

Seven Oaks Kinloch Limited

30 Okaia Drive, Kinloch

Stormwater Management Summary – Balance Land

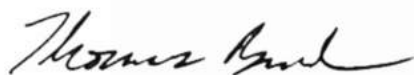
220225
3 June 2025

Seven Oaks Kinloch Limited

30 Okaia Drive, Kinloch

Stormwater Management Summary – Balance Land

Prepared by:



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Dip (Civil), AdvDip (Civil), BE (Hons) Civil, MEngNZ

Date: 3 June 2025

Reference: 220225

Status: FINAL

Revision: -

Previous Revision Date: -

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2. Sample Design Drawings from Seven Oaks Stage 2
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1. SCOPE

This report has been prepared to provide additional commentary on the approach to stormwater management and treatment for the proposed subdivision, in response to Further Information Request Item 6 from Taupō District Council (TDC) on 16 April 2025 and based upon a submission from the Waikato Regional Council (WRC). Specifically, Item 6 – Stormwater states the following:

Item 6 Stormwater

The submission from the Waikato Regional Council discussed stormwater management. Please provide further information and plan designs for stormwater management methodology to ensure that pre-treatment of stormwater from the roading network occurs prior to soakage in the soakage basins. The submission also refers to the Ecological Report and that the recommendations of that report should be implemented and maintained (see point 4 of this letter).

“Point 4” also refers to “including treatment of stormwater prior to entering the watercourses”.

Consequently, information provided below is a summary the Engineering Services Report, additional information provided to WRC during the earthworks and diversion consent process (both consents now granted), as well as additional information to clarify the stormwater approach.

2. STORMWATER APPROACH

Stormwater treatment and disposal for the balance land is proposed to follow similar methodologies used in previous stages of the Seven Oaks development. This will consist of the following:

- Pre-treatment via vegetated swales for all roads
- Attenuation via soakage ponds of all runoff for at least the 10-year post-development event, ignoring pre-development flows
- Disposal via soakage for all attenuated flow
- Discharge to the existing environment of greater storm events via spillways
- Additionally, the balance land has an added consideration of upstream catchments which currently drain through the proposed development. Consequently, overland flow paths are proposed both through and around the site to allow for these flows.

Please refer to Appendix 1 for the proposed earthworks plans and conceptual services plans.

2.1 Conservative Design as per previous Seven Oaks Stages

Nine stages have already been constructed within the greater Seven Oaks subdivision (Seven Oaks – Stages 1 to 7; Terraces – Stages 1 and 2). In all of these stages, the same approach to stormwater has been adopted and has now been in place for several years. The swales are all well vegetated, with check dams as/where required and ponds are functioning as intended. As the system is designed conservatively, there is rarely any runoff entering the ponds and when it does, the pond only contains a minor volume of water. It has been found that the ability of the swales to attenuate runoff before entering the ponds is considerable.

The ponds are designed for the 10-year event, but as mentioned, they have been designed conservatively due to the following:

- Attenuation within swale subsoil scoria filled trench has not been accounted for
- Attenuation behind check dams has not been accounted for
- Soakage within swales and check dams has not been accounted for
- Pond sizing has been based upon 100% of post-development (ignoring pre-development flows) runoff entering the pond, with no discharge. I.e. soakage of runoff within the pond during the storm event has not been taken into consideration. Soakage during a storm event would be considerable given the free draining soils and therefore the true capacity of the pond is much larger than the design volume.
- Additional soak holes have been installed in ponds to further mitigate against any runoff leaving the pond. Again, these have been installed as an added measure and have not been considered in the design.
- Most ponds include a preliminary forebay (small pond) as an additional gross pollutant trap, treatment and attenuation measure.

Please refer to Appendix 2 for a sample of drawings from Seven Oaks Stage 2, which contains typical plan views, swale/check dam sections, and various pond details. The balance land subdivision would contain the same details for swales and ponds and the same conservative design approach.

Please refer to Appendix 3 for photos taken in Stage 2 during a significant rain event in 2023. The attenuation behind check dams is evident and the pond never contained more than approximately 0.5m of water. Additional photos have been supplied from late May 2025 which show the significant vegetation within the swales, providing even further treatment and attenuation.

2.2 Adherence to the Waikato Stormwater Management Guidelines

The intent of the stormwater design for the balance land, as per previous stages of Seven Oaks developments, is to adhere to the principles of the Waikato Stormwater Management Guidelines. These guidelines recommend a low impact approach with an aim to deal with runoff at source, use natural drainage systems (such as swales) where possible and then use stormwater devices such as forebays and ponds for attenuation and additional treatment where required.

Due to the free draining pumice soils found commonly in the Taupō District, it is a TDC requirement that all individual dwellings capture all runoff from roofs and hardstand areas up to the 10-year, 1-hour event and discharge this volume to soakage within the lot. Any proposed privately owned rights of way will utilise kerb and channel, with a catchpit draining to a concrete lined drilled soakhole for disposal of the 10-year, 1 hour storm volume. This approach is entirely consistent with the Waikato Stormwater Management Guidelines as it provides the ability to contain and dispose of stormwater at source, rather than discharge to an alternative outlet. Consequently, only the public road runoff needs to be considered for treatment and attenuation at the time of subdivision.

The balance land will utilise densely vegetated swales in all roads. For the main road, Kahikatea Drive, this will be central median swale for the entire length of the road. For the other roads, including the cul-de-sacs, there will be a swale on one side with sheet flow discharge from the corresponding side of the road and curb and channel on the other side, with pipes under the road discharging to the swale for pre-treatment. The swales also contain a subsoil system containing a scoria filled trench to provide additional treatment, attenuation, and discharge to soakage. To reduce the risk of

erosion from higher flow velocity, and to encourage water to infiltrate into the scoria subsoil drain, check dams are installed in all swales with a gradient greater than 5%. All swales are planted with various grasses and plants as per landscape architect specifications to provide further treatment opportunity via filtration, evapo-transpiration, and nutrient uptake in the root structure. This approach is consistent with the principles of the Guidelines.

At the end of the swales, flows are collected generally via scruffy dome inlet and discharge to a small pond forebay which acts as a gross pollutant trap for any coarse material before ultimately discharging to the primary pond via a high-flow bypass system activated once the forebay is full, and which also discharges via soakage except for very large events. As per the commentary in Section 2.1 above regarding conservatism within the system, the ponds will not discharge any runoff for events much larger than the 10-year event and therefore meet the TDC Code of Practice as well as the permitted activity rules in the WRC Regional Plan.

Consequently, the overall approach aligns with the Waikato guidelines and provides a robust and conservative system for treatment and flow control of runoff generated from the development.

2.3 Secondary Overland Flow

For storm events greater than the 10-year, 1 hour event, or should the primary system experience blockages, secondary flow paths and emergency spillways are provided to safely allow for passage of these flows. These flow paths will be provided within the road corridors and then through the Stormwater Reserves towards the existing flows paths below the site. Discharge points have been selected to align with existing flow paths into the adjacent downstream land. These flow paths will also be designed to safely convey any overland flow runoff from upstream catchments that will pass through the balance land in two locations – down Road 1 and also through the specific stormwater reserve adjacent the Terraces block to the north.

Due to the conservative design already discussed, activation of the spillways and overland flow paths is likely to be very rare. A Discharge Consent has been granted from Waikato Regional Council for this activity.

2.4 Permitted Activity Compliance

As stated in the Engineering Services Report, the proposed stormwater system (treatment/disposal) will meet the requirements of the WRC Permitted Activity Rule 3.5.11.5 of the Regional Plan for “Discharge of Stormwater Onto or Into Land”.

The discharge runoff from the development (roads) is through swales and ponds into the land via soakage and there is no discharge to watercourses. The other conditions of this permitted activity rule are met as per comment within the Engineering Services Report but reiterated below.

- a) *The discharge shall not originate from a catchment that includes any high-risk facility or contaminated land unless there is an interceptor system in place.*
All runoff discharge originates from public roads or private residential lots and not from any high-risk facility.

- b) *The discharge shall be below a rate that would cause flooding outside the design discharge soakage area, except in rain events equivalent to the 10% Annual Exceedance Probability design storm or greater. Any exceedance shall go into designated overland flow paths.*
The proposed Stormwater treatment design captures and stores all runoff for storm events up to (and exceeding) the 10% AEP event. These flows are discharged to ground. Overland flow from larger events will be directed to existing overland flow paths.
- c) *There shall not be any overland flow resulting in a discharge to surface water, except in rain events equivalent to the 10% Annual Exceedance Probability design storm or greater; then there shall be no adverse surface water effects as a result of the discharge.*
The proposed Stormwater treatment and disposal design captures and stores all runoff for storm events up to (and exceeding) the 10% AEP event. These flows are all discharged to ground. In any case, overland flows are all directed to existing designated flow paths and not to any surface water.
- d) *Any erosion occurring as a result of the discharge shall be remedied as soon as practicable.*
Although measures will be implemented to ensure that no erosion occurs, the eventual Construction Management Plan will require this condition to be met.
- e) *The discharge shall not contain concentrations of hazardous substances that may cause significant adverse effects on aquatic life or the suitability of the water for human consumption after treatment.*
Given the nature of the development being residential, no significant hazardous substances are anticipated. Additionally, the Stormwater runoff will be treated first through swales and then through settlement ponds which are primarily discharged to ground which utilises filtration through the soil.

Therefore, Stormwater discharge to ground from the proposed subdivision will be fully compliant with the Permitted Activity Rules in the WRC Regional Plan.

3. CONCLUSION

The proposed Seven Oaks Balance Land subdivision will continue the managed stormwater approach and low impact design successfully implemented in previous Seven Oaks stages. This aligns with the principles of the Waikato Stormwater Management Guidelines, utilising a suite of treatment methods including extensive swales, subsoil drainage trenches under the swales, rock check dams and forebays provide treatment of flows prior to entering the soakage ponds. In addition, the system completely eliminates discharge (including sediment) from the subdivision for rainfall events up to (and exceeding) a 10-year probability, inclusive of climate change.

4. DISCLAIMER

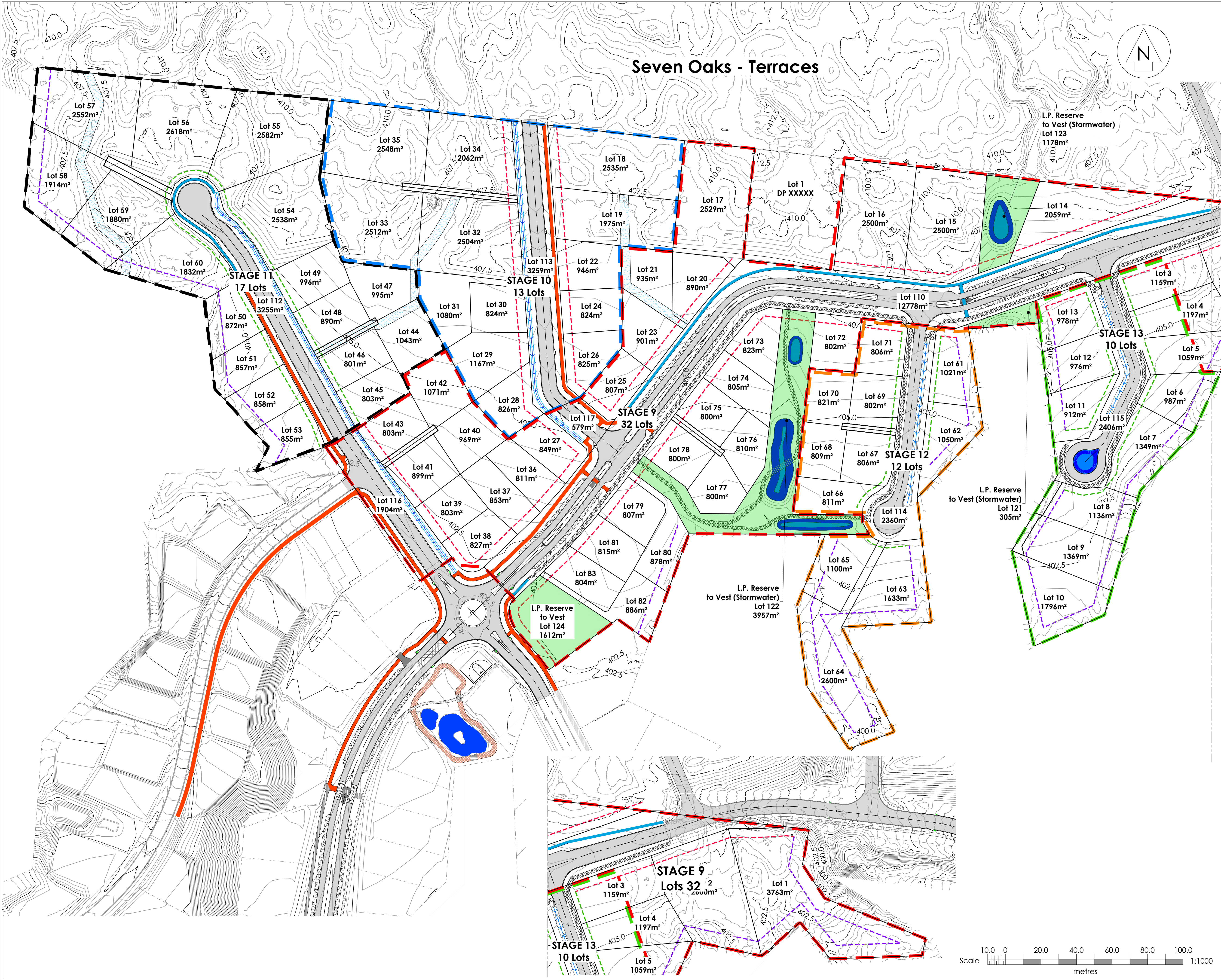
This Report has been prepared solely for the use of our client with respect to the particular brief given to Cheal Consultants Limited.

No liability is accepted in respect of its use for any other purpose or by any other person or entity. All future owners of this property should seek professional geotechnical advice to satisfy themselves as to its ongoing suitability for their intended use.

CHEAL CONSULTANTS LIMITED
3 June 2025

Appendix 1

Cheal Concept Drawings
for Earthworks (Final
Contours) and Services



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NOTES:

This plan has been prepared for the purpose of a resource consent application only. It is not a precise survey plan. As areas and dimensions are likely to vary upon survey it should not be attached to any sale & purchase agreements without an appropriate condition to cover such variations.

Owner: Seven Oaks Kinloch Ltd

Record of Title: 1109169
Total Area: 18.255 ha

Reticulated services will require additional easements after final construction and development of the legal survey.

Rights of way to rear Lots are a minimum 4m wide.

Pool Fence along DOC Land Boundary.

Legend:

- Reserve to Vest (Recreation & Stormwater)
- Stormwater Overland Flow Path
- Design Contours Major
- Design Contours Minor
- Easement
- Existing Culvert
- Footpath 1.4m
- Cycleway 1.8m
- Combined Footpath & Cycleway 2.0m
- 3m Setback
- 5m Setback
- 7.5m Setback
- Stage 9 Boundary
- Stage 10 Boundary
- Stage 11 Boundary
- Stage 12 Boundary
- Stage 13 Boundary



E	14/05/25	For Resource Consent	MM	SH	TWB
D	31/01/25	For Resource Consent	RR	SH	TWB
C	07/11/24	For Resource Consent	RR	SC	TWB
B	16/05/23	For Resource Consent	JZL	LU	TWB
A	21/12/22	For Resource Consent	PH	LU	TWB
Rev	Date	Amendment	By	Chk	App

Project Title
Seven Oaks Kinloch Limited
Okiaia Drive
Kinloch

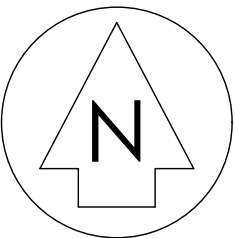
Drawing Title
Balance Land
Earthworks
Proposed Contour Plan

Surveyed	G.Ripoll	10/22	GR
Designed	S.Pen	12/22	SP
Drawn	P.Harris	21/12/22	PH
Checked	L.Urieete	21/12/22	LU
Approved	T.Brand	21/12/22	TWB

Status **RESOURCE CONSENT**

Scale A1 1:1000
A3 1:2000 | A1

Drawing Number
220225-SK202 | E



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NOTES:

This plan has been prepared for the purpose of a resource consent application only. It is not a precise survey plan. As areas and dimensions are likely to vary upon survey it should not be attached to any sale & purchase agreements without an appropriate condition to cover such variations.

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Record of Title: 1109169
Total Area: 18.255 ha

Reticulated services will require additional easements after final construction and development of the legal survey.

Rights of way to rear Lots are a minimum 4m wide.

Pool Fence along DOC Land Boundary.

Legend:

- SW Stormwater Line Proposed
- SWMH Proposed
- Cesspit Proposed
- SSWH Proposed
- SW Soakage Pit
- SS Sewer Line Proposed
- SS Sewer Rising Main Proposed
- SSW Swale Proposed
- SSMH Proposed
- SSMH Existing
- Reserve to Vest (Recreation & Stormwater)
- Stormwater Overland Flow Path
- Easement
- ROW
- Stage 9 Boundary
- Stage 10 Boundary
- Stage 11 Boundary
- Stage 12 Boundary
- Stage 13 Boundary

SEVEN OAKS

E	14/05/25	For Resource Consent	MM	SH	TWB
D	31/01/25	For Resource Consent	RR	SH	TWB
C	07/11/24	For Resource Consent	SC	SH	TWB
B	16/05/23	For Resource Consent	JZL	LU	TWB
A	21/12/22	For Resource Consent	PH	LU	TWB
Rev	Date	Amendment	By	Chk	App

Project Title
Seven Oaks Kinloch Limited
Okaia Drive
Kinloch

Drawing Title
Balance Land Services
Conceptual Layout Plan
Sheet 1 of 2

Surveyed	G.Ripoll	10/22	GR
Designed	S.Pen	12/22	SP
Drawn	P.Harris	21/12/22	PH
Checked	L.Uriarte	21/12/22	LU
Approved	T.Brand	21/12/22	TWB

Status **RESOURCE CONSENT**

Scale A1 1:750
A3 1:1500 | A1

Drawing Number 220225-SK401 | Rev E

29/05/2025 2:47:38 pm

AutoCAD

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This plan has been prepared for the purpose of a resource consent application only. It is not a precise survey plan. As areas and dimensions are likely to vary upon survey it should not be attached to any sale & purchase agreements without an appropriate condition to cover such variations.

Owner: Seven Oaks Kinloch Ltd

Record of Title: 1109169
Total Area: 18.255 ha

Reticulated services will require additional easements after final construction and development of the legal survey.

Rights of way to rear Lots are a minimum 4m wide.

Pool Fence along DOC Land Boundary.

All Lots marked with an asterisk (eg Lot 9 *) require individual sewer pumps

Legend:

- SW Stormwater Line Proposed
- SWMH Proposed
- Cesspit Proposed
- SWSH Proposed
- SW Soakage Pit
- Culvert Proposed
- (E-one) Individual SS Pump Station
- SS Sewer Line Proposed
- SS Sewer Rising Main Proposed
- SS SW Swale Proposed
- SSMH Proposed
- SSMH Existing
- Reserve to Vest (Recreation & Stormwater)
- Easement
- ROW
- Stage 9 Boundary
- Stage 10 Boundary
- Stage 11 Boundary
- Stage 12 Boundary
- Stage 13 Boundary

SEVEN OAKS

E	14/05/25	For Resource Consent	MM	SH	TWB
D	31/01/25	For Resource Consent	RR	SH	TWB
C	07/11/24	For Resource Consent	SC	SH	TWB
B	16/05/23	For Resource Consent	JZL	LU	TWB
A	21/12/22	For Resource Consent	PH	LU	TWB
Rev	Date	Amendment	By	Chk	App

Project Title
Seven Oaks Kinloch Limited
Okiaia Drive
Kinloch

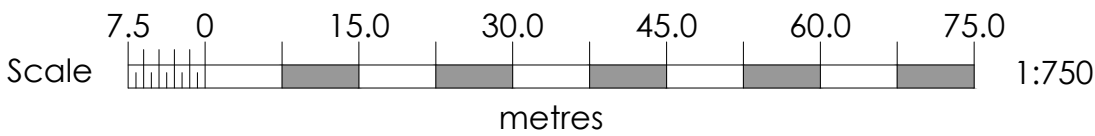
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Balance Land Services
Conceptual Layout Plan
Sheet 2 of 2

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Designed	S.Pen	12/22	SP
Drawn	P.Harris	21/12/22	PH
Checked	L.Uriaete	21/12/22	LU
Approved	T.Brand	21/12/22	TWB

Status **RESOURCE CONSENT**

Scale	A1	1:750	A1
	A3	1:1500	

Drawing Number
220225-SK402
Rev
E



Appendix 2

Sample Design Drawings
from Seven Oaks Stage 2

NOTES:

- All work shall be done in accordance with the Taupo District Council Code of Practice.
- Reduced Levels are in terms of : Moturiki Datum 1953
Level Origin : DT8J
RL: 369.623
Contour Interval = Major 1m
Minor 0.5m
- Contractor to locate and identify existing utility location and depths prior to construction. The project engineer shall be informed of any discrepancies to the information depicted on these plans immediately for revised drawings.
- Contractor shall install and maintain all stormwater, dust, and erosion control during construction as per earthworks management plan and the Waikato Regional Council Erosion and Sediment Control - "Guidelines for soil disturbing activities".
- All disturbed areas shall be re-topsoiled and grassed within 30 days upon completion of contract works.
Dust control shall be maintained until grassed areas have become established.
- All single sump (cesspit) leads to be DN225 RCRRJ Class 2 unless stated otherwise.
All double sump (cesspit) leads to be DN300 RCRRJ Class 2 unless stated otherwise.
All double sump (cesspit) in low points, leads to be DN375 RCRRJ Class 2 unless stated otherwise.
- All soak holes on ROW's are 6m depth.

Legend:

- SW Stormwater Line Proposed
- SW Stormwater Line Existing
- SWMH Proposed
- SWMH Existing
- Cesspit Proposed
- Cesspit Existing
- SWSH Proposed
- SW Connection
- Swale Drain
- Rock check dams
- Kerb & Channel
- Proposed Road
- Proposed Footpath
- Proposed Cycleway

SEVEN OAKS

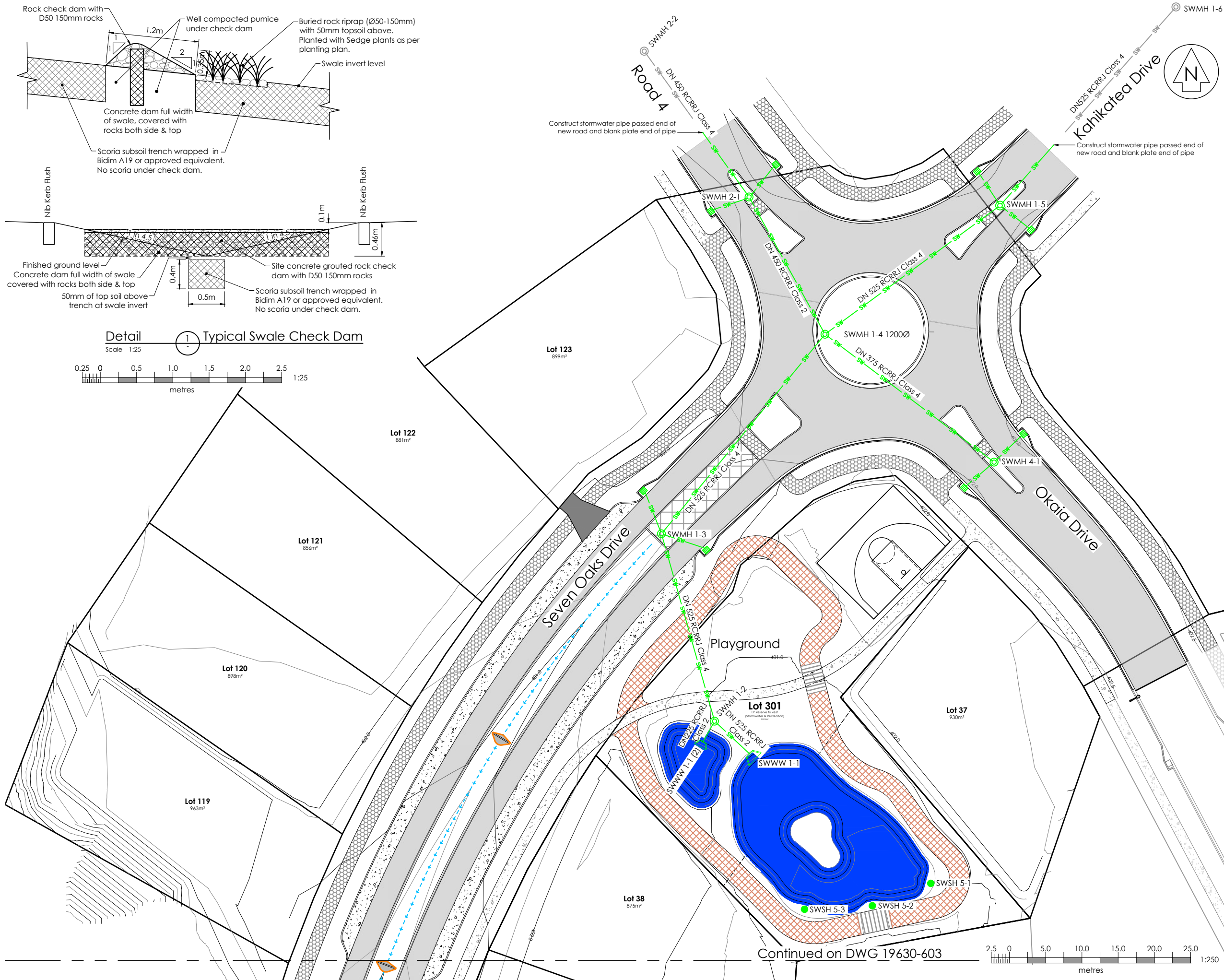
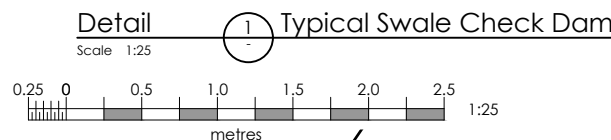
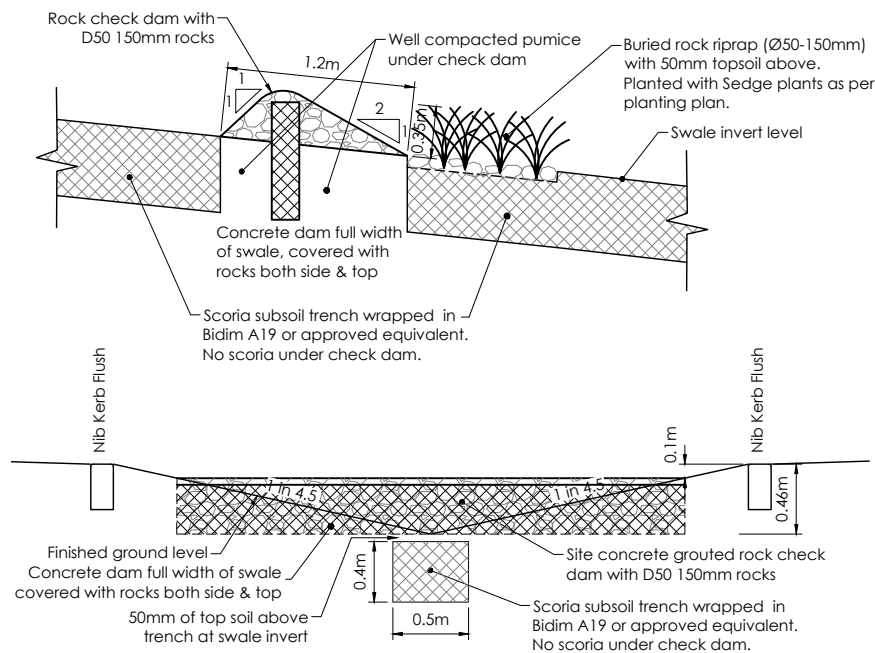
Rev	Date	Amendment	By	Chk	App
1	09/03/21	For Construction	PH	LU	JRT

Project Title
Seven Oaks Kinloch Ltd
Stage 2 - 5 Okaia Drive
Kinloch

Drawing Title
Stormwater Reticulation
Layout Plan
Sheet 2 of 9

Surveyed	-	-	-
Designed	A.Cook	11/12/20	AMC
Drawn	P.Harris	11/12/20	PH
Checked	L.Uiate	11/12/20	LU
Approved	S.Prasad	23/12/20	SP

Status	CONSTRUCTION		
Scale	A1	1:250	A1
	A3	1:500	
Drawing Number	19630-602		Rev
			1





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NOTES:

- All work shall be done in accordance with the Taupo District Council Code of Practice.
- Reduced Levels are in terms of Moturiki Vertical Datum 1953
Level Origin : DT8J
RL: 369.623
Contour Interval = Major 1m
Minor 0.5m
- Contractor to locate and identify existing utility location and depths prior to construction. The project engineer shall be informed of any discrepancies to the information depicted on these plans immediately for revised drawings.
- Contractor shall install and maintain all stormwater, dust, and erosion control during construction as per earthworks management plan and the Waikato Regional Council Erosion and Sediment Control - "Guidelines for soil disturbing activities".
- All disturbed areas shall be re-topped and grassed within 30 days upon completion of contract works.
Dust control shall be maintained until grassed areas have become established.
- All single sump (cesspit) leads to be DN225 RCRRJ Class 2 unless stated otherwise.
All double sump (cesspit) leads to be DN300 RCRRJ Class 2 unless stated otherwise.
All double sump (cesspit) in low points, leads to be DN375 RCRRJ Class 2 unless stated otherwise.
- All soak holes on ROW's are 6m depth.

Legend:

- SW Stormwater Line Proposed
- SW Stormwater Line Existing
- SWMH Proposed
- SWMH Existing
- Cesspit Proposed
- Cesspit Existing
- SWSH Proposed
- SW Connection
- Swale Drain
- Rock check dams
- Kerb & Channel
- Proposed Road
- Proposed Footpath
- Proposed Cycleway



Rev	Date	Amendment	By	Chk	JRT
2	03/06/21	Lot 54 Overland Flow Path Added	PH	LU	JRT
1	09/03/21	For Construction	PH	LU	JRT

Project Title
Seven Oaks Kinloch Ltd
Stage 2 to 5 Okia Drive
Kinloch

Drawing Title
Stormwater Reticulation
Layout Plan
Sheet 5 of 9

Surveyed	-	-	-
Designed	A.Cook	11/12/20	AMC
Drawn	P.Harris	11/12/20	PH
Checked	L.Uarte	11/12/20	LU
Approved	S.Prasad	23/12/20	SP

Status
CONSTRUCTION

Scale A1 1:250 or As Shown A1
A3 1:500

Drawing Number 19630-605 Rev 2

NOTES:

- All work shall be done in accordance with the Taupo District Council Code of Practice.
- Reduced Levels are in terms of : Moturiki Datum 1953
Level Origin : DT8J
RL: 369.623
Contour Interval = Major 1m
Minor 0.5m
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- Contractor shall install and maintain all stormwater, dust, and erosion control during construction as per earthworks management plan and the Waikato Regional Council Erosion and Sediment Control - "Guidelines for soil disturbing activities".
- All disturbed areas shall be re-topsoiled and grassed within 30 days upon completion of contract works.
Dust control shall be maintained until grassed areas have become established.
- All geotech lining to be installed to the manufactures specifications.

Rev	Date	Amendment	By	Chk	App
1	09/03/21	For Construction	PH	LU	JRT

Project Title

Seven Oaks Kinloch Ltd
Stage 2 - 5 Okaia Drive
Kinloch

Drawing Title

Stormwater
Pond 2 Layout Plan
& Typical Cross Section

Surveyed	-	-	-
Designed	A.Cook	11/12/20	AMC
Drawn	P.Harris	11/12/20	PH
Checked	L.Uarte	11/12/20	LU
Approved	S.Prasad	23/12/20	SP

Status

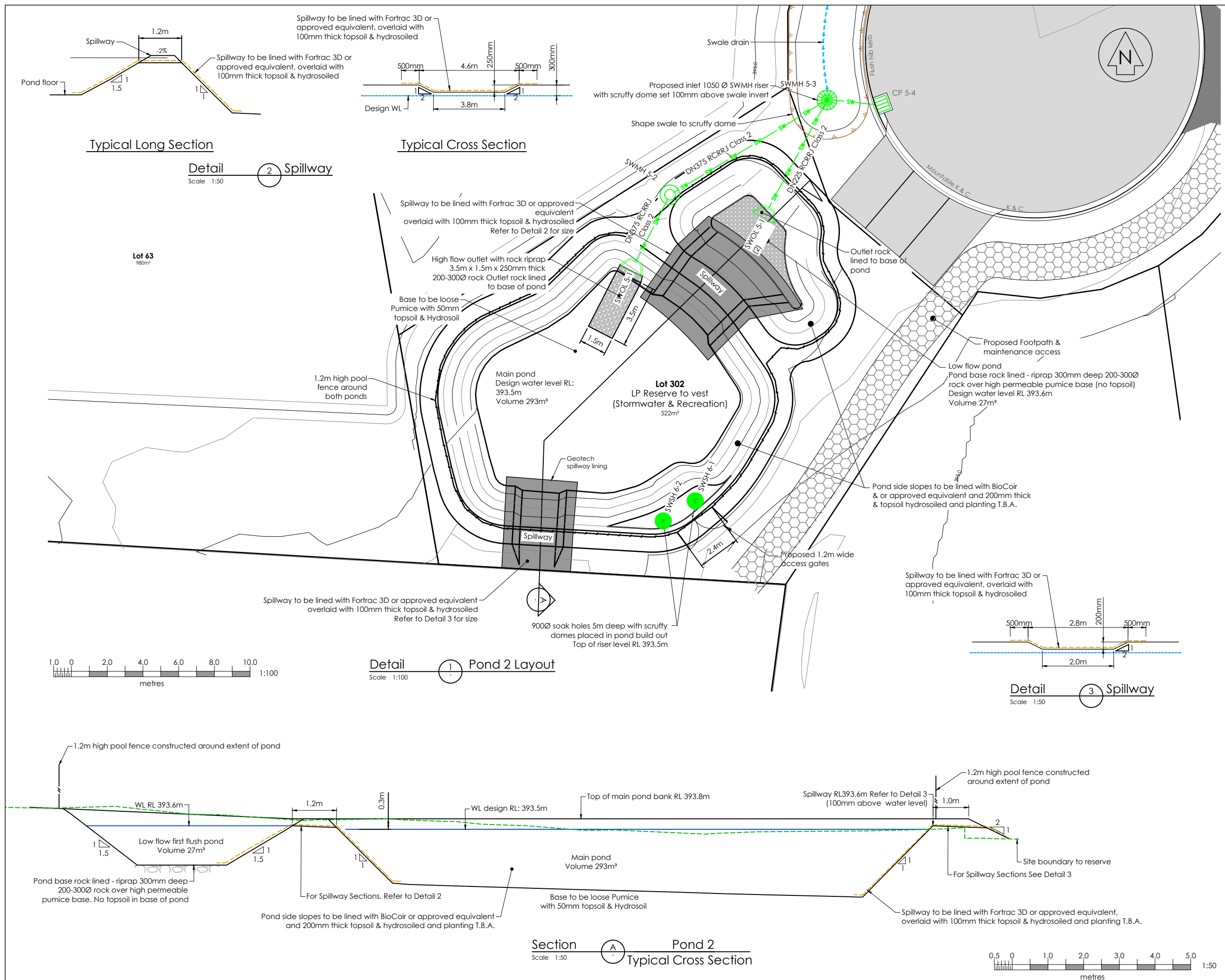
CONSTRUCTION

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	A3	As Shown x 2	

Drawing Number	Rev
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19630-618

1



NOTES:

- All work shall be done in accordance with the Taupo District Council Code of Practice.
- Reduced Levels are in terms of Moturiki Vertical Datum 1953
Level Origin : DT8J
RL: 369.623
- Contractor to locate and identify existing utility location and depths prior to construction. The project engineer shall be informed of any discrepancies to the information depicted on these plans immediately for revised drawings.
- Contractor shall install and maintain all stormwater, dust, and erosion control during construction as per earthworks management plan and the Waikato Regional Council Erosion and Sediment Control - "Guidelines for soil disturbing activities".
- All disturbed areas shall be re-topsoiled and grassed within 30 days upon completion of contract works.
Dust control shall be maintained until grassed areas have become established.
- All steel fixings to be Hot Dip Galvanised.
- All timber poles must be normal density poles complying with Table 7:1 of NZS3603:1993.
- Geotech advice must be obtained before carrying out the construction to confirm the suitability of soil.

SEVEN OAKS

Rev	Date	Amendment	By	Chk	App
2	09/12/21	Section C, Boardwalk Width Reduced	PH	LU	LU
1	09/03/21	For Construction	PH	LU	JRT

Project Title

Seven Oaks Kinloch Ltd
Stage 2 to 5 Okia Drive
Kinloch

Drawing Title

Stormwater
Pond 4 Layout Plan

Surveyed	-	-	-
Designed	A.Cook	11/12/20	AMC
Drawn	P.Harris	11/12/20	PH
Checked	L.Ularte	11/12/20	LU
Approved	S.Prasad	23/12/20	SP

Status

CONSTRUCTION

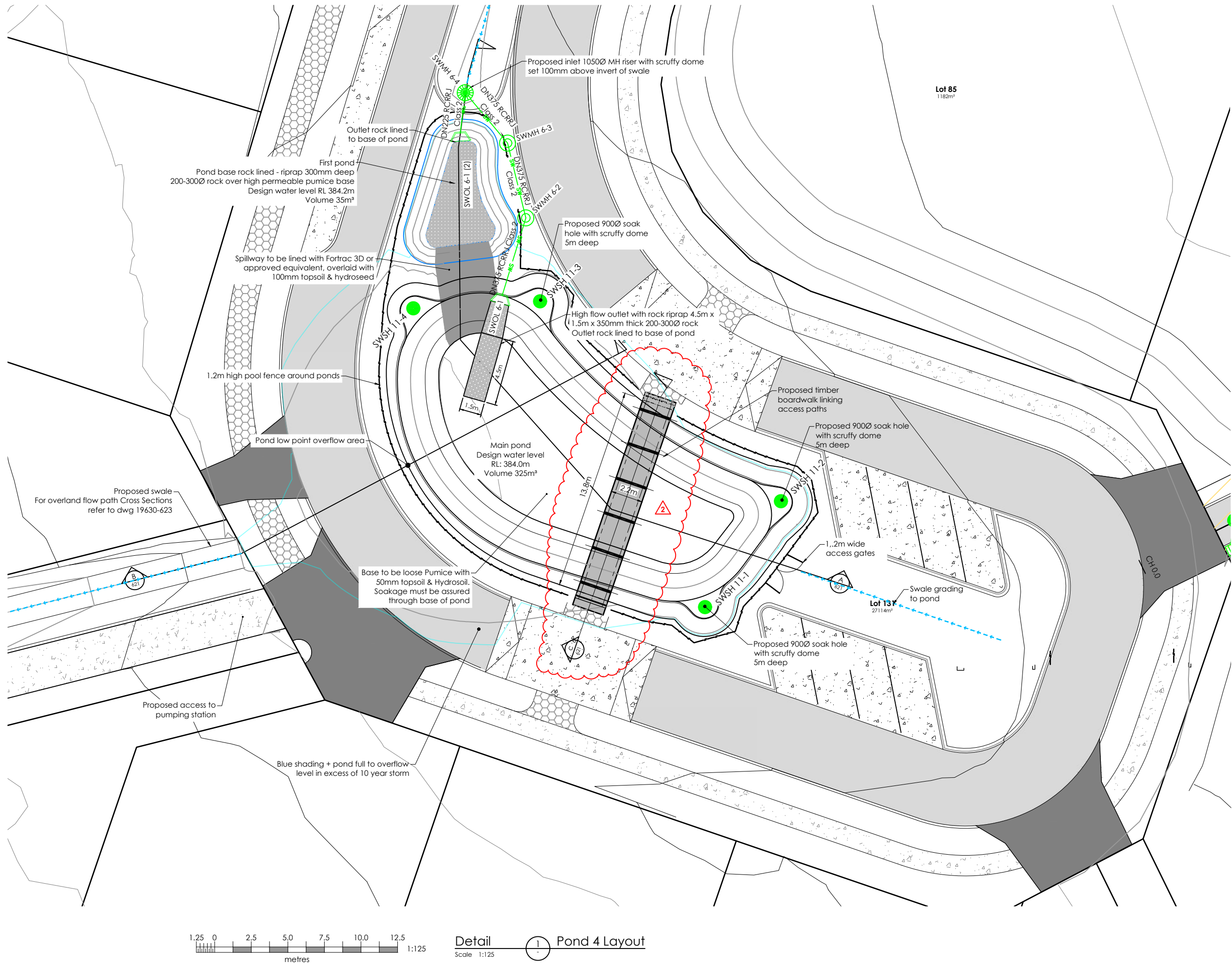
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Drawing Number

19630-620

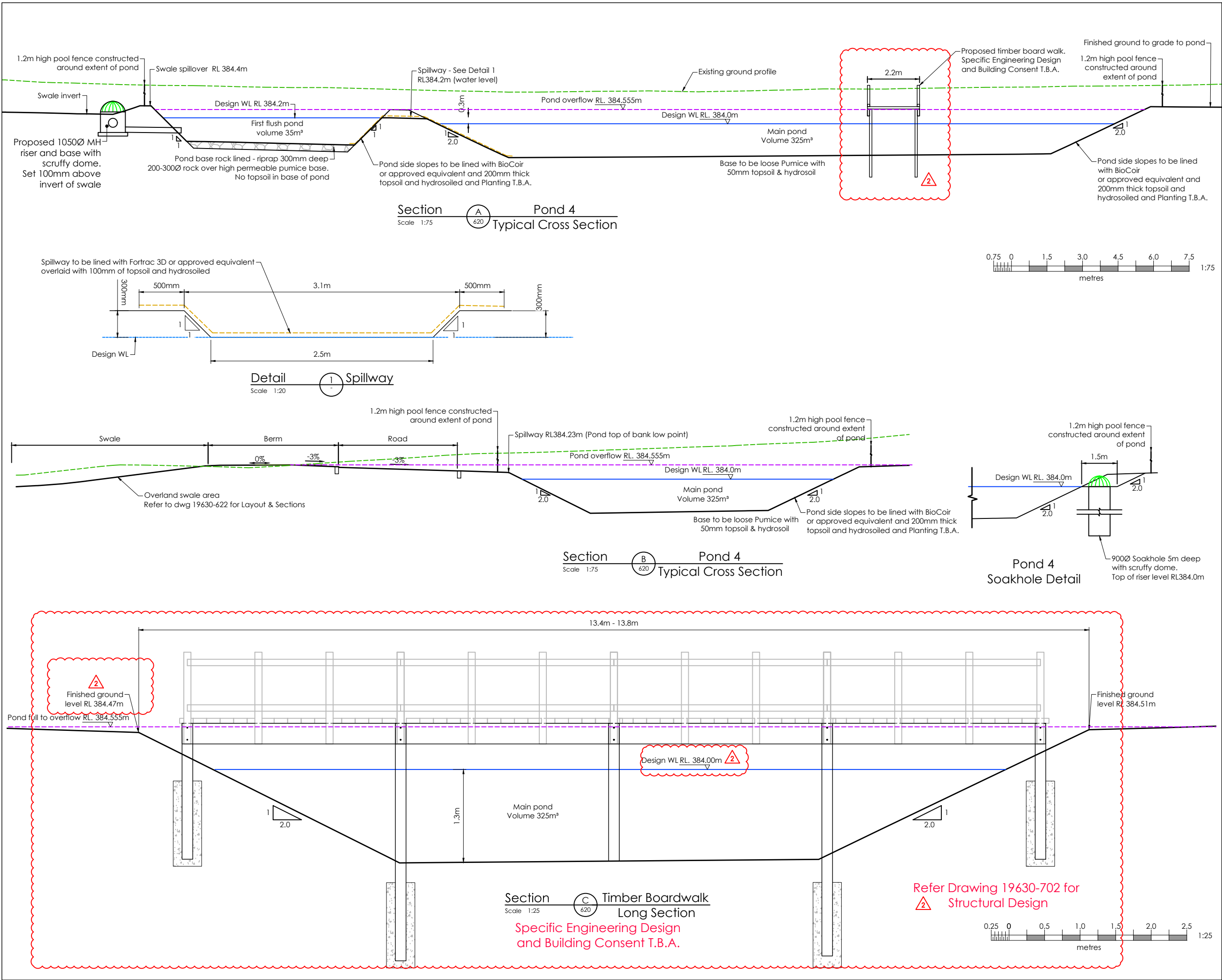
Rev

2



NOTES:

- All work shall be done in accordance with the Taupo District Council Code of Practice.
- Reduced Levels are in terms of Moturiki Vertical Datum 1953
Level Origin : DT8J
RL: 369.623
- Contractor to locate and identify existing utility location and depths prior to construction. The project engineer shall be informed of any discrepancies to the information depicted on these plans immediately for revised drawings.
- Contractor shall install and maintain all stormwater, dust, and erosion control during construction as per earthworks management plan and the Waikato Regional Council Erosion and Sediment Control - "Guidelines for soil disturbing activities".
- All disturbed areas shall be re-topsoiled and grassed within 30 days upon completion of contract works.
Dust control shall be maintained until grassed areas have become established.
- All geotech lining to be installed to the manufactures specifications.



Rev	Date	Amendment	By	Chk	App
2	09/12/21	Levels Amended, Boardwalk Ref	PH	LU	LU
1	09/03/21	For Construction	PH	LU	JRT

Project Title
Seven Oaks Kinloch Ltd
Stage 2 to 5 Okaia Drive
Kinloch

Drawing Title
Stormwater
Pond 4
Typical Cross Section

Surveyed	-	-	-
Designed	A.Cook	11/12/20	AMC
Drawn	P.Harris	11/12/20	PH
Checked	L.Uarte	11/12/20	LU
Approved	S.Prasad	23/12/20	SP

Status	CONSTRUCTION		
Scale	A1	As Shown	A1
	A3	As Shown x 2	
Drawing Number	19630-621		Rev
			2

Appendix 3

Photos of existing Stage 2
swales and ponds during
rain event

Photo 1 – Typical Swale



Photo 2 – Swale Inlet to Pond



Photo 3 – Swale Under Footpath (Inlet)



Photo 4 – Swale Under Footpath (Outlet)



Photo 5 – Check Dam



Photo 6 – Stormwater Pond Forebay



Photo 7 – Stormwater Pond



Photo 8 – Vegetated Swale Sample 1 – May 2025



Photo 9 – Vegetated Swale Sample 2 – May 2025

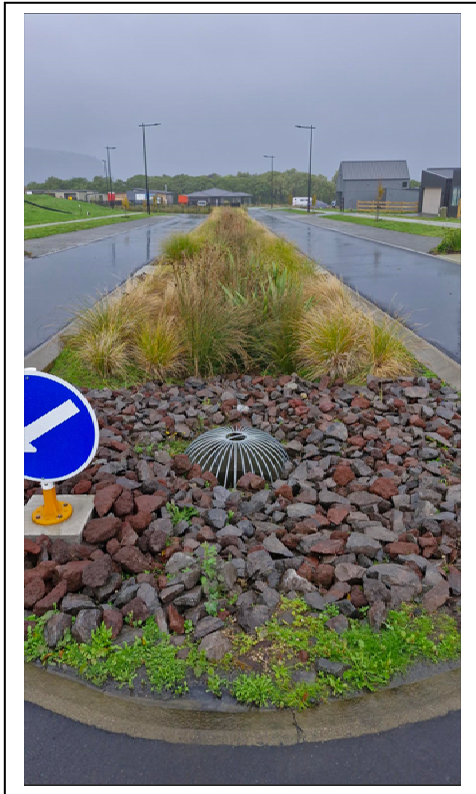


Photo 10 – Vegetated Swale Sample 3 – May 2025



Photo 11 – Vegetated Swale Sample 4 – May 2025

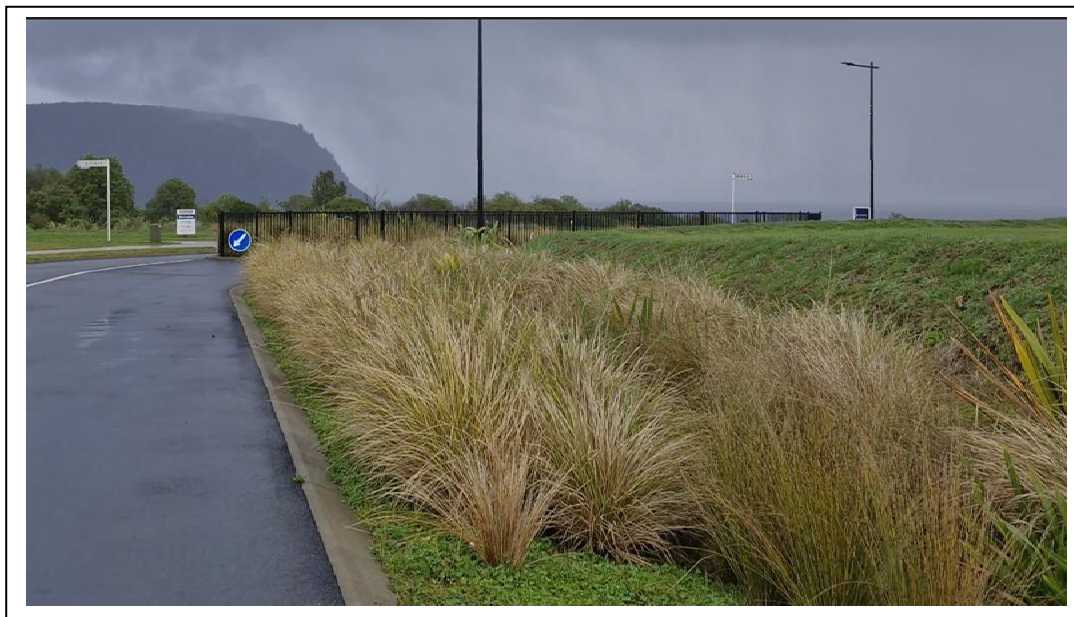


Photo 12 – Vegetated Swale Sample 5 – May 2025

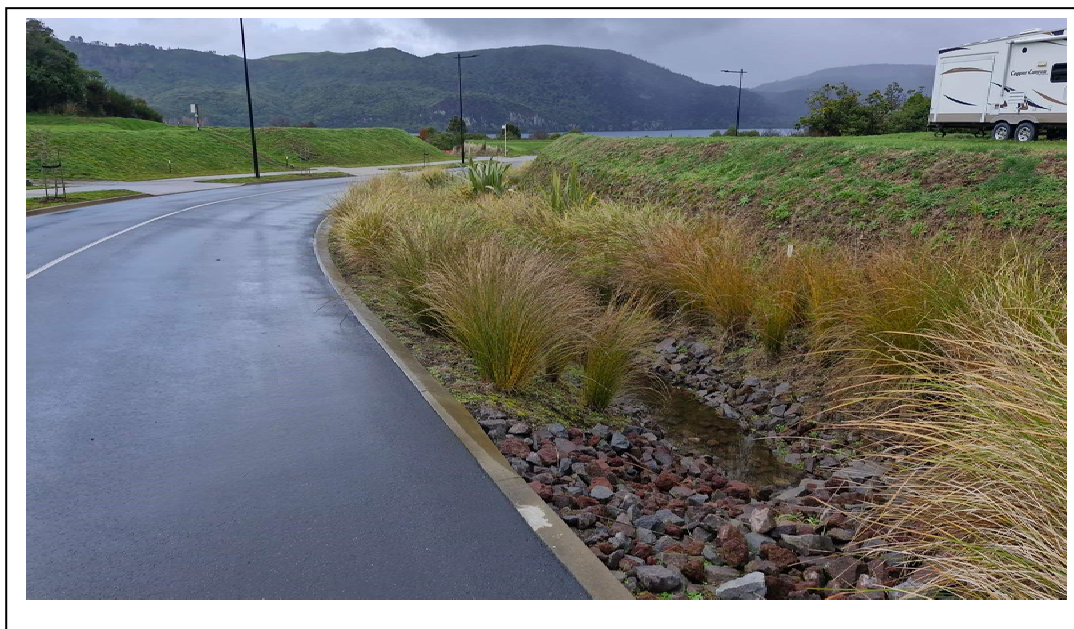


Photo 13 – Vegetated Attenuation Pond Sample – May 2025

