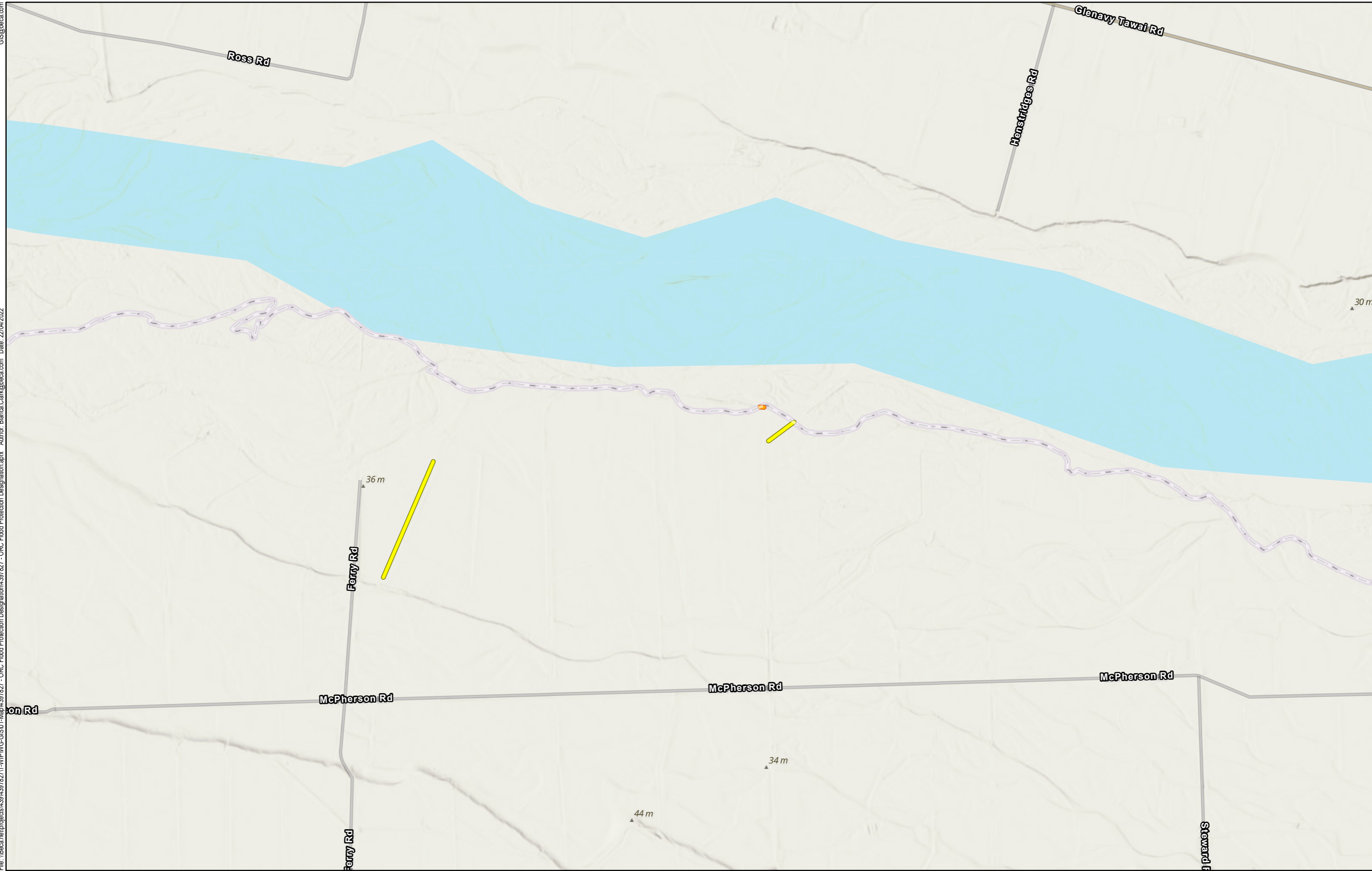
### Waitaki Designation Groynes and Cross-banks Sheet 1

- Legend**
- Groynes
  - Cross-banks
  - Regional Council
  - Boundaries



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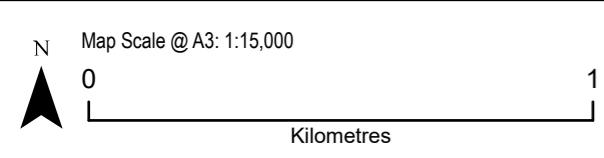
### Waitaki Designation Groynes and Cross-banks Sheet 2

- Legend**
- Groynes
  - Cross-banks
  - Regional Council
  - Boundaries



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GIS@beca.com  
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**Waitaki Designation  
Groynes and Cross-banks**  
Sheet 3

- Legend**
- Groynes
  - Cross-banks
  - Regional Council
  - Boundaries



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Draft for Consultation



## **APPENDIX D**

Conditions

## PROPOSED CONDITIONS

### CROSSBANKS

#### General

For the purpose of this designation, normal working hours are between 7.30am and 7pm, Monday to Friday, and 8am and 6pm Saturday, with the operation of noisy machinery restricted to 8am until 6pm Monday to Saturday. No work shall be undertaken on-site on Sundays or public holidays. Where in the opinion of the requiring authority there is an imminent or immediate risk to people or property, the requiring authority may undertake works at any time.

#### Earthworks

Any exposed earth shall be stabilised as soon as practicable.

#### Dust and Fumes

The requiring authority must avoid, as far as practicable, discharging dust and fumes beyond the boundaries of the designation.

#### Transportation of Material

The requiring authority must implement suitable measures to avoid deposition of any debris on surrounding roads by vehicles moving to and from the site. If any material is deposited on any roads, the requiring authority shall take immediate action, at its expense, to clean the roads.

#### Spraying

Any use of agrichemicals shall be carried out in accordance with the conditions and standards of NZS8409:2004 Management of Agrichemicals or any replacement standard.

The requiring authority must ensure that any contractor undertaking spraying of pest plants shall either hold current Growsafe certification or shall be directly supervised by an individual with a current Growsafe certification.

A register of organic farms must be included in the Operation and Maintenance manuals for the works.

#### Construction and Maintenance Noise

All construction work shall be designed, managed and conducted to ensure that construction and maintenance noise from the site does not exceed the limits in NZS6803:1999 Acoustics– Construction Noise.

## **Cultural**

If any urupā, traditional sites, taonga (significant artefacts), or kōiwi (human remains) are exposed during site works, then the following procedures shall apply:

- a. Works in the immediate vicinity of the site that has been exposed shall cease;
- b. The site supervisor shall immediately secure the area in a way that ensures that any remains or artefacts are untouched;
- c. The site supervisor shall notify representatives of relevant tangata whenua, the Heritage New Zealand Pouhere Taonga, and, in the case of human remains, the New Zealand Police; and
- d. The notification in (c) above shall allow such persons being given a reasonable time to record and recover archaeological features discovered before work may recommence on the exposed site.

## **Advice Note**

Any new works or equipment means those works which were not existing prior to the notification of the Proposed Waitaki District Plan.

No outline plan shall be required for the maintenance of the crossbanks, provided there is no overall increase in their height.

## **GROYNES**

### **General**

For the purpose of this designation, normal working hours are between 7.30am and 7pm, Monday to Friday, and 8am and 6pm Saturday, with the operation of noisy machinery restricted to 8am until 6pm Monday to Saturday. No work shall be undertaken on-site on Sundays or public holidays.

Where in the opinion of the requiring authority there is an imminent or immediate risk to people or property, the requiring authority may undertake works at any time.

### **Earthworks**

Any exposed earth shall be stabilised as soon as practicable.

### **Dust and Fumes**

The requiring authority must avoid, as far as practicable, discharging dust and fumes beyond the boundaries of the designation.

### **Transportation of Material**

The requiring authority must implement suitable measures to avoid deposition of any debris on surrounding roads by vehicles moving to and from the site. If any material is deposited on any roads, the requiring authority shall take immediate action, at its expense, to clean the roads.

### **Spraying**

All use of agrichemicals shall be carried out in accordance with the conditions and standards of NZS8409:2004 Management of Agrichemicals or any replacement standard.

The requiring authority must ensure that any contractor undertaking spraying of pest plants shall either hold current Growsafe certification or shall be directly supervised by an individual with a current Growsafe certification.

A register of organic farms must be included in the Operation and Maintenance manuals for the works.

### **Construction and Maintenance Noise**

All construction work shall be designed, managed and conducted to ensure that construction and maintenance noise from the site does not exceed the limits in NZS6803:1999 Acoustics– Construction Noise.

### **Cultural**

If any urupā, traditional sites, taonga (significant artefacts), or kōiwi (human remains) are exposed during site works, then the following procedures shall apply:

- a. Works in the immediate vicinity of the site that has been exposed shall cease;
- b. The site supervisor shall immediately secure the area in a way that ensures that any remains or artefacts are untouched;
- c. The site supervisor shall notify representatives of relevant tangata whenua, the Heritage New Zealand Pouhere Taonga, and, in the case of human remains, the New Zealand Police; and
- d. The notification in (c) above shall allow such persons being given a reasonable time to record and recover archaeological features discovered before work may recommence on the exposed site.

### **Advice Note**

Any new works or equipment means those works which were not existing prior to the notification of the Proposed Waitaki District Plan.

No outline plan shall be required for the maintenance of the groynes, provided there is no overall increase in its height.

## **FLOODWAYS**

### **General**

For the purpose of this designation, normal working hours are between 7.30am and 7pm, Monday to Friday, and 8am and 6pm Saturday, with the operation of noisy machinery restricted to 8am until 6pm Monday to Saturday. No work shall be undertaken on-site on Sundays or public holidays. Where in the opinion of the requiring authority there is an imminent or immediate risk to people or property, the requiring authority may undertake works at any time.

### **Earthworks**

Any exposed earth shall be stabilised as soon as practicable.

### **Dust and Fumes**

The requiring authority must avoid, as far as practicable, discharging dust and fumes beyond the boundaries of the designation.

### **Transportation of Material**

The requiring authority must implement suitable measures to avoid deposition of any debris on surrounding roads by vehicles moving to and from the site. If any material is deposited on any roads, the requiring authority shall take immediate action, at its expense, to clean the roads.

### **Spraying**

All use of agrichemicals shall be carried out in accordance with the conditions and standards of NZS8409:2004 Management of Agrichemicals or any replacement standard.

The requiring authority must ensure that any contractor undertaking spraying of pest plants shall either hold current Growsafe certification or shall be directly supervised by an individual with a current Growsafe certification.

A register of organic farms must be included in the Operation and Maintenance manuals for the works.

### **Construction and Maintenance Noise**

All construction work shall be designed, managed and conducted to ensure that construction and maintenance noise from the site does not exceed the limits in NZS6803:1999 Acoustics—Construction Noise.

## **Cultural**

If any urupā, traditional sites, taonga (significant artefacts), or kōiwi (human remains) are exposed during site works, then the following procedures shall apply:

- a. Works in the immediate vicinity of the site that has been exposed shall cease;
- b. The site supervisor shall immediately secure the area in a way that ensures that any remains or artefacts are untouched;
- c. The site supervisor shall notify representatives of relevant tangata whenua, the Heritage New Zealand Pouhere Taonga, and, in the case of human remains, the New Zealand Police; and
- d. The notification in (c) above shall allow such persons being given a reasonable time to record and recover archaeological features discovered before work may recommence on the exposed site.

## **Advice Note**

Any new works or equipment means those works which were not existing prior to the notification of the Proposed Waitaki District Plan.

No outline plan shall be required for the maintenance of the floodways, provided that bank height is not increased.