

Project Reference: 25050 306 Pebble Brook Road, Wainui Document ID: 370098

# **APPENDIX B**

# **DESIGN CALCULATIONS**





### **GD005 Sediment Retention Pond Design**

angineers - scientists					
Client:	Kings Quarry Ltd.				
Address:	306 Pebble Brook Road, Wainui	Project No.:	25050		
Phase:	Resource Consent - Access Road	Doc ID:	364299		
Prepared By:	Yoonhwa Choi	Date:	25/09/2023		
Checked By:	Helena Dubinko	Date:	9/10/2023		

### 1 Site Characteristics

Catchment Size Catchment Length Catchment Slope

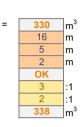
11000 m<sup>2</sup> >200m <18%

SRP catchment should be limited to 5ha

Greater of the immediate 20m from sediment pond or average catchment slope for both pre and post development

### 2 Pond Sizing

Required Pond Volume Pond Length Pond Width Pond Depth Length to Width Ratio Inlet batter Perimeter batter Pond Volume



Length to width ratio must be no less than 3:1 and no greater than 5:1

No deeper than 2m

Adopt a 16m long x 5m wide x 2m deep Sediment Retention Pond with a total of 338m3 volume

### 3 Decants

Recommended SRP Decant Flow Rate (3L/sec/ha) Standard T-Bar decant flow rate Required number of T-bar decants

L/sec L/sec

6 rows of 10mm holes at 60mm spacings (200 holes over 2m)

Adopt 1 T-bar decants in SRP for the recommended 3.3L/sec flow rate 108

101

Iterate Dead Storage Level (First T-Required Dead Storage (30%)

0.9 m

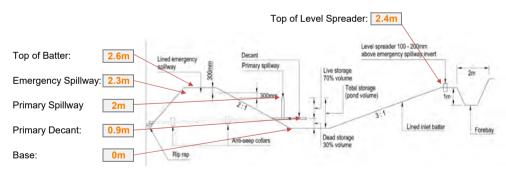
3%

Initial decant must be able to raise to full extent of the sediment ponds live storage (70%)

Install first T-bar decant system 0.9m above SRP base Second Decanting T-bar range N/A of live storage upper Second T-Bar Decant Not Required N/A Third Decanting T-bar range upper of live storage

Third T-Bar Decant Not Required

### 4 SRP Details



SRP Cross-Section from Auckland Council GD005

### 5 Forebay

Recommended 5% of SRP total volume Forebay base length Forebay width

m<sup>3</sup> 4.0 m

Adopt a 4m long x 5m wide x 1m deep Forebay with a total of 20m3 volume



### **GD005 Sediment Retention Pond Design**

engineers - serontrists					
Client:	Kings Quarry Ltd.				
Address:	306 Pebble Brook Road, Wainui	Project No.:	25050		
Phase:	Resource Consent - Fill Site	Doc ID:	364299		
Prepared By:	Yoonhwa Choi	Date:	25/09/2023		
Checked By:	Helena Dubinko	Date:	9/10/2023		

### 1 Site Characteristics

Catchment Size Catchment Length Catchment Slope

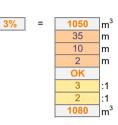
35000 m<sup>2</sup> >200m <18%

SRP catchment should be limited to 5ha

Greater of the immediate 20m from sediment pond or average catchment slope for both pre and post development

### 2 Pond Sizing

Required Pond Volume Pond Length Pond Width Pond Depth Length to Width Ratio Inlet batter Perimeter batter Pond Volume



Length to width ratio must be no less than 3:1 and no greater than 5:1

No deeper than 2m

Adopt a 35m long x 10m wide x 2m deep Sediment Retention Pond with a total of 1080m3 volume

### 3 Decants

Recommended SRP Decant Flow Rate (3L/sec/ha) Standard T-Bar decant flow rate Required number of T-bar decants

10.5 L/sec L/sec

6 rows of 10mm holes at 60mm spacings (200 holes over 2m)

Adopt 3 T-bar decants in SRP for the recommended 10.5L/sec flow rate

Iterate Dead Storage Level (First T-Required Dead Storage (30%)

0.8 m

341 324

Initial decant must be able to raise to full extent of the sediment ponds live storage (70%)

Install first T-bar decant system 0.8m above SRP base

Second Decanting T-bar range

66% of live storage upper

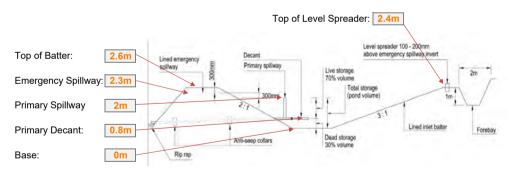
Install Second T-bar decant system to operate in upper 66% of live storage

Third Decanting T-bar range

upper 33% of live storage

Install Third T-bar decant system to operate in upper 33% of live storage

### 4 SRP Details



SRP Cross-Section from Auckland Council GD005

### 5 Forebay

Recommended 5% of SRP total volume Forebay base length Forebay width

m<sup>3</sup> 6.0 m

Adopt a 6m long x 10m wide x 1m deep Forebay with a total of 60m3 volume



### **GD005 Sediment Retention Pond Design**

angineers - scientists					
Client:	Kings Quarry Ltd.				
Address:	306 Pebble Brook Road, Wainui	Project No.:	25050		
Phase:	Resource Consent - Main Quarry	Doc ID:	364299		
Prepared By:	Yoonhwa Choi	Date:	25/09/2023		
Checked By:	Helena Dubinko	Date:	9/10/2023		

### 1 Site Characteristics

Catchment Size Catchment Length Catchment Slope

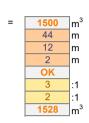
50000 m<sup>2</sup> >200m >18%

SRP catchment should be limited to 5ha

Greater of the immediate 20m from sediment pond or average catchment slope for both pre and post development

### 2 Pond Sizing

Required Pond Volume Pond Length Pond Width Pond Depth Length to Width Ratio Inlet batter Perimeter batter Pond Volume



Length to width ratio must be no less than 3:1 and no greater than 5:1

No deeper than 2m

Adopt a 44m long x 12m wide x 2m deep Sediment Retention Pond with a total of 1528m3 volume

### 3 Decants

Recommended SRP Decant Flow Rate (3L/sec/ha) Standard T-Bar decant flow rate Required number of T-bar decants

L/sec L/sec

6 rows of 10mm holes at 60mm spacings (200 holes over 2m)

Adopt 4 T-bar decants in SRP for the recommended 15L/sec flow rate

Iterate Dead Storage Level (First T-Required Dead Storage (30%)

0.8 m

3%

498 m<sup>3</sup> 458

Initial decant must be able to raise to full extent of the sediment ponds live storage (70%)

Install first T-bar decant system 0.8m above SRP base

Second Decanting T-bar range

66% of live storage upper

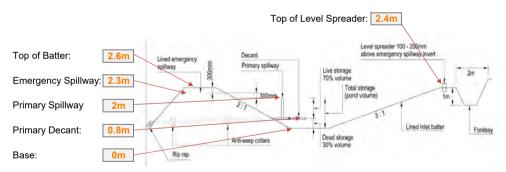
Install Second T-bar decant system to operate in upper 66% of live storage

Third Decanting T-bar range

upper 33% of live storage

Install Third T-bar decant system to operate in upper 33% of live storage

### 4 SRP Details



SRP Cross-Section from Auckland Council GD005

### 5 Forebay

Recommended 5% of SRP total volume Forebay base length Forebay width

m<sup>3</sup> 7.0 m

Adopt a 7m long x 12m wide x 1m deep Forebay with a total of 80m3 volume

# APPENDIX C ESCP DESIGN PLANS





Project Number: 25050
Project Office: Auckland

Project Manager: Helena Dubinko

# Erosion and Sediment Control Plans for Proposed Quarry Expansion Kings Quarry 306 Pebble Brook Road Wainui, Auckland

DRAWING INDEX						
SHEET	DESCRIPTION	ISSUE DATE	STATUS	REVISION		
200	Overall Site Plan	3/03/2025	Consent	D		
201	Sediment Control Plan - Year 1	3/03/2025	Consent	D		
202	Sediment Control Plan - Year 2	3/03/2025	Consent	D		
203	Sediment Control Plan - Year 3-4	3/03/2025	Consent	D		
204	Sediment Control Plan - Year 5	3/03/2025	Consent	D		
205	Sediment Control Plan - Year 6-10	3/03/2025	Consent	D		
206	Sediment Control Plan - Year 11-15	3/03/2025	Consent	D		
207	Sediment Control Plan - Year 16-20	3/03/2025	Consent	D		
208	Sediment Control Plan - Year 21-25	3/03/2025	Consent	D		
209	Sediment Control Plan - Year 26-30	3/03/2025	Consent	D		
210	Sediment Control Plan - Year 31-35	3/03/2025	Consent	D		
211	Sediment Control Plan - Year 36-40	3/03/2025	Consent	D		
212	Sediment Control Plan - Year 41-45	3/03/2025	Consent	D		
213	Device Details A	3/03/2025	Consent	D		
214	Device Details B	3/03/2025	Consent	D		
215	Device Details C	3/03/2025	Consent	D		
216	Device Details D	3/03/2025	Consent	D		

