Section 92 Response Attachments

Attachment 3 - Appendix A ESCPs and text

Central Interceptor
Erosion & Sediment and Stormwater Control Plan

Plan No:	MAIN ESCP 1.1 - Western Springs (WS1)	
Location:	Western Springs	
Prepared by	Anna Tyrrell, revised Tomas Ussher	Date: 4/12/12
Checked by	Dietmar Londer	Revision: D

1 Introduction

This Erosion & Sediment and Stormwater Control Plan (ESCP) covers the construction phase of the Central Interceptor at the WS1 – Western Springs construction site.

The ESCP will be finalised by the Contractor to meet council requirements and to suit their methodology following the award of the Construction Contract and submitted to Council prior to commencing work on site.

2 Site Activity

The Western Springs WS1 construction site can be split into two areas, the main construction site at which work will last 60 months (5 years) and smaller construction site to the south and across Great North Road at which work will last 8 months.

Construction activities on the main site include the construction of 2 shafts and 2 chambers, tunnel construction, and the construction of an air treatment facility. Construction activities at the small site include the construction of 1 shaft, 1 chamber and tunnel construction towards the main site. During construction the majority of traffic will consist of heavy trucks to remove construction spoil from site and deliver construction materials.

During construction the site will include materials stock pile areas, utility buildings, and construction staff parking areas.

3 Erosion and Sediment Control Plan

3.1 Introduction

The ESCP provides details of the proposed sediment treatment control devices for the construction phase of the proposed Central Interceptor works at this site. The ESCP was developed using available LIDAR data and Council services information from GIS.

Sediment controls in the works area will include stabilised clean water diversions, silt fences, a sediment retention pond (SRP) and a decanting earth bund (DEB).

The main construction site area (0.70 ha) will be directed to the SRP which will start treating the catchment immediately. The construction site area at the small site (0.10 ha) will be directed to the DEB which will start treating the catchment immediately.

3.2 Erosion and Sediment Control Methodology

1) Install silt fences.
2) Construct clean water diversion drains to divert clean water from construction site.
3) Install a SRP, stabilised spillways and outlets. Construct sediment diversion drains to direct catchment to treatment devices.
4) Install a DEB, stabilised spillways and outlets. Construct sediment diversion drains to direct catchment to treatment devices.
5) Construct stabilised vehicle access and wheel wash. Direct wheel wash drain to water treatment device.
6) Construct the water treatment devices and adjust throughout construction period to suit current construction activities.
7) Progressively stabilise site in accordance with TP90.
8) Maintain sediment controls in accordance with TP90.

A spill response plan will be developed to mediate the potential risk of refuelling on site and the effects of fuel on the proposed TP90 controls. There will be no storage of fuel on site; all machines will be refuelled by mini tankers.

In the event of a design exceedance event overland flow paths will be directed safely from the construction site to the surrounding park area. Surface water will flow from the SRP's stabilised spillway to the neighbouring reserve.

3.2.1 Sediment Retention Pond

The SRP will be constructed in the south west corner of the site in accordance with TP90. The outlet will discharge to the existing public stormwater network. Stabilised emergency spillways will be constructed to safely convey storm exceedance events from the site to the neighbouring reserve.

- SRP will receive 0.70 ha and will have a volume of 210 m^3.
- Live storage is 147 m^3.
- Dead storage is 63 m^3.
- Control efficiency is 95%.

3.2.2 Decanting Earth Bund

The DEB will be constructed in the north west corner of the small site in accordance with TP90. The outlet will discharge to the existing public stormwater network. Stabilised emergency spillways will be constructed to safely convey storm exceedance events from the site to the roads surrounding the site.

- DEB will receive 0.10 ha and will have a volume of 31 m^3.
- Live storage is 22 m^3.
- Dead storage is 9 m^3.
- Control efficiency is 75%.

3.2.3 Diversion Bund

Diversion bunds will direct the catchment's sediment laden flow to the SRP as indicated. Lined clean water diversion bunds will direct overland flows from outside of the work area around the construction site. The site will be contoured to direct surface flows to the respective treatment device.

3.2.4 Site access

The site access road will be stabilised with single coat Grade 5 chip seal over basecourse and subbase. An R10 concrete commercial vehicle crossing will be constructed at the exit/entry to the site. A wheel wash will be constructed near the site exit which will drain to the water treatment device.

3.2.5 Water treatment plant

A dewatering treatment device, or several devices, will be used on site and adapted to suit the current construction activity. The device(s) will be used to contain ground water extracted during the tunnel shaft construction, vehicle wheel wash runoff and any excess ground water from the tunnelling process. Clarity and pH balancing will be completed before discharging to the existing stormwater network.

4 USLE Calculations

SRP

							USLE Parameters									
Treatment Device	Location	Earthwork Area (ha)	Slope (%)	Slope length (m)	Bare Soil (B) Pasture (P) New Grass (E)	Duration (months)	R	K	LS	C	P	Time	Delivery Ratio	Control Efficiency	Total (tonnes)	T/ha
SRP	WS1	0.7	0.5	90	E	60	78	0.17	0.12	0.1	1.00	5.00	0.50	95%	0.01	0.02

DEB

							USLE Parameters									
Treatment Device	Location	Earthwork Area (ha)	Slope (%)	Slope length (m)	Bare Soil (B) Pasture (P) New Grass (E)	Duration (months)	R	K	LS	C	P	Time	Delivery Ratio	Control Efficiency	Total (tonnes)	T/ha
DEB	WS1	0.1	2	40	E	60	78	0.17	0.22	0.1	1.00	5.00	0.50	75%	0.02	0.18

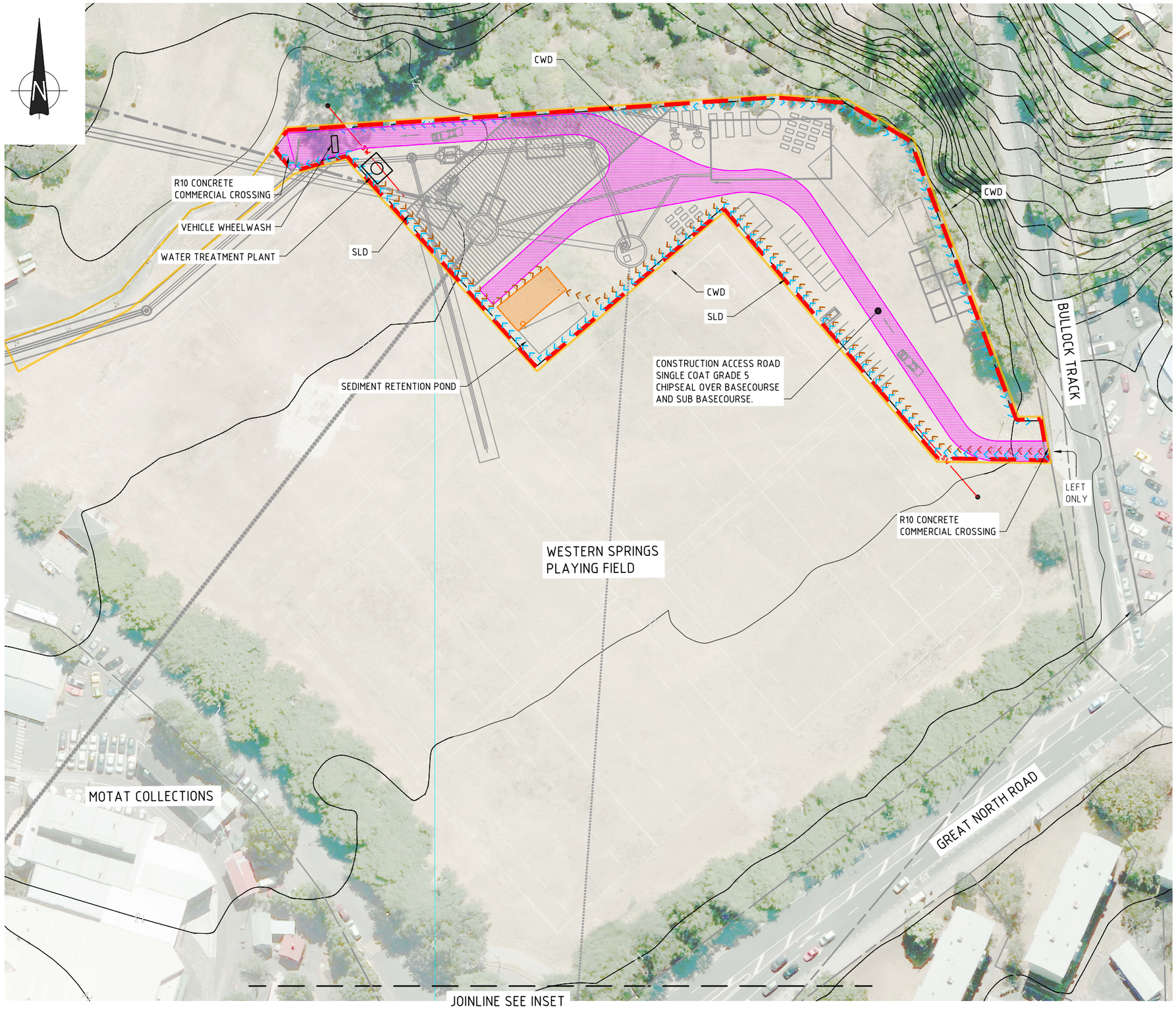
5 Stormwater Management Controls

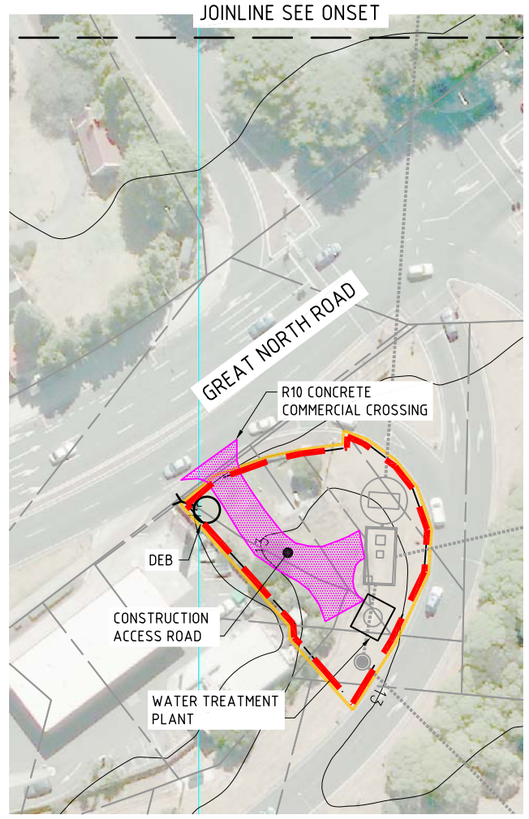
All stormwater discharged from the construction work area will be treated to TP90 standard.

Furthermore is it proposed to utilise rain detention tanks to attenuate the clean roof water runoff from the site shed covering the tunnel shaft work area and discharge directly to the public stormwater system.

NOTES

1. REFER TO DWG MAIN-ESCP-1.01 FOR GENERAL NOTES AND LEGEND.
2. REFER TO DRAWING ESCP-1.02 TO ESCP-1.03 FOR TP90 DETAILS.





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B	18/7/12	UPDATED USLE TABLE - SITE ESTABLISHMENT DURATION	AGT	AC
A	7/6/12	ISSUED FOR CONSENT		

DESIGNED	AT	
DES. CHECKED	AC	
DRAWN	LC	
DWG. CHECKED	CTC	
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APP'D P.DIR		
BY	DATE	

OPERATIONS

ASSET MANAGER

water Care services limited

CENTRAL INTERCEPTOR
EROSION SEDIMENT CONTROL PLAN
WESTERN SPRINGS (WS1) - EROSION SEDIMENT CONTROL PLAN

CAD FILE MAIN-ESCP-1.1	DATE 7-Jun-12
ORIGINAL SCALE A1 1:500	CONTRACT No. 0538
DRAWING No. MAIN-ESCP-1.1	ISSUE C

Central Interceptor
Erosion & Sediment and Stormwater Control Plan

Plan No:	MAIN ESCP 2.1- Mt Albert War Memorial Reserve (AS1)	
Location:	Mt Albert	
Prepared by:	Aidan Cooper revised Tomas Ussher	Date: 04/12/12
Checked by:	Dietmar Londer	Revision: D

1 Introduction

This Erosion & Sediment Control Plan (ESCP) details the required sediment and erosion controls to manage sediment during the construction phase of the Central Interceptor at the AS1 – Mt Albert War Memorial Reserve construction site.

The ESCP will be finalised by the Contractor to meet council requirements and to suit their methodology following the award of the Construction Contract and submitted to Council prior to commencing work on site.

2 Site Activity

Construction at the AS1 – Mt Albert War Memorial Reserve will last 18 months.

Construction activities on the site may include the construction of three shafts, the tunnel construction to the next shaft site, construction of the permanent access structures and reinstatement of the site.

During construction heavy vehicles will remove construction spoil away and deliver construction materials.

During construction the site will include materials stockpile areas, utility buildings and construction staff parking areas.

3 Erosion and Sediment Control Plan

3.1 Introduction

The ESCP details the proposed sediment treatment control devices for the construction phase of the proposed Central Interceptor works at this site. The ESCP was developed considering available LIDAR data and Council services information from GIS.

Sediment controls in the works area will include stabilised clean water diversions, sediment diversion drains and a Decanting Earth Bund (DEB).

The construction site area (0.33 ha) will be directed to the DEB which will start treating the catchment immediately.

3.2 Erosion and Sediment Control Methodology

1) Install DEB, stabilised spillways and outlets.
2) Construct sediment diversion drains to direct catchment to treatment devices.
3) Construct clean water diversion drains to divert clean water from construction site.
4) Construct stabilised vehicle access and wheel wash. Direct wheel wash drain to treatment device.
5) Construct the water treatment device and adjust throughout construction period to suit current construction activities.
6) Progressively stabilise site in accordance with TP90.
7) Maintain sediment controls in accordance with TP90.

In the event of a design exceedance event overland flow paths will be directed safely around the construction site. Surface water will flow from the DEB's stabilised spillway to the neighbouring reserve.

A spill response plan will be developed to mediate the potential risk of refuelling on site and the effects of fuel on the proposed TP90 controls. There will be no storage of fuel on site; all machines will be refuelled by mini tankers.

3.2.1 Decanting Earth Bund

The DEB will be constructed in the north eastern part of the site in accordance with TP90. The DEB outlet will discharge to the existing 1500 mm diameter stormwater pipe. A stabilised emergency spillway will be constructed to safely convey storm exceedance events from the site to the neighbouring reserve.

- The DEB will have a volume of 100 m^3 (3%) and will be connected to the existing stormwater drain which runs beside the site; the DEB's spillway will be directed safely to the neighbouring reserve. The DEB is not flocculated.
- Live storage is 70 m^3.
- Dead storage is 30 m^3.
- Control efficiency is 75%.

3.2.2 Diversion Bund

Diversion bunds will direct the catchment's sediment laden flow to the DEB as indicated. Lined (stabilised) clean water diversion bunds will direct overland flows from outside of the work area around the construction site. The site will be contoured to direct surface flows to the treatment device.

3.2.3 Site access

The site access road will be stabilised with single coat Grade 5 chip seal over basecourse and subbase. An R10 concrete commercial vehicle crossing will be constructed at the exit/entry to the site. A wheel wash will be constructed near the site exit which will drain to the water treatment device.

3.2.4 Water treatment plant

A dewatering treatment device, or several devices, will be used on site and adapted to suit the current construction activity. The device(s) will be used to contain ground water extracted during the tunnel shaft construction, vehicle wheel wash runoff and any excess ground water from the tunnelling process. Clarity and pH balancing will be completed before discharging to the existing stormwater network.

4 USLE Calculations

Treatment Device	Location	Earthwork Area (ha)	Slope (%)	Slope length (m)	Bare Soil (B) Pasture (P) New Grass (E)	Duration (months)	USLE Parameters R	K	LS	C	P	Time	Delivery Ratio	Control Efficiency	Total (tonnes)	T/ha
DEB	AS1	0.33	1	75	E	18	78	0.1	0.17	0.1	1.00	1.50	0.50	75%	0.01	0.02

5 Stormwater Management Controls

All stormwater discharged from the construction work area will be treated to TP90 standard.

NOTES

1. REFER TO DWG MAIN-ESCP-1.01 FOR GENERAL NOTES AND LEGEND.
2. REFER TO DRAWING ESCP-1.02 TO ESCP-1.03 FOR TP90 DETAILS.

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CONSENT ISSUE

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B	26/6/12	ISSUED FOR CONSENT		
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DESIGNED	AC		
DES. CHECKED	AG		
DRAWN	LC		
DWG. CHECKED	CTC		
REV'D P.MGR			
APP'D P.DIR			
BY		DATE	

OPERATIONS

ASSET MANAGER

water Care services limited

CENTRAL INTERCEPTOR
EROSION AND SEDIMENT CONTROL PLAN
MT ALBERT WAR MEMORIAL RESERVE (AS1) – EROSION SEDIMENT CONTROL PLAN

CAD FILE MAIN-ESCP-2.1 | DATE 7-Jun-12

ORIGINAL SCALE A1: 1:500 | CONTRACT No.: 0538

DRAWING No.: MAIN-ESCP-2.1 | ISSUE: D

Central Interceptor
Erosion & Sediment and Stormwater Control Plan

Plan No:	MAIN ESCP 3.1 – Lyon Avenue (AS2)	
Location:	Lyon Avenue	
Prepared by:	Anna Tyrrell, revised Tomas Ussher	Date: 04/12/12
Checked by:	Dietmar Londer	Revision: D

1 Introduction

This Erosion & Sediment Control Plan (ESCP) details the required sediment and erosion controls to manage sediment during the construction phase of the Central Interceptor at the AS2 – Lyon Avenue construction site.

The ESCP will be finalised by the Contractor to meet council requirements and to suit their methodology following the award of the Construction Contract and submitted to Council prior to commencing work on site.

2 Site Activity

Construction at the AS2 – Lyon Avenue site will last 18 months.

Construction activities on the site include the construction of two shafts, construction of the permanent access structures and reinstatement of the site.

During the construction phase the traffic at this construction site will consist of heavy trucks to cart construction spoil away and deliver construction materials.

During construction the site will include materials stockpile areas, utility buildings and construction staff parking areas.

3 Erosion and Sediment Control Plan

3.1 Introduction

The ESCP details the proposed sediment treatment control devices for the construction phase of the proposed Central Interceptor works at this site. The ESCP was developed considering available LIDAR data and Council services information from GIS.

Sediment controls in the works area will include stabilised clean water diversions, sediment diversion drains, a Sediment Retention Pond (SRP) and a water treatment plant.

The construction site area (0.41 ha) will be directed via a diversion bund to a SRP which will start treating the catchment immediately.

3.2 Erosion and Sediment Control Methodology

1) Install SRP, stabilised spillways and outlets.
2) Construct sediment diversion drains to direct catchment to treatment devices.
3) Construct clean water diversion drains to divert clean water from construction site.
4) Construct stabilised vehicle access and wheel wash. Direct wheel wash drain to treatment device.

5) Construct the water treatment device and adjust throughout construction period to suit current construction activities.
6) Progressively stabilise site in accordance with TP90.
7) Maintain sediment controls in accordance with TP90.

In the event of a design exceedance event overland flow paths will be directed safely around the construction site. Surface water will flow from the SRP's stabilised spillway to the nearby stream.

A spill response plan will be developed to mediate the potential risk of refuelling on site and the effects of fuel on the proposed TP90 controls. There will be no storage of fuel on site; all machines will be refuelled by mini tankers.

3.2.1 Sediment Retention Pond

The SRP will be constructed in the north-western part of the site in accordance with TP90. The outlet will discharge to the existing nearby stream. An emergency spillway will be constructed to safely convey storm exceedance events from the pond to the nearby stream.

- The SRP will receive 0.41 ha and will have a volume of 121 m^3 (3%). It is proposed to flocculate the treatment pond.
- Live storage 85 m^3.
- Dead storage 36 m^3.
- Provide 95% treatment efficiency. The SRP outlet will discharge to the stream.

3.2.2 Diversion Bund

Sediment diversion bunds will direct the catchment's sediment-laden flow to the SRP as indicated. The site will be contoured to direct surface flows to the respective treatment device. Lined clean water diversion bunds will direct overland flows from outside of the work area around the construction site.

3.2.3 Site access

The site access road will be stabilised with single coat Grade 5 chip seal over basecourse and subbase. An R10 concrete commercial vehicle crossing will be constructed at the exit/entry to the site. A wheel wash will be constructed near the site exit which will drain to the water treatment device.

3.2.4 Water treatment plant

A dewatering treatment device, or several devices, will be used on site and adapted to suit the current construction activity. The device(s) will be used to contain ground water extracted during the tunnel shaft construction, vehicle wheel wash runoff and any excess ground water from the tunnelling process. Clarity and pH balancing will be completed before discharging to the nearby stream.

4 USLE Calculations

							USLE Parameters									
Treatment Device	Location	Earthwork Area (ha)	Slope (%)	Slope length (m)	Bare Soil (B) Pasture (P) New Grass (E)	Duration (months)	R	K	LS	C	P	Time	Delivery Ratio	Control Efficiency	Total (tonnes)	T/ha
SRP	AS2	0.41	8	50	E	18	78	0.17	1.27	0.1	1.00	1.50	0.50	95%	0.03	0.06

5 Stormwater Management Controls

All stormwater discharged from the construction work area will be treated to TP90 standard.

In addition temporary scour protection is provided where the SRP discharges to the stream to mitigate the risk of stream bank and bed erosion.

NOTES

1. REFER TO DWG MAIN-ESCP-1.01 FOR GENERAL NOTES AND LEGEND.
2. REFER TO DRAWING ESCP-1.02 TO ESCP-1.03 FOR TP90 DETAILS.

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B	18/7/12	UPDATED USLE TABLE - SITE ESTABLISHMENT DURATION	AGT	AC
A	7/6/12	ISSUED FOR CONSENT		

DESIGNED	AT	
DES. CHECKED	AC	
DRAWN	LC	
DWG. CHECKED	CTC	
REV'D P.MGR		
APP'D P.DIR		
BY		DATE

OPERATIONS

ASSET MANAGER

water Care services limited

CENTRAL INTERCEPTOR
GENERAL
LYON AVENUE (AS2) - EROSION SEDIMENT CONTROL PLAN

CAD FILE MAIN-ESCP-3.1	DATE 7-Jun-12
ORIGINAL SCALE A1 1:500	CONTRACT No. 0538
DRAWING No. MAIN-ESCP-3.1	ISSUE C

Central Interceptor
Erosion & Sediment and Stormwater Control Plan

Plan No:	MAIN ESCP 4.1 – Haverstock Road (AS3)	
Location:	Mt Albert	
Prepared by:	Aidan Cooper, revised Tomas Ussher	Date: 04/12/12
Checked by:	Dietmar Londer	Revision: D

1 Introduction

This Erosion & Sediment Control Plan (ESCP) details the required sediment and erosion controls to manage sediment during the construction phase of the Central Interceptor at the AS3 – Haverstock Road construction site.

The ESCP will be finalised by the Contractor to meet council requirements and to suit their methodology following the award of the Construction Contract and submitted to Council prior to commencing work on site.

2 Site Activity

Construction at the AS3 – Haverstock Road site will last 18 months.

Construction activities on the site may include the construction of two access shafts, one chamber, construction of the permanent all weather access, and reinstatement of the site.

During construction heavy vehicles will remove construction spoil away and deliver construction materials.

During construction the site will include materials stockpile areas, utility buildings and construction staff parking areas.

3 Erosion and Sediment Control Plan

3.1 Introduction

The ESCP details the proposed sediment treatment control devices for the construction phase of the proposed Central Interceptor works at this site. The ESCP was developed considering available LIDAR data and Council services information from GIS.

Sediment controls in the works area will include stabilised clean water diversions, sediment diversion bunds, decanting earth bunds and stabilised access road.

The construction site area (0.29 ha) will be directed to a silt fence which will start treating the catchment immediately. The estimated control efficiency of the decanting earth bund is 75%.

3.2 Erosion and Sediment Control Methodology

1) Install silt fence.
2) Construct decanting earth bund and sediment diversion bunds (DEB).
3) Construct clean water diversion drains and culverts to divert clean water from construction site.
4) Construct stabilised vehicle access and wheel wash. Direct wheel wash drain to water treatment device.
5) Construct the water treatment devices and adjust throughout construction period to suit current construction activities.
6) Progressively stabilise site in accordance with TP90.
7) Maintain sediment controls in accordance with TP90.

In the event of a design exceedance event overland flow paths will be directed safely around the construction site. Surface water will flow from the DEB's stabilised spillway to the neighbouring reserve.

A spill response plan will be developed to mediate the potential risk of refuelling on site and the effects of fuel on the proposed TP90 controls. There will be no storage of fuel on site; all machines will be refuelled by mini tankers.

An existing open drain will continue to channel flows from outside of the work area around the construction site. A temporary culvert will be installed to direct this open drain below the northern vehicle access point and connect to the existing 1600 mm diameter stormwater drain. The site will be contoured to direct construction surface flows to the silt fence.

3.2.1 Diversion Bund

Sediment diversion bunds will direct the catchment's sediment-laden flow to the decanting earth bund (DEB) as indicated. The site will be contoured to direct surface flows to the respective treatment device.

3.2.2 Decanting Earth Bund

The DEB will be constructed in the north eastern part of the site in accordance with TP90. The DEB outlet will discharge to the existing stormwater pipe. A stabilised emergency spillway will be constructed to safely convey storm exceedance events from the site to the neighbouring reserve.

- The DEB will have a volume of 87 m^3 (3%) and will be connected to the existing stormwater drain which runs beside the site; the DEB's spillway will be directed safely to the neighbouring reserve. The DEB is not flocculated.
- Live storage is 61 m^3.
- Dead storage is 26 m^3.
- Control efficiency is 75%.

3.2.3 Site access

The site access road will be stabilised with single coat Grade 5 chip seal over basecourse and subbase. An R10 concrete commercial vehicle crossing will be constructed at the exit/entry to the site. A wheel wash will be constructed near the site exit which will drain to the water treatment device.

If the southern vehicle entrance is required, a temporary culvert will be installed to direct the existing private open drain below the site access.

3.2.4 Water treatment devices

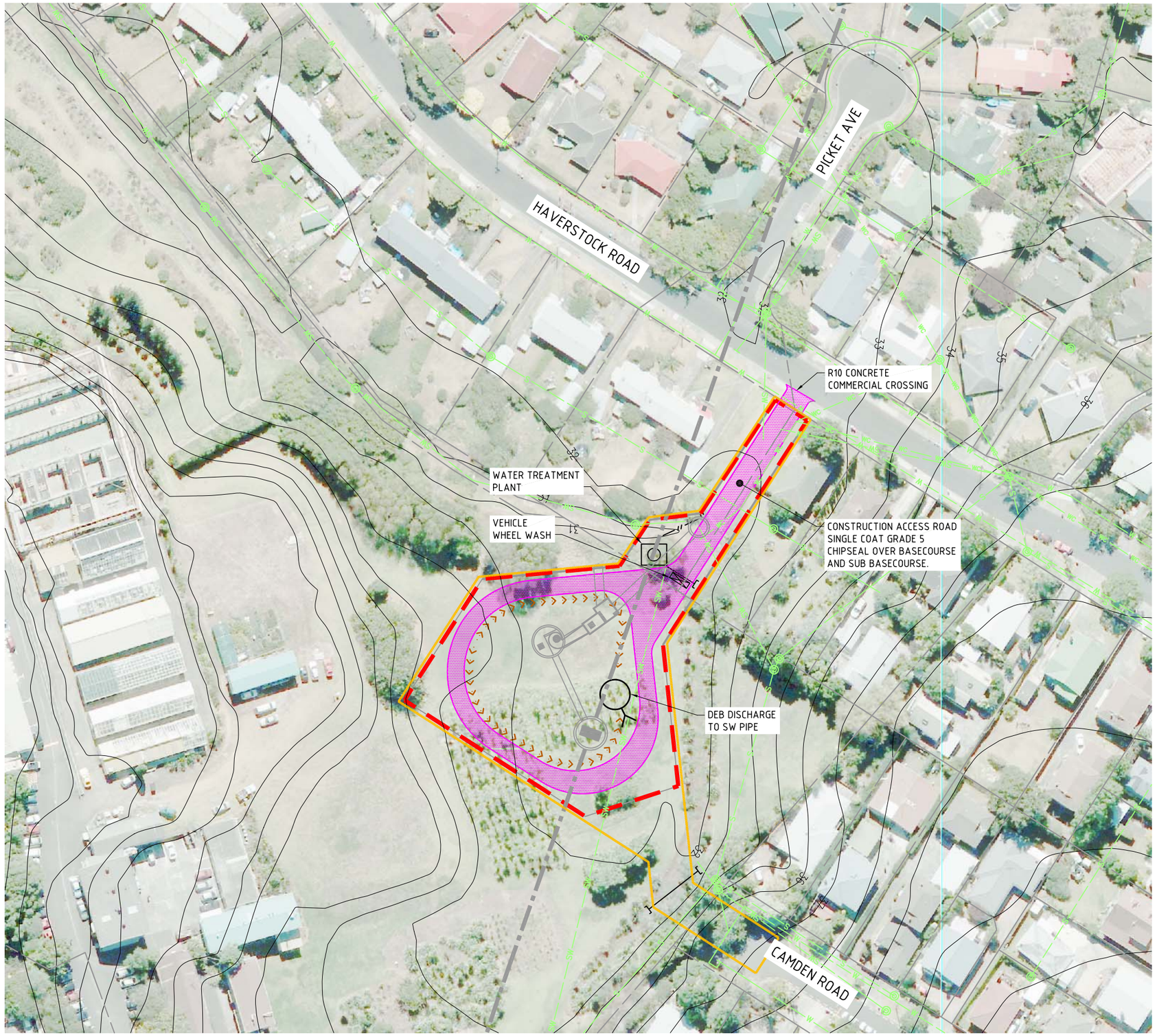
A dewatering treatment device, or several devices, will be used on site and adapted to suit the current construction activity. The device(s) will be used to contain ground water extracted during the tunnel shaft construction, vehicle wheel wash runoff and any excess ground water from the tunnelling process. Clarity and pH balancing will be completed before discharging to the existing stormwater pipe.

4 USLE Calculations

								USLE Parameters									
Works Phase	Treatment Device	Location	Earthwork Area (ha)	Slope (%)	Slope length (m)	Bare Soil (B) Pasture (P) New Grass (E)	Duration (months)	R	K	LS	C	P	Time	Delivery Ratio	Control Efficiency	Total (tonnes)	T/ha
Construction phase	DEB	AS3	0.29	1	70	E	18	78	0.1	0.17	0.1	1.00	1.50	0.50	75%	0.01	0.02

5 Stormwater Management Controls

All stormwater discharged from the construction work area will be treated to TP90 standard.



NOTES

1. REFER TO DWG MAIN-ESCP-1.01 FOR GENERAL NOTES AND LEGEND.
2. REFER TO DRAWING ESCP-1.02 TO ESCP-1.03 FOR TP90 DETAILS.

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20 10

CONSENT ISSUE

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C	6/9/12	UPDATED USLE TABLE – SITE	YC	AC
B	18/7/12	UPDATED USLE TABLE – SITE ESTABLISHMENT DURATION	AGT	AC
A	7/6/12	ISSUED FOR CONSENT		

DESIGNED	AT		
DES. CHECKED	AC		
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DWG. CHECKED	CTC		
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APP'D P.DIR			

OPERATIONS

ASSET MANAGER

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CENTRAL INTERCEPTOR
GENERAL
HAVERSTOCK ROAD (AS3) – EROSION SEDIMENT CONTROL PLAN

CAD FILE MAIN-ESCP-4.1 DATE 7-Jun-12

ORIGINAL SCALE A1: 1:1000

CONTRACT No.: 0538

DRAWING No.: MAIN-ESCP-4.1

ISSUE: D

Central Interceptor
Erosion & Sediment and Stormwater Control Plan

Plan No:	MAIN ESCP 5.1 – Walmsley Park (AS4)	
Location:	Walmsley Park	
Prepared by:	Anna Tyrrell, revised Tomas Ussher	Date: 04/12/12
Checked by:	Dietmar Londer	Revision: D

1 Introduction

This Erosion & Sediment Control Plan (ESCP) details the required sediment and erosion controls to manage sediment during the construction phase of the Central Interceptor at the AS4 – Walmsley Park construction site.

The ESCP will be finalised by the Contractor to meet council requirements and to suit their methodology following the award of the Construction Contract and submitted to Council prior to commencing work on site.

2 Site Activity

Construction at the AS4 – Walmsley Park site will last 18 months.

Construction activities on the site include the construction of two shafts and construction of the permanent access structure and reinstatement of the site.

During the construction phase the traffic at this construction site will consist of heavy trucks to cart construction spoil away and deliver construction materials.

During construction the site will include materials stockpile areas, utility buildings and construction staff parking areas.

3 Erosion and Sediment Control Plan

3.1 Introduction

The ESCP details the proposed sediment treatment control devices for the construction phase of the proposed Central Interceptor works at this site. The ESCP was developed considering available LIDAR data and Council services information from GIS.

Sediment controls in the works area will include stabilised clean water diversions, sediment diversion drains, a decanting earth bund (DEB) and silt fences where necessary.

The construction site area (0.25 ha) will be directed to the DEB which will start treating the catchment immediately. Silt fences will be used where temporary works are located which cannot divert flow into the DEB.

3.2 Erosion and Sediment Control Methodology

1) Install silt fences where necessary.
2) Install DEB and sediment diversion bunds.
3) Construct clean water diversion drains to divert clean water from construction site.

4) Construct stabilised vehicle access and wheel wash. Direct wheel wash drain to treatment device.
5) Construct the water treatment device and adjust throughout construction period to suit current construction activities.
6) Progressively stabilise site in accordance with TP90.
7) Maintain sediment controls in accordance with TP90.

In the event of a design exceedance event overland flow paths will be directed safely around the construction site. Surface water will flow from the DEB's stabilised spillway to the neighbouring stream.

A spill response plan will be developed to mediate the potential risk of refuelling on site and the effects of fuel on the proposed TP90 controls. There will be no storage of fuel on site; all machines will be refuelled by mini tankers.

3.2.1 Decanting Earth Bund

The DEB will be constructed in the northern part of the site in accordance with TP90. The DEB outlet will discharge to the neighbouring stream. Bunding will be constructed on the accessway itself to direct sediment-laden water to the DEB.

- The DEB (to the west of the stream) will receive 0.25 ha and will be 75 m^3.
- Live storage volume is 53 m^3.
- Dead storage volume is 22 m^3.
- Provide 75% treatment efficiency and discharge to the stream

3.2.2 Diversion Bund

Lined clean water diversion bunds will direct overland flows from outside of the work area around the construction site. The site will be contoured to direct surface flows to the respective treatment devices.

3.2.3 Silt Fences

Any areas which cannot be treated by the DEB such as any temporary work such as the area to the north and south of the stream will have a silt fence erected if necessary. These shall have a treatment efficiency of 75%.

3.2.4 Site access

The site access road will be stabilised with single coat Grade 5 chip seal over basecourse and subbase. An R10 concrete commercial vehicle crossing will be constructed at the exit/entry to the site. A wheel wash will be constructed near the site exit which will drain to the water treatment device.

3.2.5 Water treatment plant

A dewatering treatment device, or several devices, will be used on site and adapted to suit the current construction activity. The device(s) will be used to contain ground water extracted during the tunnel shaft construction, vehicle wheel wash runoff and any excess ground water from the tunnelling process. Clarity and pH balancing will be completed before discharging to the neighbouring stream.

4 USLE Calculations

							USLE Parameters									
Treatment Device	Location	Earthwork Area (ha)	Slope (%)	Slope length (m)	Bare Soil (B) Pasture (P) New Grass (E)	Duration (months)	R	K	LS	C	P	Time	Delivery Ratio	Control Efficiency	Total (tonnes)	T/ha
DEB	AS4	0.25	1	50	E	18	78	0.1	0.15	0.1	1.00	1.50	0.50	75%	0.01	0.02

5 Stormwater Management Controls

All stormwater discharged from the construction work area will be treated to TP90 standard.

In addition temporary scour protection is provided where the DEB discharges to the stream to mitigate the risk of stream bank and bed erosion.

NOTES

1. REFER TO DWG MAIN-ESCP-1.01 FOR GENERAL NOTES AND LEGEND.
2. REFER TO DRAWING ESCP-1.02 TO ESCP-1.03 FOR TP90 DETAILS.

SCALE 1:500 (A1)

0 10 20 30 40 50m

10 8 6 4 2

CONSENT ISSUE

Plot Date: 12-Dec-12 11:12 AM
File path: I:\AENVA\Projects\AE03786\DELIVERABLES\Drawings\Sketches

ISSUE	DATE	AMENDMENT	BY	APPD.
D	22/11/12	ISSUED FOR CONSENT	RM	TSH
C	18/7/12	UPDATED USLE TABLE – SITE ESTABLISHMENT DURATION	AGT	AC
B	26/6/12	ISSUED FOR CONSENT		
A	7/6/12	ISSUED FOR CONSENT		

DESIGNED	AT		
DES. CHECKED	AC		
DRAWN	LC		
DWG. CHECKED	CTC		
REV'D P.MGR			
APP'D P.DIR			
BY		DATE	

OPERATIONS

ASSET MANAGER

watercare services limited

CENTRAL INTERCEPTOR
GENERAL
WALMSLEY PARK (AS4) – EROSION SEDIMENT CONTROL PLAN

CAD FILE MAIN-ESCP-5.1	DATE 7-Jun-12
ORIGINAL SCALE A1 1:500	CONTRACT No. 0538
DRAWING No. MAIN-ESCP-5.1	ISSUE D

Central Interceptor
Erosion & Sediment and Stormwater Control Plan

Plan No:	MAIN ESCP 6.1 – May Road (WS2)	
Location:	Mt Roskill	
Prepared by:	Aidan Cooper, revised Tomas Ussher	Date: 04/12/12
Checked by:	Dietmar Londer	Revision: D

1 Introduction

This Erosion & Sediment Control Plan (ESCP) details the required sediment and erosion controls to manage sediment during the construction phase of the Central Interceptor at the WS2 - May Road construction site.

The ESCP will be finalised by the Contractor to meet council requirements and to suit their methodology following the award of the Construction Contract and submitted to Council prior to commencing work on site.

2 Site Activity

The Construction Phase for the WS2 – May Road construction site will conservatively last 60 months (5 years).

Construction activities on the site include the construction of two shafts, tunnel construction, a stormwater detention area, and an air treatment facility. During construction the majority of traffic will consist of heavy trucks to cart construction spoil away and deliver construction materials.

During construction the site will include construction materials stock pile areas, utility buildings, and construction staff parking areas.

3 Erosion and Sediment Control Plan

3.1 Introduction

The ESCP details the proposed sediment treatment control devices for the construction phase of the proposed Central Interceptor works at this site. The ESCP was developed considering available LIDAR data and Council services information from GIS.

Sediment controls in the works area will include stabilised clean water diversions, sediment diversion bunds, stabilised access road with wheel wash and a Sediment Retention Pond (SRP).

The construction site area (1.49 ha) will be directed to a SRP which will start treating the catchment immediately.

3.2 Erosion and Sediment Control Methodology

1) Install SRP, stabilised spillways and outlets.
2) Construct sediment diversion drains to direct catchment to treatment devices.
3) Construct clean water diversion drains to divert clean water from construction site.

4) Construct stabilised vehicle access and wheel wash. Direct wheel wash drain to treatment device.
5) Progressively stabilise site in accordance with TP90.
6) Construct the water treatment device and adjust throughout construction period to suit current construction activities.
7) Maintain sediment controls in accordance with TP90.

In the event of a design exceedance storm event overland flow paths will direct surface water safely from the site to the surface drain. Surface water will flow from the SRP's stabilised spillway to the nearby watercourse.

A spill response plan will be developed to mediate the potential risk of refuelling on site and the effects of fuel on the proposed TP90 controls. There will be no storage of fuel on site; all machines will be refuelled by mini tankers.

3.2.1 Sediment Retention Pond

SRP will be constructed in the northern corner of the site in accordance with ARC's TP90. The outlet will discharge to the nearby watercourse. A stabilised emergency spillway will be constructed to safely convey storm exceedance events from the site to the nearby watercourse.

- The SRP will receive 1.49ha and will have a volume of 450 m^3. It is proposed to flocculate the treatment pond.
- Live storage volume 315 m^3.
- Dead storage volume 135 m^3.
- Will provide 95% treatment efficiency.

3.2.2 Diversion Bund

Diversion bunds will direct the catchment's sediment laden flow to the SRPs as indicated. Lined clean water diversion bunds and existing open drains will direct overland flows from outside of the work area around the construction site. The site will be contoured to direct surface flows to the respective treatment device.

3.2.3 Site access

The site access road will be stabilised with single coat Grade 5 chip seal over basecourse and subbase. An R10 concrete commercial vehicle crossing will be constructed at the exit/entry to the site. A wheel wash will be constructed near the site exit which will drain to the water treatment device.

3.2.4 Water treatment plant

A dewatering treatment device, or several devices, will be used on site and adapted to suit the current construction activity. The device(s) will be used to contain ground water extracted during the tunnel shaft construction, vehicle wheel wash runoff and any excess ground water from the tunnelling process. Clarity and pH balancing will be completed before discharging to the nearby watercourse.

4 USLE Calculations

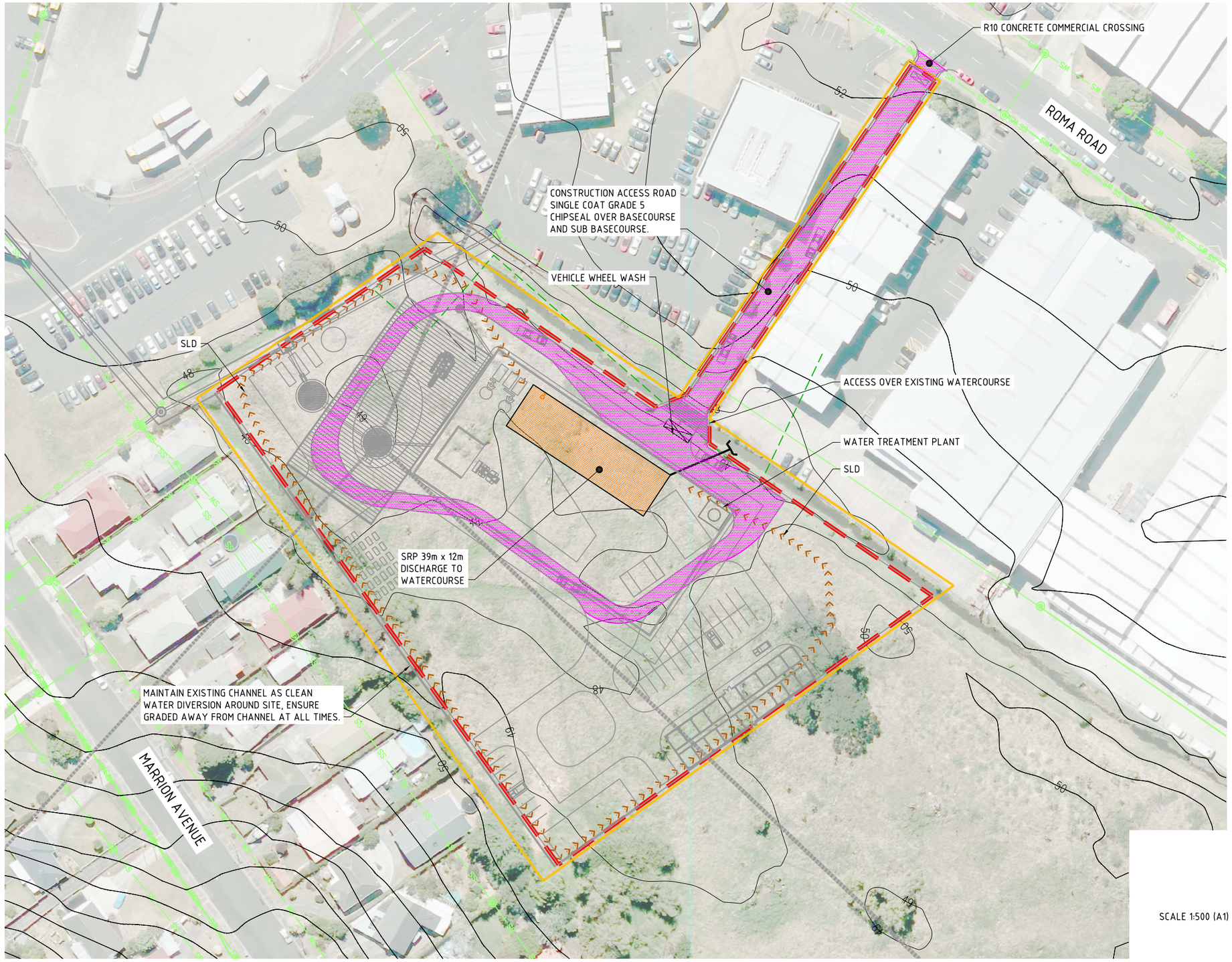
							USLE Parameters									
Treatment Device	Location	Earthwork Area (ha)	Slope (%)	Slope length (m)	Bare Soil (B) Pasture (P) New Grass (E)	Duration (months)	R	K	LS	C	P	Time	Delivery Ratio	Control Efficiency	Total (tonnes)	T/ha
SRP	WS2	1.49	1	80	E	60	78	0.1	0.17	0.1	1.00	5.00	0.50	95%	0.02	0.02

5 Stormwater Management Controls

All stormwater discharged from the construction work area will be treated to TP90 standard.

Temporary scour protection is provided where the SRP discharges to the watercourse to mitigate the risk of bank and bed erosion.

Furthermore is it proposed to utilise rain detention tanks to attenuate the clean roof water runoff from the site shed covering the tunnel shaft work area and discharge directly to the public stormwater system.



NOTES

1. REFER TO DWG MAIN-ESCP-1.01 FOR GENERAL NOTES AND LEGEND.
2. REFER TO DRAWING ESCP-1.02 TO ESCP-1.03 FOR TP90 DETAILS.

SCALE 1:500 (A1)

0 10 20 30 40 50m

10 8 6 4 2

CONSENT ISSUE

Plot Date: 12-Dec-12 11:17 AM
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ISSUE	DATE	AMENDMENT	BY	APPD.
D	22/11/12	ISSUED FOR CONSENT	RM	TSH
C	18/7/12	UPDATED USLE TABLE – SITE ESTABLISHMENT DURATION	AGT	AC
B	26/6/12	ISSUED FOR CONSENT		
A	7/6/12	ISSUED FOR CONSENT		

		DATE
DESIGNED	LC	
DES. CHECKED	AC	
DRAWN	LC	
DWG. CHECKED	MM	
REV'D P.MGR		
APP'D P.DIR		

OPERATIONS

ASSET MANAGER

water Care services limited

CENTRAL INTERCEPTOR
GENERAL
MAY ROAD (WS2) – EROSION SEDIMENT CONTROL PLAN

CAD FILE MAIN-ESCP-6.1	DATE 7-Jun-12
ORIGINAL SCALE A1 1:500	CONTRACT No. 0538
DRAWING No. MAIN-ESCP-6.1	ISSUE D

Central Interceptor
Erosion & Sediment and Stormwater Control Plan

Plan No:	MAIN ESCP 7.1 – Keith Hay Park (AS5)	
Location:	Keith Hay Park	
Prepared by:	Lance Collier, Revised Tomas Ussher	Date: 04/12/2012
Checked by:	Dietmar Londer	Revision: D

1 Introduction

This Erosion & Sediment Control Plan (ESCP) details the required sediment and erosion controls to manage sediment during the construction phase of the Central Interceptor at the AS5 – Keith Hay Park construction site.

The ESCP will be finalised by the Contractor to meet council requirements and to suit their methodology following the award of the Construction Contract and submitted to Council prior to commencing work on site.

2 Site Activity

Construction at the AS5 – Keith Hay Park site will last 18 months.

Construction activities on the site include the construction of two shafts, construction of the permanent access structures and reinstatement of the site.

During the construction phase the traffic at this construction site will consist of heavy trucks to cart construction spoil away and deliver construction materials.

During construction the site will include materials stockpile areas, utility buildings and construction staff parking areas.

3 Erosion and Sediment Control Plan

3.1 Introduction

The ESCP details the proposed sediment treatment control devices for the construction phase of the proposed Central Interceptor works at this site. The ESCP was developed considering available LIDAR data and Council services information from GIS.

Sediment controls in the works area will include stabilised clean water diversions, sediment diversion drains, a silt fence and a Decanting Earth Bund (DEB).

The construction site area (0.29 ha) will be directed to a silt fence and a DEB which will start treating the catchment immediately. Any areas not able to be treated by the DEB will have temporary silt fences erected.

3.2 Erosion and Sediment Control Methodology

1) Install silt fences, DEB, stabilised spillways and outlets.
2) Construct sediment diversion drains to direct catchment to treatment devices.
3) Construct clean water diversion drains to divert clean water from construction site.
4) Construct stabilised vehicle access and wheel wash. Direct wheel wash drain to treatment device.
5) Construct the water treatment device and adjust throughout construction period to suit current construction activities.
6) Progressively stabilise site in accordance with TP90.
7) Maintain sediment controls in accordance with TP90.

In the event of a design exceedance event overland flow paths will be directed safely around the construction site. Surface water will flow from the DEB's stabilised spillway to the neighbouring stream.

A spill response plan will be developed to mediate the potential risk of refuelling on site and the effects of fuel on the proposed TP90 controls. There will be no storage of fuel on site; all machines will be refuelled by mini tankers.

3.2.1 Decanting Earth Bund

The DEB will be constructed in the northern corner of the site in accordance with TP90. The outlet will discharge to the neighbouring stream. A stabilised emergency spillway will be constructed to safely convey storm exceedance events from the site to the neighbouring stream.

- The DEB will receive 0.29 ha and will have a volume of 87 m^3. It is proposed not to flocculate the DEB.
- Live storage volume 61 m^3.
- Dead storage volume 26 m^3.
- Will provide 75% treatment efficiency.

3.2.2 Diversion Bund

Diversion bunds will direct the catchment's sediment laden flow to the DEB as indicated. Lined clean water diversion bunds will direct overland flows from outside of the work area around the construction site. The site will be contoured to direct surface flows to the respective treatment device.

3.2.3 Silt Fences

Any areas which cannot be treated by the DEB such as any temporary works in the north-west will have a silt fence erected. These shall have a treatment efficiency of 75%.

3.2.4 Site access

The site access road will be stabilised with single coat Grade 5 chip seal over basecourse and subbase. An R10 concrete commercial vehicle crossing will be constructed at the exit/entry to the site. A wheel wash will be constructed near the site exit which will drain to the water treatment device.

3.2.5 Water treatment plant

A dewatering treatment device, or several devices, will be used on site and adapted to suit the current construction activity. The device(s) will be used to contain ground water extracted

during the tunnel shaft construction, vehicle wheel wash runoff and any excess ground water from the tunnelling process. Clarity and pH balancing will be completed before discharging to the neighbouring stream.

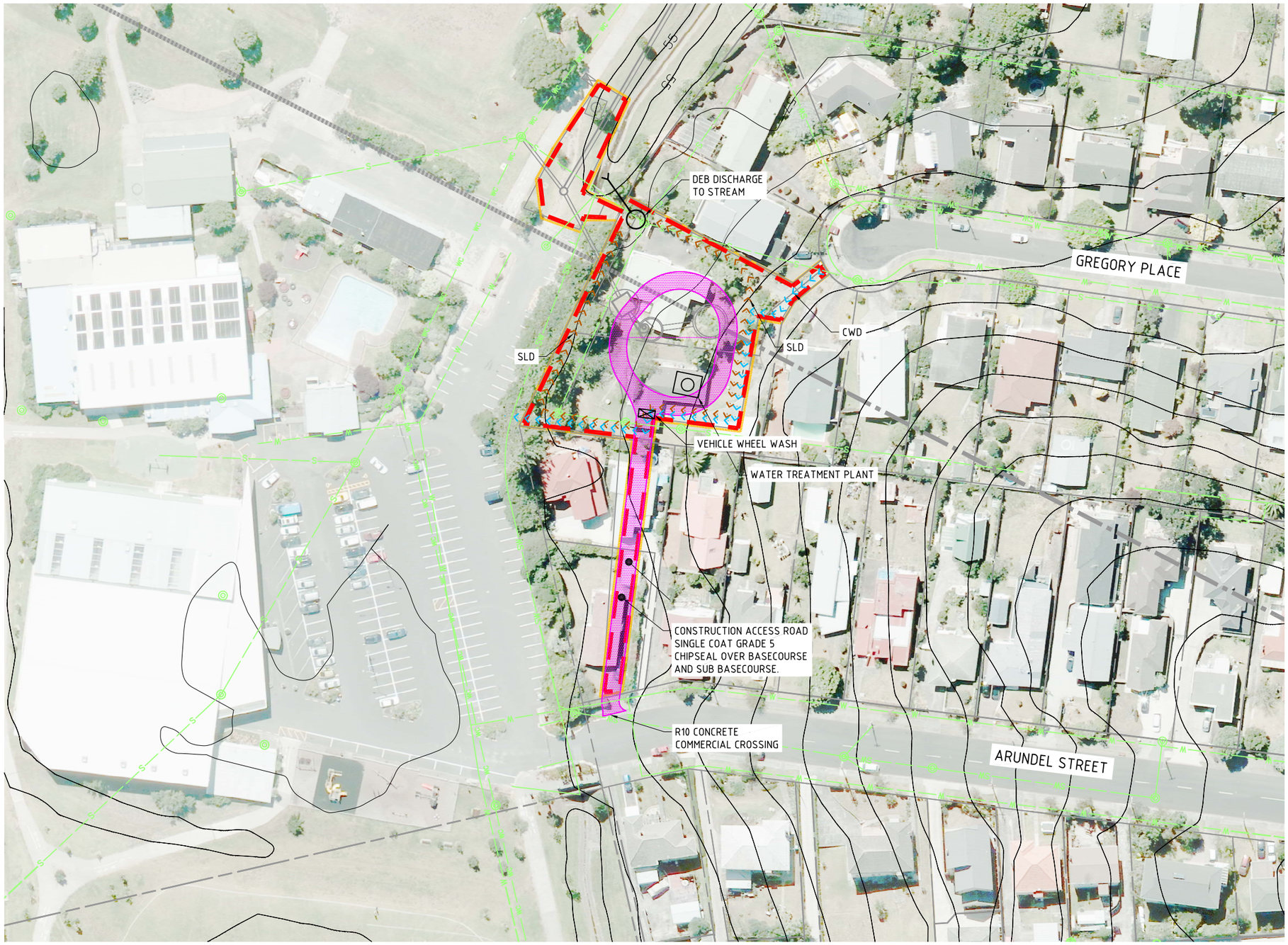
4 USLE Calculations

							USLE Parameters									
Treatment Device	Location	Earthwork Area (ha)	Slope (%)	Slope length (m)	Bare Soil (B) Pasture (P) New Grass (E)	Duration (months)	R	K	LS	C	P	Time	Delivery Ratio	Control Efficiency	Total (tonnes)	T/ha
DEB	AS5	0.29	8	35	E	18	78	0.1	1.06	0.1	1.00	1.50	0.50	75%	0.04	0.15

5 Stormwater Management Controls

All stormwater discharged from the construction work area will be treated to TP90 standard.

In addition temporary scour protection is provided where the DEB discharges to the stormwater drain to mitigate the risk of bank and bed erosion.



NOTES

1. REFER TO DWG MAIN-ESCP-1.01 FOR GENERAL NOTES AND LEGEND.
2. REFER TO DRAWING ESCP-1.02 TO ESCP-1.03 FOR TP90 DETAILS.

SCALE 1:500 (A1)

0 10 20 30 40 50m
10 8 6 4 2

CONSENT ISSUE

Plot Date: 12-Dec-12 4:40 PM
File path: i:\AENVA\Projects\AE03786\DELIVERABLES\Drawings\Sketches

ISSUE	DATE	AMENDMENT	BY	APPD.
D	22/11/12	ISSUED FOR CONSENT	RM	TSH
C	18/7/12	UPDATED USLE TABLE – SITE ESTABLISHMENT DURATION	AGT	AC
B	26/6/12	ISSUED FOR CONSENT		
A	7/6/12	ISSUED FOR CONSENT		

DESIGNED	LC		
DES. CHECKED	AC		
DRAWN	LC		
DWG. CHECKED	MM		
REV'D P.MGR			
APP'D P.DIR			

OPERATIONS

ASSET MANAGER

water Care services limited

CENTRAL INTERCEPTOR
GENERAL
KEITH HAY PARK (AS5) – EROSION SEDIMENT CONTROL PLAN

CAD FILE MAIN-ESCP-7.1	DATE 7-Jun-12
ORIGINAL SCALE A1: 1:500	CONTRACT No.: 0538
DRAWING No.: MAIN-ESCP-7.1	ISSUE: D

Central Interceptor
Erosion & Sediment and Stormwater Control Plan

Plan No:	MAIN ESCP 8.1– PS23 (AS6)	
Location:	Frederick Street	
Prepared by:	Aidan Cooper, revised Tomas Ussher	Date: 04/12/2012
Checked by:	Dietmar Londer	Revision: D

1 Introduction

This Erosion & Sediment Control Plan (ESCP) details the required sediment and erosion controls to manage sediment during the construction phase of the Central Interceptor at the AS6 – PS23 construction site.

The ESCP will be finalised by the Contractor to meet council requirements and to suit their methodology following the award of the Construction Contract and submitted to Council prior to commencing work on site.

2 Site Activity

Construction at the AS6 – PS23 will last 18 months.

Construction activities on the site include the construction of two shafts, construction of a temporary work platform, permanent access structure, air treatment facility and reinstatement of the site.

During the construction phase the traffic at this construction site will consist of heavy trucks to cart construction spoil away and deliver construction materials.

During construction the site will include materials stockpile areas, utility buildings and construction staff parking areas.

3 Erosion and Sediment Control Plan

3.1 Introduction

The ESCP details the proposed sediment treatment control devices for the construction phase of the proposed Central Interceptor works at this site. The ESCP was developed considering available LIDAR data and Council services information from GIS.

Sediment controls in the works area will include stabilised clean water diversions, sediment diversion drains and a decanting earth bund (DEB).

The construction site area (0.25 ha) will be directed to the DEB which will start treating the catchment immediately.

3.2 Erosion and Sediment Control Methodology

1) Install DEB diversion bunds.
2) Construct sediment diversion drains to direct catchment to treatment devices.
3) Construct clean water diversion drains to divert clean water from construction site.
4) Construct a silt fence if required.
5) Construct wheel wash. Direct wheel wash drain to treatment device.

6) Construct the water treatment device and adjust throughout construction period to suit current construction activities.
7) Maintain sediment controls in accordance with TP90.

In the event of a design exceedance event overland flow paths will be directed safely around the construction site. Surface water will flow from the DEB's stabilised spillway to the Manukau Harbour.

A spill response plan will be developed to mediate the potential risk of refuelling on site and the effects of fuel on the proposed TP90 controls. There will be no storage of fuel on site; all machines will be refuelled by mini tankers.

3.2.1 Decanting Earth Bund

A DEB will be constructed in the southern part of the construction site and will be in accordance with TP90. The outlets will discharge to the Manukau Harbour.

- The DEBs will each receive approximately 0.25 ha and will each have a volume of 75 m^3 (3%).
- Dead storage volume per DEB 23 m^3.
- Will provide treatment efficiency of 75%.

3.2.2 Diversion Bund

A clean water diversion bund will be formed across the existing driveway to direct flows from driveway to kerbs and beside the works area.

3.2.3 Site access

The existing road will be maintained and a vehicle wheel wash constructed to drain to the DEB.

3.2.4 Water treatment plant

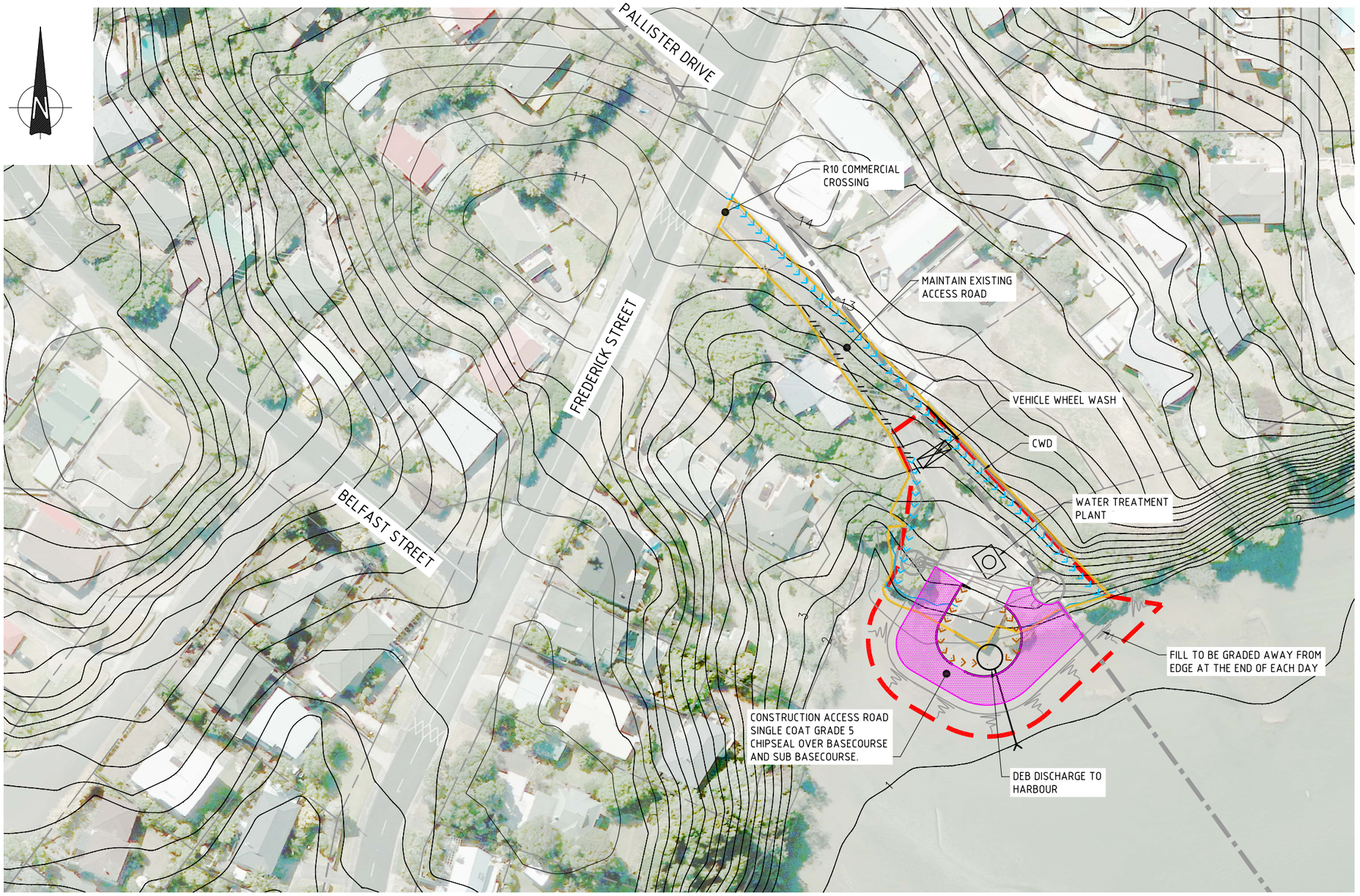
A dewatering treatment device, or several devices, will be used on site and adapted to suit the current construction activity. The device(s) will be used to contain ground water extracted during the tunnel shaft construction, vehicle wheel wash runoff and any excess ground water from the tunnelling process. Clarity and pH balancing will be completed before discharging to the Manukau Harbour.

4 USLE Calculations

							USLE Parameters									
Treatment Device	Location	Earthwork Area (ha)	Slope (%)	Slope length (m)	Bare Soil (B) Pasture (P) New Grass (E)	Duration (months)	R	K	LS	C	P	Time	Delivery Ratio	Control Efficiency	Total (tonnes)	T/ha
DEB	AS6	0.25	1	50	E	18	78	0.1	0.15	0.1	1.00	1.50	0.50	75%	0.01	0.02

5 Stormwater Management Controls

All stormwater discharged from the construction work area will be treated to TP90 standard.



NOTES

1. REFER TO DWG MAIN-ESCP-1.01 FOR GENERAL NOTES AND LEGEND.
2. REFER TO DRAWING ESCP-1.02 TO ESCP-1.03 FOR TP90 DETAILS.

SCALE 1:500 (A1)

0 10 20 30 40 50m

10 8 6 4 2

CONSENT ISSUE

Plot Date: 12-Dec-12 11:08 AM
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ISSUE	DATE	AMENDMENT	BY	APPD.
D	22/11/12	ISSUED FOR CONSENT	YC	TSH
C	18/7/12	UPDATED USLE TABLE – SITE ESTABLISHMENT DURATION	AGT	AC
B	29/6/12	ISSUED FOR CONSENT		
A	7/6/12	ISSUED FOR CONSENT		

DESIGNED	AC		
DES. CHECKED	AG		
DRAWN	LC		
DWG. CHECKED	CTC		
REV'D P.MGR			
APP'D P.DIR			

OPERATIONS

ASSET MANAGER

water Care services limited

CENTRAL INTERCEPTOR
GENERAL
PS23 (AS6) – EROSION SEDIMENT CONTROL PLAN

CAD FILE MAIN-ESCP-8.1	DATE 7-Jun-12
ORIGINAL SCALE A1 1:500	CONTRACT No. 0538
DRAWING No. MAIN-ESCP-8.1	ISSUE D

Central Interceptor
Erosion & Sediment and Stormwater Control Plan

Plan No:	MAIN ESCP 9.1 - Kiwi Esplanade (AS7)	
Location:	Mangere	
Prepared by:	Aidan Cooper, revised Tomas Ussher	Date: 04/12/2012
Checked by:	Dietmar Londer	Revision: D

1 Introduction

This Erosion & Sediment Control Plan (ESCP) details the required sediment and erosion controls to manage sediment during the construction phase of the Central Interceptor at the AS7 - Kiwi Esplanade Utilities construction site.

The ESCP will be finalised by the Contractor to meet council requirements and to suit their methodology following the award of the Construction Contract and submitted to Council prior to commencing work on site.

2 Site Activity

Construction at the AS7 - Kiwi Esplanade site will last 18 months.

Construction activities on the site include the construction of a shaft, construction of permanent access structure and reinstatement of the site.

During the construction phase the traffic at this construction site will consist of heavy trucks to cart construction spoil away and deliver construction materials and excavation machinery.

3 Erosion and Sediment Control Plan

3.1 Introduction

The ESCP details the proposed sediment treatment control devices for the construction phase of the proposed Central Interceptor works at this site. The ESCP was developed considering available LIDAR data and Council services information from GIS.

Sediment controls in the works area will include stabilised clean water diversions, sediment diversion drains and a two decanting earth bunds (DEB).

The construction site area (0.30 ha) will be directed to the two DEBs which will start treating the catchment immediately.

During construction the site will include materials stockpile areas, utility buildings and construction staff parking areas.

3.2 Erosion and Sediment Control Methodology

1) Install silt fences, DEB, stabilised spillways and outlets.
2) Construct sediment diversion drains to direct catchment to treatment devices.
3) Construct clean water diversion drains to divert clean water from construction site.
4) Construct stabilised vehicle access and wheel wash. Direct wheel wash drain to treatment device.

5) Construct the water treatment device and adjust throughout construction period to suit current construction activities.
6) Progressively stabilise site in accordance with TP90.
7) Maintain sediment controls in accordance with TP90.

In the event of a design exceedance event overland flow paths will be directed safely around the construction site. Surface water will flow from the DEB's stabilised spillway to the neighbouring reserve.

A spill response plan will be developed to mediate the potential risk of refuelling on site and the effects of fuel on the proposed TP90 controls. There will be no storage of fuel on site; all machines will be refuelled by mini tankers.

3.2.1 Decanting Earth Bund

Two DEBs will be constructed, one in the northern part and the other in the south of the construction site and will be in accordance with TP90. The outlets will discharge to the neighbouring reserve which will flow overland to the Manukau Harbour.

- The DEBs will each receive approximately 0.15 ha and will each have a volume of 45 m^3 (3%).
- Dead storage volume per DEB 14 m^3.
- Will provide treatment efficiency of 75%.

3.2.2 Diversion Bund

The site will be graded to direct the site's catchment inwards towards the two DEBs. The existing kerb line along the eastern boundary of the site will be maintained to divert clean flows from the reserve access road away from the construction site. Sediment diversion drains will direct the catchment's sediment laden flow to the two DEBs as indicated. Lined clean water diversion bunds will direct overland flows from outside of the work area around the construction site.

3.2.3 Site access

The site access road will be stabilised with single coat Grade 5 chip seal over basecourse and subbase. An R10 concrete commercial vehicle crossing will be constructed at the exit/entry to the site. A wheel wash will be constructed near the site exit which will drain to the water treatment device.

3.2.4 Water treatment plant

A dewatering treatment device, or several devices, will be used on site and adapted to suit the current construction activity. The device(s) will be used to contain ground water extracted during the tunnel shaft construction, vehicle wheel wash runoff and any excess ground water from the tunnelling process. Clarity and pH balancing will be completed before discharging to the neighbouring reserve.

4 USLE Calculations

Treatment Device	Location	Earthwork Area (ha)	Slope (%)	Slope length (m)	Bare Soil (B) Pasture (P) New Grass (E)	Duration (months)	USLE Parameters R	K	LS	C	P	Time	Delivery Ratio	Control Efficiency	Total (tonnes)	T/ha
DEB 1	AS7	0.15	1	35	E	18	78	0.1	0.13	0.1	1.00	1.50	0.50	75%	0.00	0.02
DEB 2	AS7	0.15	1	35	E	18	78	0.1	0.13	0.1	1.00	1.50	0.50	75%	0.00	0.02

5 Stormwater Management Controls

All stormwater discharged from the construction work area will be treated to TP90 standard.

NOTES

1. REFER TO DWG MAIN-ESCP-1.01 FOR GENERAL NOTES AND LEGEND.
2. REFER TO DRAWING ESCP-1.02 TO ESCP-1.03 FOR TP90 DETAILS.

SCALE 1:500 (A1)

0 10 20 30 40 50m
10 8 6 4 2

CONSENT ISSUE

Plot Date: 12-Dec-12 11:25 AM
File path: I:\AENVA\Projects\AE03786\DELIVERABLES\Drawings\Sketches

ISSUE	DATE	AMENDMENT	BY	APPD.
D	22/11/12	ISSUED FOR CONSENT	AGT	TSH
C	6/9/12	UPDATED USLE TABLE – EARTHWORK AREA	YC	AC
B	18/7/12	UPDATED USLE TABLE – SITE ESTABLISHMENT DURATION	AGT	AC
A	7/6/12	ISSUED FOR CONSENT		

DESIGNED	LC	
DES. CHECKED	AC	
DRAWN	LC	
DWG. CHECKED	MM	
REV'D P.MGR		
APP'D P.DIR		

OPERATIONS

ASSET MANAGER

water Care services limited

CENTRAL INTERCEPTOR
GENERAL
KIWI ESPLANADE UTILITIES (AS7) – EROSION SEDIMENT CONTROL PLAN

CAD FILE MAIN-ESCP-9.1 DATE 7-Jun-12
ORIGINAL SCALE A1 1:500
CONTRACT No. 0538
DRAWING No. MAIN-ESCP-9.1
ISSUE D

Central Interceptor
Erosion & Sediment and Stormwater Control Plan

Plan No:	MAIN ESCP 10.1 - Mangere Pump Station (WS3)	
Location:	Mangere	
Prepared by:	Aidan Cooper revised Tomas Ussher	Date: 04/12/12
Checked by:	Dietmar Londer	Revision: D

1 Introduction

This Erosion & Sediment Control Plan (ESCP) details the required sediment and erosion controls to manage sediment during the construction phase of the Central Interceptor at the WS3 - Mangere Pump Station construction site.

The ESCP will be finalised by the Contractor to meet council requirements and to suit their methodology following the award of the Construction Contract and submitted to Council prior to commencing work on site.

2 Site Activity

Construction at WS3 - Mangere Pump Station will last 72 months (6 years).

Construction activities on the site include the construction of receiving/tunnelling shaft, tunnel construction, pump station and the air treatment facility. During construction the majority of traffic will consist of heavy trucks to cart construction spoil away and deliver construction materials.

During the construction phase the site will include construction materials stock pile areas, utility buildings, and construction staff parking areas.

Due to the extents of the area required for construction the two TP90 sediment retention ponds (SRP) will be decommissioned as the site is progressively stabilised.

3 Erosion and Sediment Control Plan

3.1 Introduction

The ESCP details the proposed sediment treatment control devices for the construction phase of the proposed Central Interceptor works at this site. The ESCP was developed considering available LIDAR data and Council services information from GIS.

Sediment controls in the works area will include stabilised clean water diversions, sediment diversion drains and a Sediment Retention Pond (SRP). The sediment retention pond's spillway will be directed safely to the adjoining wetland.

The construction site area (2.25 ha) will be directed to the SRP which will start treating the catchment immediately.

3.2 Erosion and Sediment Control Methodology

1) Install SRP, stabilised spillways and outlets. Size and install flocculation units in accordance with TP227 if necessary.
2) Construct sediment diversion drains to direct catchment to treatment devices.
3) Construct clean water diversion drains to divert clean water from construction site.
4) Construct stabilised vehicle access and wheel wash. Direct wheel wash drain to treatment device.
5) Construct the water treatment device and adjust throughout construction period to suit current construction activities.
6) Maintain future use area to TP90 erosion control standard.
7) Progressively stabilise site in accordance with TP90
8) Maintain sediment controls in accordance with TP90.

In the event of a design exceedance event overland flow paths will be directed safely around the construction site to the surrounding park area. Surface water will flow from the SRP's stabilised spillway to the neighbouring wetland.

A spill response plan will be developed to mediate the potential risk of refuelling on site and the effects of fuel on the proposed TP90 controls. There will be no storage of fuel on site; all machines will be refuelled by mini tankers.

3.2.1 Sediment Retention Pond

SRP will be constructed in the western part of the site in accordance with TP90. The outlet will discharge to the neighbouring wetland. An emergency spillway will be constructed to safely convey storm exceedance events from the site to the neighbouring wetland.

- SRP will receive 2.25 ha and will have a volume of 680 m^3. It is proposed to flocculate the treatment pond during site establishment.
- Dead storage volume of 200 m^3.
- Treatment efficiency of 95%.

3.2.2 Diversion Bund

Diversion bunds will direct the catchment's sediment laden flow to the SRP as indicated. Lined clean water diversion bunds will direct overland flows from outside of the work area around the construction site. The site will be contoured to direct surface flows to the respective treatment device.

3.2.3 Site access

The site access road will be stabilised with single coat Grade 5 chip seal over basecourse and subbase. An R10 concrete commercial vehicle crossing will be constructed at the exit/entry to the site. A wheel wash will be constructed near the site exit which will drain to the water treatment device.

3.2.4 Water treatment plant

A dewatering treatment device, or several devices, will be used on site and adapted to suit the current construction activity. The device(s) will be used to contain ground water extracted during the tunnel shaft construction, vehicle wheel wash runoff and any excess ground water from the tunnelling process. Clarity and pH balancing will be completed before discharging to the neighbouring wetland.

4 USLE Calculations

							USLE Parameters									
Treatment Device	Location	Earthwork Area (ha)	Slope (%)	Slope length (m)	Bare Soil (B) Pasture (P) New Grass (E)	Duration (months)	R	K	LS	C	P	Time	Delivery Ratio	Control Efficiency	Total (tonnes)	T/ha
SRP	WS3	2.25	2	100	E	6	71	0.1	0.29	0.1	1.00	0.50	0.50	95%	0.01	0.00

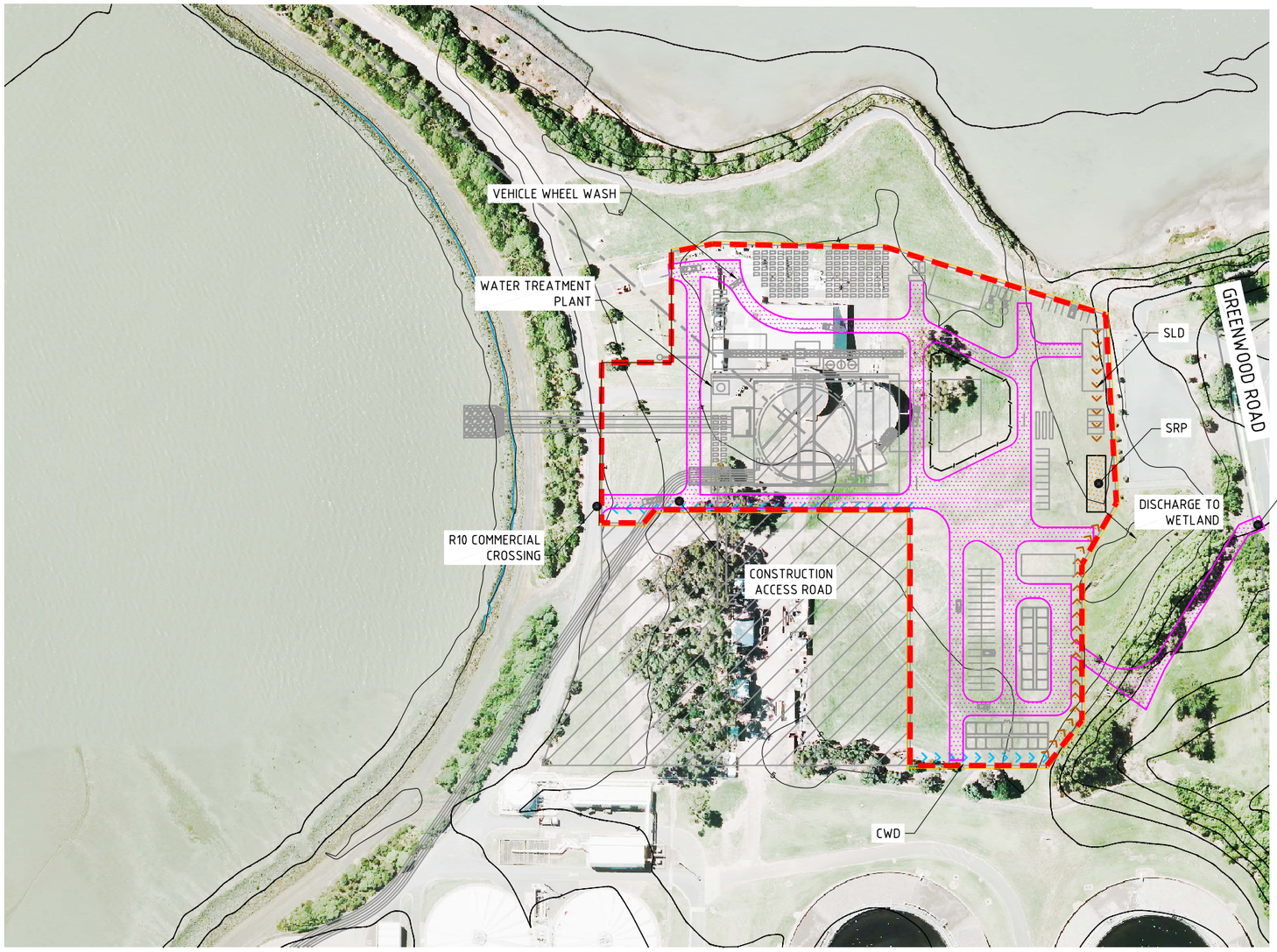
5 Stormwater Management Controls

All stormwater discharged from the construction work area will be treated to TP90 standard.

Temporary scour protection is provided where the SRP discharges to the wetland to mitigate the risk of bank and bed erosion.

NOTES

1. REFER TO DWG MAIN-ESCP-1.01 FOR GENERAL NOTES AND LEGEND.
2. REFER TO DRAWING ESCP-1.02 TO ESCP-1.03 FOR TP90 DETAILS.



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CONSENT ISSUE

Plot Date: 13-Dec-12 8:44 AM
File path: I:\AEWA\Projects\AE03786\DELIVERABLES\Drawings\Sketches

ISSUE	DATE	AMENDMENT	BY	APPD.
C	22/11/12	ISSUED FOR CONSENT	YC	TSH
B	18/7/12	UPDATED USLE TABLE – SITE ESTABLISHMENT DURATION	AGT	AC
A	7/6/12	ISSUED FOR CONSENT		

DESIGNED	AC		
DES. CHECKED	AG		
DRAWN	LC		
DWG. CHECKED	MM		
REV'D P.MGR			
APP'D P.DIR			
	BY	DATE	

OPERATIONS

ASSET MANAGER

water Care services limited

CENTRAL INTERCEPTOR
GENERAL
MANGERE PUMP STATION (WS3) – EROSION SEDIMENT CONTROL PLAN

CAD FILE MAIN-ESCP-10.1	DATE 7-Jun-12
ORIGINAL SCALE A1 1:1000	CONTRACT No. 0538
DRAWING No. MAIN-ESCP-10.1	ISSUE C

Central Interceptor
Erosion & Sediment and Stormwater Control Plan

Plan No:	MAIN ESCP 11.1 – Motions Road (L1S1)	
Location:	Motions Road	
Prepared by:	Aidan Cooper, revised Tomas Ussher	Date: 04/12/2012
Checked by:	Dietmar Londer	Revision: D

1 Introduction

This Erosion & Sediment Control Plan (ESCP) details the required sediment and erosion controls to manage sediment during the construction phase of the Central Interceptor at the L1S1 – Motions Road construction site.

The ESCP will be finalised by the Contractor to meet council requirements and to suit their methodology following the award of the Construction Contract and submitted to Council prior to commencing work on site.

2 Site Activity

Construction for the L1S1 – Motions Road site will conservatively last 18 months.

Construction activities on the site may include the construction of two jacking/receiving shafts, the tunnel construction, construction of the permanent access structure, construction of chambers and reinstatement of the site.

During the construction phase the traffic at this construction site will consist of heavy trucks to cart construction spoil away and deliver construction materials.

During construction the site will include materials stockpile areas, utility buildings and construction staff parking areas.

3 Erosion and Sediment Control Plan

3.1 Introduction

The ESCP provides details of the proposed sediment treatment control devices for the site establishment phase of the proposed Central Interceptor works at this site. The ESCP was developed using available LIDAR data and Council services information from GIS.

Sediment controls in the works area will include stabilised clean water diversions, sediment diversion drains, stabilised vehicle access, decanting earth bund (DEB) and silt fences where required.

The construction site area (0.21 ha) will be directed to a DEB which will start treating the catchment immediately.

3.2 Erosion and Sediment Control Methodology

1) Construct DEB, stabilised spillways and outlets.
2) Construct sediment diversion drains to direct catchment to treatment devices.
3) Construct cleanwater diversion drains to divert clean water from construction site.
4) Construct stabilised vehicle access and wheel wash. Direct wheel wash drain to water treatment device.
5) Construct Silt Fences to provide treatment to outlying work areas if required.
6) Construct the water treatment device and adjust throughout construction period to suit current construction activities.
7) Progressively stabilise site in accordance with TP90.
8) Maintain sediment controls in accordance with TP90.

In the event of a design exceedance event overland flow paths will be directed safely around the construction site. Surface water will flow from the DEB's stabilised spillway to the neighbouring stream.

A spill response plan will be developed to mediate the potential risk of refuelling on site and the effects of fuel on the proposed TP90 controls. There will be no storage of fuel on site; all machines will be refuelled by mini tankers.

3.2.1 Decanting Earth Bund

The proposed DEB will be constructed in the south eastern part of the site in accordance with TP90. The DEB outlet will discharge to the neighbouring stream and a stabilised emergency spillway will be constructed to safely convey storm exceedance events from the site to the neighbouring stream.

- DEB will receive 0.21 ha and will have a volume of 63 m^3.
- Live storage volume will be 44 m^3.
- Dead storage volume will be 19 m^3.
- Treatment efficiency will be 75%.

3.2.2 Silt fences

Silt fences can be used to treat any outlying areas which cannot drain to the DEB. These will have a treatment efficiency of 75%.

3.2.3 Diversion Bund

Diversion bunds will direct the catchment's sediment laden flow to the DEB as indicated. Lined clean water diversion bunds will direct overland flows from outside of the work area around the construction site. The site will be contoured to direct surface flows to the respective treatment device.

3.2.4 Site access

The site access road will be stabilised with single coat Grade 5 chip seal over basecourse and subbase. An R10 concrete commercial vehicle crossing will be constructed at the exit/entry to the site. A wheel wash will be constructed near the site exit which will drain to the water treatment device.

3.2.5 Water treatment plant

A dewatering treatment device, or several devices, will be used on site and adapted to suit the current construction activity. The device(s) will be used to contain ground water extracted

during the tunnel shaft construction, vehicle wheel wash runoff and any excess ground water from the tunnelling process. Clarity and pH balancing will be completed before discharging to the neighbouring stream.

4 USLE Calculations

							USLE Parameters									
Treatment Device	Location	Earthwork Area (ha)	Slope (%)	Slope length (m)	Bare Soil (B) Pasture (P) New Grass (E)	Duration (months)	R	K	LS	C	P	Time	Delivery Ratio	Control Efficiency	Total (tonnes)	T/ha
DEB	L1S1	0.21	4	52	E	18	78	0.1	0.50	0.1	1.00	1.50	0.50	75%	0.02	0.07

5 Stormwater Management Controls

All stormwater discharged from the construction work area will be treated to TP90 standard.

In addition temporary scour protection is provided where the DEB discharges to the stream to mitigate the risk of stream bank and bed erosion.

NOTES

1. REFER TO DWG MAIN-ESCP-1.01 FOR GENERAL NOTES AND LEGEND.
2. REFER TO DRAWING ESCP-1.02 TO ESCP-1.03 FOR TP90 DETAILS.

SCALE 1:500 (A1)

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CONSENT ISSUE

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D	22/11/12	ISSUED FOR CONSENT	AGT	TSH
C	18/7/12	UPDATED USLE TABLE – SITE ESTABLISHMENT DURATION	AGT	AC
B	29/6/12	ISSUED FOR CONSENT		
A	7/6/12	ISSUED FOR CONSENT		

DESIGNED	AC		
DES. CHECKED	AG		
DRAWN	LC		
DWG. CHECKED	CTC		
REV'D P.MGR			
APP'D P.DIR			
	BY	DATE	

OPERATIONS

ASSET MANAGER

water Care services limited

CENTRAL INTERCEPTOR
GENERAL
MOTIONS ROAD (L1S1) – EROSION SEDIMENT CONTROL PLAN

CAD FILE MAIN-ESCP-11.1 DATE 7-Jun-12

ORIGINAL SCALE A1	CONTRACT No.
1:500	0538

DRAWING No.	ISSUE
MAIN-ESCP-11.1	D

Central Interceptor
Erosion & Sediment and Stormwater Control Plan

Plan No:	MAIN ESCP 12.1 – Western Springs Depot (L1S2)	
Location:	Western Springs	
Prepared by:	Anna Tyrrell, revised Tomas Ussher	Date: 04/12/12
Checked by:	Dietmar Londer	Revision: D

1 Introduction

This Erosion & Sediment Control Plan (ESCP) details the required sediment and erosion controls to manage sediment during the construction phase of the Central Interceptor at the L1S2 – Western Springs Depot construction site.

The ESCP will be finalised by the Contractor to meet council requirements and to suit their methodology following the award of the Construction Contract and submitted to Council prior to commencing work on site.

2 Site Activity

Construction at the L1S2 – Western Springs Depot site will last 8 months.

Construction activities on the site may include the construction of a jacking/receiving shaft, the tunnel construction, construction of the permanent access structure and reinstatement of the site.

During the construction phase the traffic at this construction site will consist of excavation machinery, heavy trucks to cart construction spoil away and deliver construction materials.

During construction the site will include materials stockpile areas, utility buildings and construction staff parking areas.

3 Erosion and Sediment Control Plan

3.1 Introduction

The ESCP details the proposed sediment treatment control devices for the construction phase of the proposed Central Interceptor works at this site. The ESCP was developed considering available LIDAR data and Council services information from GIS.

Sediment controls in the works area will include stabilised clean water diversions and a Decanting Earth Bund.

The construction site area (0.08 ha) will be directed to a DEB which will start treating the catchment immediately. The DEB will have a treatment efficiency of 75%.

3.2 Erosion and Sediment Control Methodology

1) Install DEB, stabilised spillways and outlets.
2) Construct sediment diversion drains to direct catchment to treatment devices.
3) Construct clean water diversion drains to divert clean water from construction site.
4) Construct stabilised vehicle access and wheel wash. Direct wheel wash drain to treatment device.
5) Progressively stabilise site in accordance with TP90.
6) Maintain sediment controls in accordance with TP90.

In the event of a design exceedance event overland flow paths will be directed safely around the construction site. Surface water will flow from the DEB's stabilised spillway to the nearby stream.

A spill response plan will be developed to mediate the potential risk of refuelling on site and the effects of fuel on the proposed TP90 controls. There will be no storage of fuel on site; all machines will be refuelled by mini tankers.

3.2.1 Decanting Earth Bund

The proposed DEB will be constructed in the southern part of the site in accordance with TP90. The DEB outlet will discharge to the nearby stream and a stabilised emergency spillway will be constructed to safely convey storm exceedance events from the site to the nearby stream.

- DEB will receive 0.08 ha and will have a volume of 24 m^3.
- Live storage volume will be 17 m^3.
- Dead storage volume will be 7 m^3.
- Treatment efficiency will be 75%.

3.2.2 Diversion Bund

Lined clean water diversion bunds will direct overland flows from outside of the work area around the construction site. The site will be contoured to direct surface flows to the respective treatment device.

3.2.3 Site access

The site access road will be stabilised with single coat Grade 5 chip seal over basecourse and subbase. An R10 concrete commercial vehicle crossing will be constructed at the exit/entry to the site. A wheel wash will be constructed near the site exit which will drain to the water treatment device.

3.2.4 Water treatment devices

A dewatering treatment device, or several devices, will be used on site and adapted to suit the current construction activity. The device(s) will be used to contain ground water extracted during the tunnel shaft construction, vehicle wheel wash runoff and any excess ground water from the tunnelling process. Clarity and pH balancing will be completed before discharging to the nearby stream.

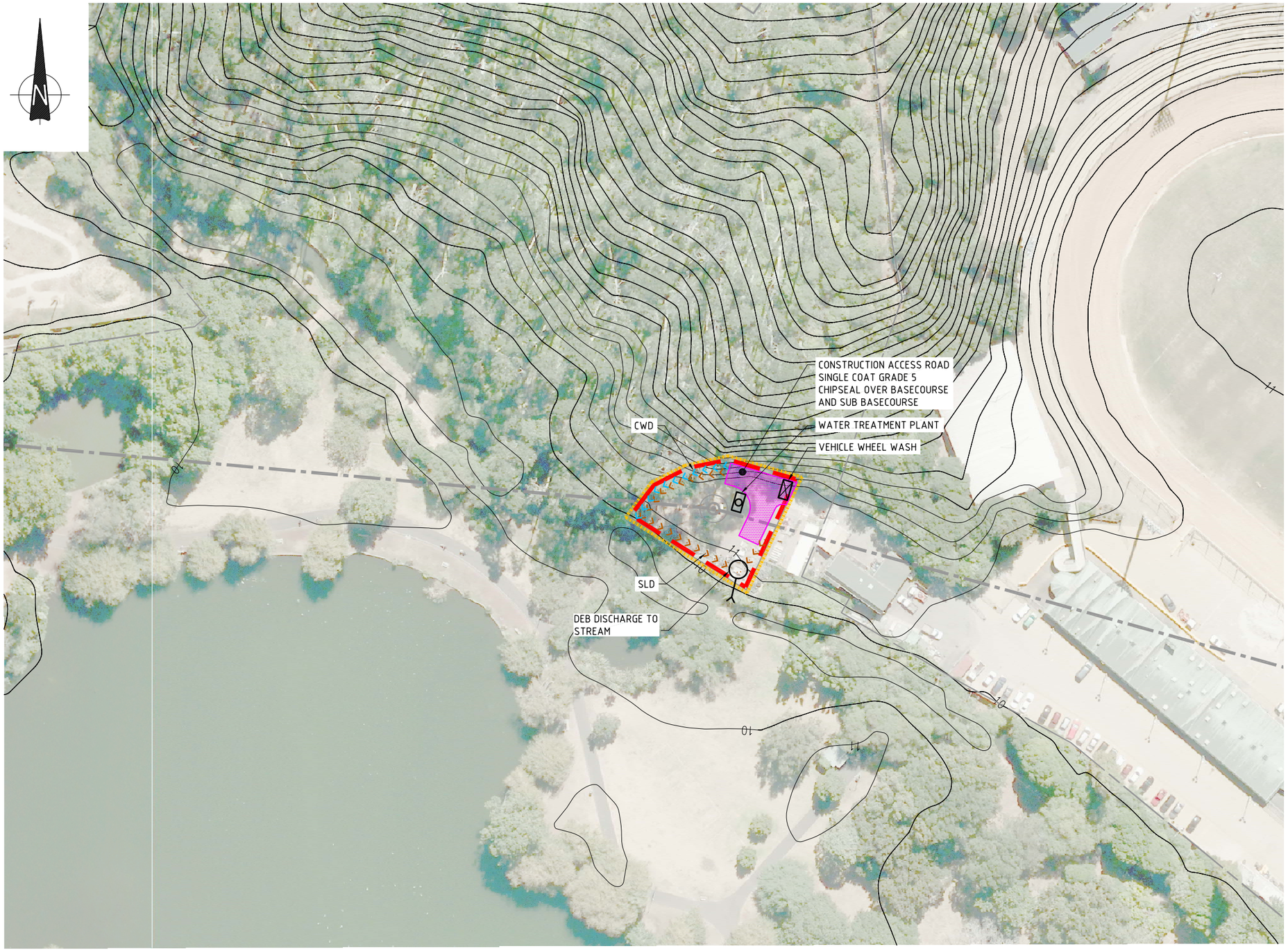
4 USLE Calculations

Treatment Device	Location	Earthwork Area (ha)	Slope (%)	Slope length (m)	Bare Soil (B) Pasture (P) New Grass (E)	Duration (months)	USLE Parameters R	K	LS	C	P	Time	Delivery Ratio	Control Efficiency	Total (tonnes)	T/ha
DEB	L1S2	0.08	20	25	E	8	78	0.1	3.70	0.1	1.00	0.67	0.50	75%	0.02	0.24

5 Stormwater Management Controls

All stormwater discharged from the construction work area will be treated to TP90 standard.

In addition temporary scour protection is provided where the DEB discharges to the stream to mitigate the risk of stream bank and bed erosion.



NOTES

1. REFER TO DWG MAIN-ESCP-1.01 FOR GENERAL NOTES AND LEGEND.
2. REFER TO DRAWING ESCP-1.02 TO ESCP-1.03 FOR TP90 DETAILS.

SCALE 1:500 (A1)

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10 8 6 4 2

CONSENT ISSUE

Plot Date: 12-Dec-12 11:49 AM
File path: i:\AENVA\Projects\AE03786\DELIVERABLES\Drawings\Sketches

ISSUE	DATE	AMENDMENT	BY	APPD.
D	22/11/12	ISSUED FOR CONSENT	AGT	TSH
C	18/7/12	UPDATED USLE TABLE – SITE ESTABLISHMENT DURATION	AGT	AC
B	26/6/12	ISSUED FOR CONSENT		
A	7/6/12	ISSUED FOR CONSENT		

DESIGNED	AT		
DES. CHECKED	AC		
DRAWN	LC		
DWG. CHECKED	CTC		
REV'D P.MGR			
APP'D P.DIR			

OPERATIONS

ASSET MANAGER

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CENTRAL INTERCEPTOR
GENERAL
WESTERN SPRINGS DEPOT (L1S2) – EROSION SEDIMENT CONTROL PLAN

CAD FILE MAIN-ESCP-12.1 DATE 7-Jun-12

ORIGINAL SCALE A1: 1:500

CONTRACT No.: 0538

DRAWING No.: MAIN-ESCP-12.1

ISSUE: D

Central Interceptor
Erosion & Sediment and Stormwater Control Plan

Plan No:	MAIN ESCP 13.1 – Rawalpindi Reserve (L2S1)	
Location:	Rawalpindi Reserve	
Prepared by:	Aidan Cooper, revised Tomas Ussher	Date: 04/12/2012
Checked by:	Dietmar Londer	Revision: D

1 Introduction

This Erosion & Sediment Control Plan (ESCP) details the required sediment and erosion controls to manage sediment during the construction phase of the Central Interceptor at the L2S1 – Rawalpindi Reserve construction site.

The ESCP will be finalised by the Contractor to meet council requirements and to suit their methodology following the award of the Construction Contract and submitted to Council prior to commencing work on site.

2 Site Activity

Construction at L2S1 – Rawalpindi Reserve will last 18 months.

Construction activities on the site may include the construction of a jacking/receiving shaft, the tunnel construction, construction of the permanent access structure and reinstatement of the site.

During construction heavy vehicles will remove construction spoil away and deliver construction materials.

During construction the site will include materials stockpile areas, utility buildings and construction staff parking areas.

3 Erosion and Sediment Control Plan

3.1 Introduction

The ESCP details the proposed sediment treatment control devices for the construction phase of the proposed Central Interceptor works at this site. The ESCP was developed considering available LIDAR data and Council services information from GIS.

Sediment controls in the works area will include stabilised clean water diversions, sediment diversion drains and a sediment retention pond (SRP).

The construction site area (0.42 ha) will be directed to a SRP which will start treating the catchment immediately.

3.2 Erosion and Sediment Control Methodology

1) Install SRP, stabilised spillways and outlets.
2) Construct sediment diversion drains to direct catchment to treatment device.
3) Construct clean water diversion drains to divert clean water from construction site.
4) Construct stabilised vehicle access and wheel wash. Direct wheel wash drain to water treatment device.
5) Construct the water treatment devices and adjust throughout construction period to suit current construction activities.
6) Progressively stabilise site in accordance with TP90.
7) Maintain sediment controls in accordance with TP90.

In the event of a design exceedance event overland flow paths will be directed safely around the construction site. Surface water will flow from the SRP stabilised spillway to the neighbouring stream.

A spill response plan will be developed to mediate the potential risk of refuelling on site and the effects of fuel on the proposed TP90 controls. There will be no storage of fuel on site; all machines will be refuelled by mini tankers.

3.2.1 Sediment Retention Pond

The SRP will be constructed in the north eastern corner of the site in accordance with TP90. The outlet will discharge to the neighbouring stream. An emergency spillway will be constructed to safely convey storm exceedance events from the site to the neighbouring stream.

- The SRP will have a volume of 130 m^3.
- Live storage volume of 92 m^3.
- Dead storage volume of 38 m^3.
- Treatment efficiency will be 95%.

3.2.2 Diversion Bund

Diversion bunds will direct the catchment's sediment laden flow to the SRP as indicated. Lined clean water diversion bunds will direct overland flows from outside of the work area around the construction site. The site will be contoured to direct surface flows to the respective treatment device via sediment diversion drains.

3.2.3 Site access

The site access road will be stabilised with single coat Grade 5 chip seal over basecourse and subbase. An R10 concrete commercial vehicle crossing will be constructed at the exit/entry to the site. A wheel wash will be constructed near the site exit which will drain to the water treatment device.

If the southern vehicle entrance is required, a temporary culvert will be installed to direct the existing private open drain below the site access.

3.2.4 Water treatment devices

A dewatering treatment device, or several devices, will be used on site and adapted to suit the current construction activity. The device(s) will be used to contain ground water extracted during the tunnel shaft construction, vehicle wheel wash runoff and any excess ground water

from the tunnelling process. Clarity and pH balancing will be completed before discharging to the neighbouring stream.

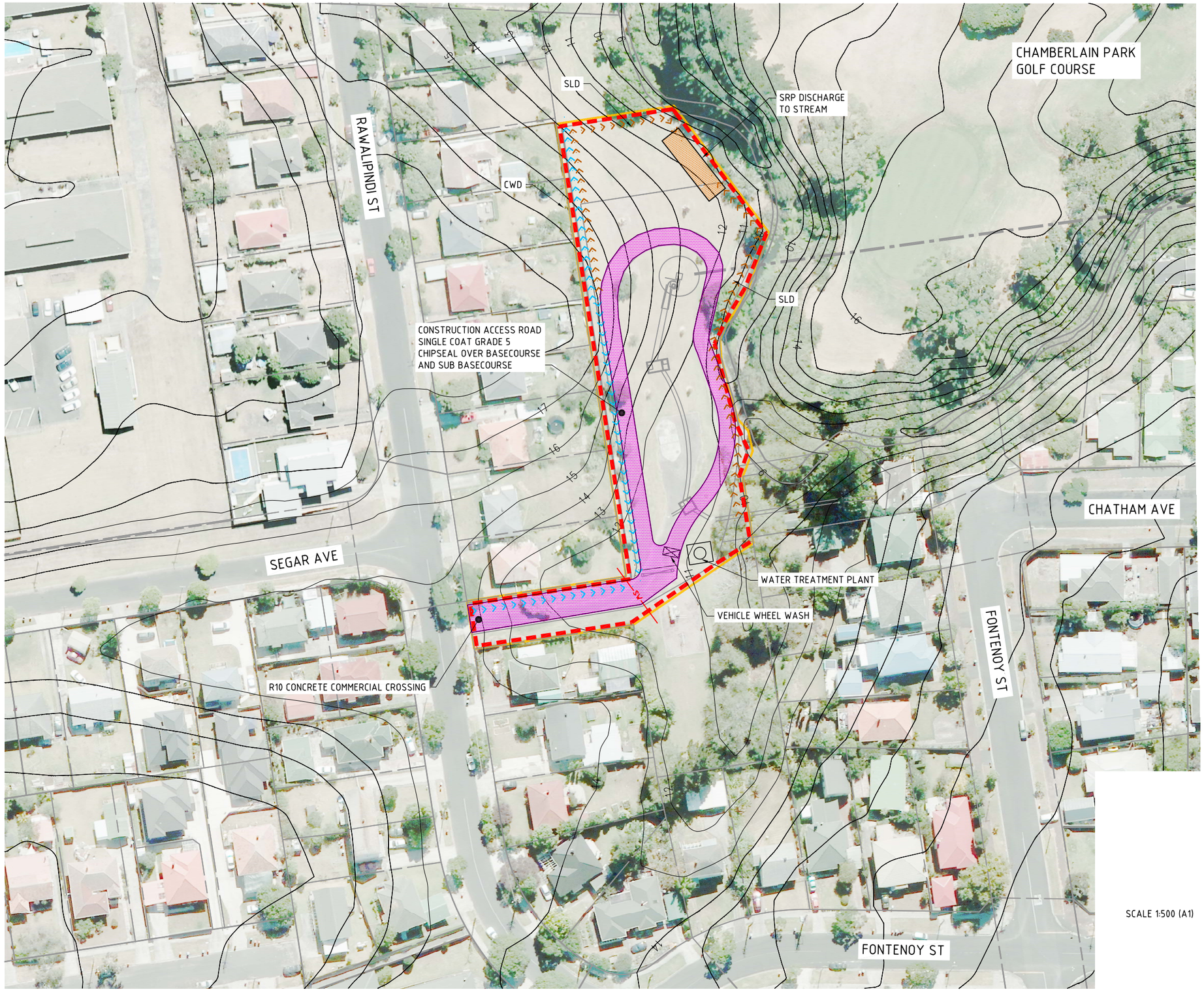
4 USLE Calculations

Treatment Device	Location	Earthwork Area (ha)	Slope (%)	Slope length (m)	Bare Soil (B) Pasture (P) New Grass (E)	Duration (months)	USLE Parameters R	K	LS	C	P	Time	Delivery Ratio	Control Efficiency	Total (tonnes)	T/ha
SRP	L2S1	0.42	1	75	E	18	78	0.1	0.17	0.1	1.00	1.50	0.50	95%	0.00	0.00

5 Stormwater Management Controls

All stormwater discharged from the construction work area will be treated to TP90 standard.

In addition temporary scour protection is provided where the SRP discharges to the stream to mitigate the risk of stream bank and bed erosion.



NOTES

1. REFER TO DWG MAIN-ESCP-1.01 FOR GENERAL NOTES AND LEGEND.
2. REFER TO DRAWING ESCP-1.02 TO ESCP-1.03 FOR TP90 DETAILS.

SCALE 1:500 (A1)

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10 8 6 4 2

CONSENT ISSUE

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ISSUE	DATE	AMENDMENT	BY	APPD.
C	22/11/12	ISSUED FOR CONSENT	YC	TSH
B	18/7/12	UPDATED USLE TABLE – SITE ESTABLISHMENT DURATION	AGT	AC
A	7/6/12	ISSUED FOR CONSENT		

DESIGNED	AC		
DES. CHECKED	AG		
DRAWN	LC		
DWG. CHECKED	CTC		
REV'D P.MGR			
APP'D P.DIR			
BY		DATE	

OPERATIONS

ASSET MANAGER

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CENTRAL INTERCEPTOR
GENERAL
RAWALPINDI RESERVE (L2S1) – EROSION SEDIMENT CONTROL PLAN

CAD FILE MAIN-ESCP-13.1 DATE 7-Jun-12

ORIGINAL SCALE A1: 1:500

CONTRACT No.: 0538

DRAWING No.: MAIN-ESCP-13.1

ISSUE: C

Central Interceptor
Erosion & Sediment and Stormwater Control Plan

Plan No:	MAIN ESCP 14.1 – Norgrove Avenue (L2S2)	
Location:	Mt Albert	
Prepared by:	Lance Collier, revised Tomas Ussher	Date: 04/12/12
Checked by:	Dietmar Londer	Revision: D

1 Introduction

This Erosion & Sediment Control Plan (ESCP) details the required sediment and erosion controls to manage sediment during the construction phase of the Central Interceptor at the L2S2 – Norgrove Avenue construction site.

The ESCP will be finalised by the Contractor to meet council requirements and to suit their methodology following the award of the Construction Contract and submitted to Council prior to commencing work on site.

2 Site Activity

Construction at the L2S2 – Norgrove Avenue site will last 8 months.

Construction activities on the site include the construction of a jacking/receiving shaft, the tunnel construction, construction of the permanent access structure, construction of a control chamber and reinstatement of the site.

During the construction phase the traffic at this construction site will consist of heavy trucks to cart construction spoil away and deliver construction materials.

During construction the site will include materials stockpile areas, utility buildings and construction staff parking areas.

3 Erosion and Sediment Control Plan

3.1 Introduction

The ESCP details the proposed sediment treatment control devices for the construction phase of the proposed Central Interceptor works at this site. The ESCP was developed considering available LIDAR data and Council services information from GIS.

Sediment controls in the works area will include stabilised clean water diversions, sediment diversion drains, a silt fence and a Decanting Earth Bund (DEB).

The construction site area (0.22 ha) will be directed to a DEB which will start treating the catchment immediately.

3.2 Erosion and Sediment Control Methodology

1) Install DEB, stabilised spillways and outlets.
2) Construct sediment diversion drains to direct catchment to treatment devices.
3) Construct clean water diversion drains to divert clean water from construction site.
4) Construct stabilised vehicle access and wheel wash. Direct wheel wash drain to water treatment device.

5) Construct the water treatment devices and adjust throughout construction period to suit current construction activities.
6) Progressively stabilise site in accordance with TP90.
7) Maintain sediment controls in accordance with TP90.

In the event of a design exceedance event overland flow paths will be directed safely around the construction site. Surface water will flow from the DEB's stabilised spillway to the neighbouring stream.

A spill response plan will be developed to mediate the potential risk of refuelling on site and the effects of fuel on the proposed TP90 controls. There will be no storage of fuel on site; all machines will be refuelled by mini tankers.

3.2.1 Decanting Earth Bund

The DEB will be constructed in the eastern part of the site in accordance with TP90. The outlets for the DEB will discharge to the neighbouring stream. A stabilised emergency spillway will be constructed for the DEB to safely convey storm exceedance events from the site to the neighbouring stream.

- DEB will receive 0.22 ha and will have a volume of 66 m^3.
- Live storage volume is 46 m^3.
- Dead storage volume is 20 m^3.
- Will provide treatment efficiency of 75%.

3.2.2 Diversion Bund

Diversion bunds will direct the catchment's sediment laden flow to the DEB as indicated. Lined clean water diversion bunds will direct overland flows from outside of the work area around the construction site. The site will be contoured to direct surface flows to the respective treatment device.

3.2.3 Site access

The site access road will be stabilised with single coat Grade 5 chip seal over basecourse and subbase. An R10 concrete commercial vehicle crossing will be constructed at the exit/entry to the site. A wheel wash will be constructed near the site exit which will drain to the water treatment device.

3.2.4 Water treatment devices

A dewatering treatment device, or several devices, will be used on site and adapted to suit the current construction activity. The device(s) will be used to contain ground water extracted during the tunnel shaft construction, vehicle wheel wash runoff and any excess ground water from the tunnelling process. Clarity and pH balancing will be completed before discharging to the neighbouring stream.

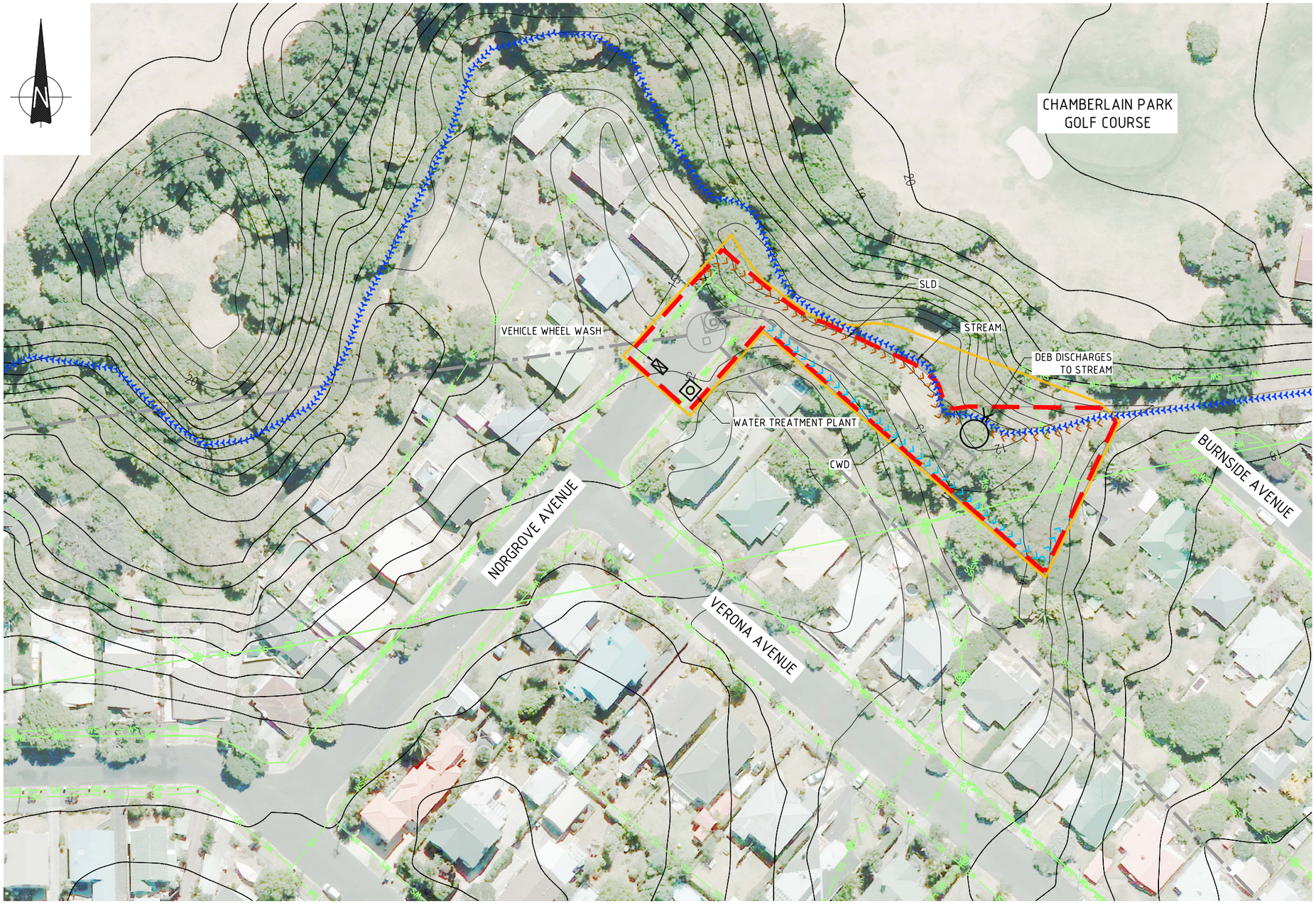
4 USLE Calculations

							USLE Parameters									
Treatment Device	Location	Earthwork Area (ha)	Slope (%)	Slope length (m)	Bare Soil (B) Pasture (P) New Grass (E)	Duration (months)	R	K	LS	C	P	Time	Delivery Ratio	Control Efficiency	Total (tonnes)	T/ha
DEB A	L2S2	0.22	20	15	E	8	78	0.1	2.86	0.1	1.00	0.67	0.50	75%	0.04	0.19

5 Stormwater Management Controls

All stormwater discharged from the construction work area will be treated to TP90 standard.

In addition temporary scour protection is provided where the DEB discharges to the stream to mitigate the risk of stream bank and bed erosion.



NOTES

1. REFER TO DWG MAIN-ESCP-1.01 FOR GENERAL NOTES AND LEGEND.
2. REFER TO DRAWING ESCP-1.02 TO ESCP-1.03 FOR TP90 DETAILS.

SCALE 1:500 (A1)

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CONSENT ISSUE

Plot Date: 12-Dec-12 11:51 AM
File path: i:\AENVA\Projects\AE03786\DELIVERABLES\Drawings\Sketches

ISSUE	DATE	AMENDMENT	BY	APPD.
D	22/11/12	ISSUED FOR CONSENT	YC	TSH
C	18/7/12	UPDATED USLE TABLE - SITE ESTABLISHMENT DURATION	AGT	AC
B	26/6/12	ISSUED FOR CONSENT		
A	7/6/12	ISSUED FOR CONSENT		

DESIGNED	LC		
DES. CHECKED	AG		
DRAWN	LC		
DWG. CHECKED	CTC		
REV'D P.MGR			
APP'D P.DIR			

OPERATIONS

ASSET MANAGER

water Care services limited

CENTRAL INTERCEPTOR
GENERAL
NORGROVE AVENUE (L2S2) - EROSION SEDIMENT CONTROL PLAN

CAD FILE MAIN-ESCP-14.1	DATE 7-Jun-12
ORIGINAL SCALE A1	CONTRACT No.
1:500	0538
DRAWING No.	ISSUE
MAIN-ESCP-14.1	D

Central Interceptor
Erosion & Sediment and Stormwater Control Plan

Plan No:	MAIN ESCP 15.1 - PS25 (L3S1)	
Location:	PS25	
Prepared by:	Aidan Cooper, revised Tomas Ussher	Date: 04/12/12
Checked by:	Dietmar Londer	Revision: D

1 Introduction

This Erosion & Sediment Control Plan (ESCP) details the required sediment and erosion controls to manage sediment during the construction phase of the Central Interceptor at the L3S1 - PS25 construction site.

The ESCP will be finalised by the Contractor to meet council requirements and to suit their methodology following the award of the Construction Contract and submitted to Council prior to commencing work on site.

2 Site Activity

Construction at the L3S1 - PS25 site will conservatively last 18 months.

Construction activities on the site may include the construction of a jacking/receiving shaft, one further shaft, two chambers, construction of the permanent all weather access, Air treatment facility and reinstatement of the site.

During construction heavy vehicles will remove construction spoil away and deliver construction materials.

During construction the site will include materials stockpile areas, utility buildings and construction staff parking areas.

3 Erosion and Sediment Control Plan

3.1 Introduction

The ESCP details the proposed sediment treatment control devices for the construction phase of the proposed Central Interceptor works at this site. The ESCP was developed considering available LIDAR data and Council services information from GIS.

Sediment controls in the works area will include stabilised clean water diversions, sediment diversion drains and a Sediment Retention Pond (SRP).

The construction site area (0.40 ha) will be directed to the SRP which will start treating the catchment immediately.

3.2 Erosion and Sediment Control Methodology

1) Install SRP, stabilised spillways and outlet.
2) Construct vehicle wheel wash.
3) Construct sediment diversion drains to direct catchment to treatment devices, with check dams on steep portions.
4) Construct clean water diversion drains to divert clean water from construction site.
5) Construct stabilised vehicle access.
6) Progressively stabilise site in accordance with TP90.
7) Maintain sediment controls in accordance with TP90.

In the event of a design exceedance event overland flow paths will be directed safely around the construction site. Surface water will flow from the SRP stabilised spillway to the neighbouring stream.

A spill response plan will be developed to mediate the potential risk of refuelling on site and the effects of fuel on the proposed TP90 controls. There will be no storage of fuel on site; all machines will be refuelled by mini tankers.

3.2.1 Sediment Retention Pond

The SRP will be constructed on the north bank of the stream in accordance with TP90 and discharge to the neighbouring stream. A stabilised emergency spillway will be constructed to safely convey storm exceedance events from the site to the neighbouring stream.

- The SRP will receive 0.4 ha and will have a volume of 120 m^3.
- Dead storage volume will be 36m^3.
- Will provide treatment efficiency of 95%.

3.2.2 Diversion Bund

Diversion bunds will direct the catchment's sediment laden flow to the SRP as indicated. Lined clean water diversion bunds will direct overland flows from outside of the work area around the construction site. The site will be contoured to direct surface flows to the treatment device. Contour drains will be used on steep sections to convey water across sloping land on a minimal gradient. The vehicle was bay will be directed to the SRP.

3.2.3 Site access

The site access road will be stabilised with single coat Grade 5 chip seal over basecourse and subbase. An R10 concrete commercial vehicle crossing will be constructed at the exit/entry to the site. A wheel wash will be constructed near the site exit which will drain to the water treatment device.

If the southern vehicle entrance is required, a temporary culvert will be installed to direct the existing private open drain below the site access.

3.2.4 Water treatment devices

A dewatering treatment device, or several devices, will be used on site and adapted to suit the current construction activity. The device(s) will be used to contain ground water extracted during the tunnel shaft construction, vehicle wheel wash runoff and any excess ground water from the tunnelling process. Clarity and pH balancing will be completed before discharging to the neighbouring stream.

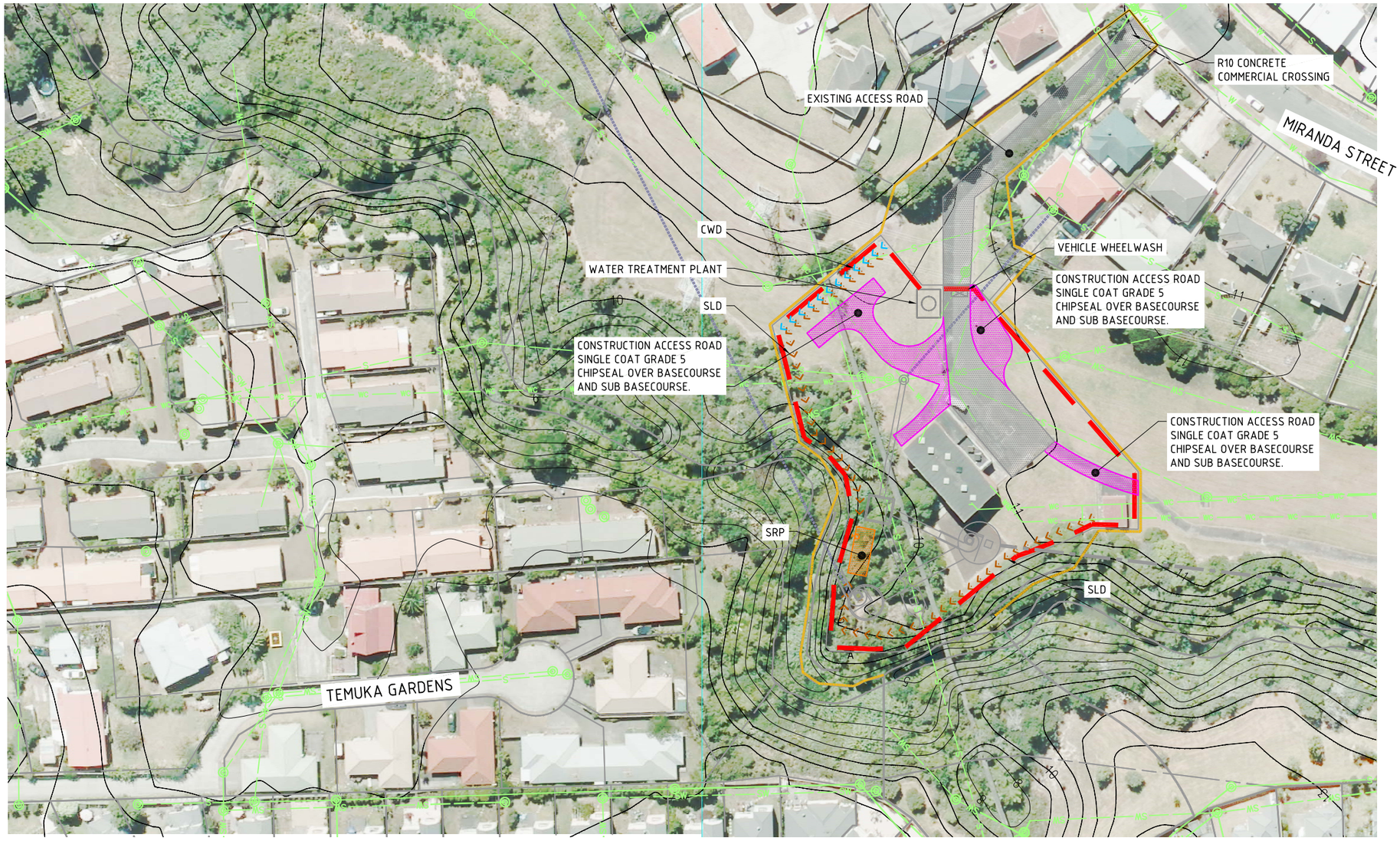
4 USLE Calculations

							USLE Parameters									
Treatment Device	Location	Earthwork Area (ha)	Slope (%)	Slope length (m)	Bare Soil (B) Pasture (P) New Grass (E)	Duration (months)	R	K	LS	C	P	Time	Delivery Ratio	Control Efficiency	Total (tonnes)	T/ha
SRP A	L3S1	0.4	33	60	E	18	78	0.1	13.05	0.1	1.00	1.50	0.50	95%	0.15	0.38

5 Stormwater Management Controls

All stormwater discharged from the construction work area will be treated to TP90 standard.

In addition temporary scour protection is provided where the SRP discharges to the stream to mitigate the risk of stream bank and bed erosion.



NOTES

1. REFER TO DWG MAIN-ESCP-1.01 FOR GENERAL NOTES AND LEGEND.
2. REFER TO DRAWING ESCP-1.02 TO ESCP-1.03 FOR TP90 DETAILS.

SCALE 1:500 (A1)

0 10 20 30 40 50m

10 8 6 4 2

CONSENT ISSUE

Plot Date: 12-Dec-12 11:35 AM
File path: I:\AEWA\Projects\AE03786\DELIVERABLES\Drawings\Sketches

ISSUE	DATE	AMENDMENT	BY	APPD.
D	22/11/12	ISSUED FOR CONSENT	RM	TH
C	18/7/12	UPDATED USLE TABLE – SITE ESTABLISHMENT DURATION	AGT	AC
B	26/6/12	ISSUED FOR CONSENT		
A	7/6/12	ISSUED FOR CONSENT		

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DESIGNED	LC	
DES. CHECKED	AG	
DRAWN	LC	
DWG. CHECKED	CTC	
REV'D P.MGR		
APP'D P.DIR		

OPERATIONS

ASSET MANAGER

waterCare services limited

CENTRAL INTERCEPTOR
GENERAL
PS25 (L3S1) – EROSION SEDIMENT CONTROL PLAN

CAD FILE MAIN-ESCP-15.1 DATE 7-Jun-12

ORIGINAL SCALE A1	CONTRACT No.
1:500	0538

DRAWING No.	ISSUE
MAIN-ESCP-15.1	D

Central Interceptor
Erosion & Sediment and Stormwater Control Plan

Plan No:	MAIN ESCP 16.1 – Miranda Reserve (L3S2)	
Location:	Miranda Reserve	
Prepared by:	Anna Tyrrell, revised Tomas Ussher	Date: 04/12/2012
Checked by:	Dietmar Londer	Revision D

1 Introduction

This Erosion & Sediment Control Plan (ESCP) details the required sediment and erosion controls to manage sediment during the construction phase of the Central Interceptor at the L3S2 – Miranda Reserve construction site.

The ESCP will be finalised by the Contractor to meet council requirements and to suit their methodology following the award of the Construction Contract and submitted to Council prior to commencing work on site.

2 Site Activity

Construction at L3S2 – Miranda Reserve site will last 8 months.

Construction activities on the site may include the construction of a jacking/receiving shaft, the tunnel construction, construction of the permanent access structure and reinstatement of the site.

During construction heavy vehicles will remove construction spoil away and deliver construction materials.

During construction the site will include materials stockpile areas, utility buildings and construction staff parking areas.

3 Erosion and Sediment Control Plan

3.1 Introduction

The ESCP details the proposed sediment treatment control devices for the construction phase of the proposed Central Interceptor works at this site. The ESCP was developed considering available LIDAR data and Council services information from GIS.

Sediment controls in the works area will include stabilised clean water diversions, sediment diversion drains and a Decanting Earth Bund (DEB).

The construction site area (0.10 ha) will be directed to a DEB which will start treating the catchment immediately.

3.2 Erosion and Sediment Control Methodology

1) Install DEB, stabilised spillways and outlets.
2) Construct sediment diversion drains to direct catchment to treatment devices.
3) Construct clean water diversion drains to divert clean water from construction site.
4) Construct stabilised vehicle access and wheel wash. Direct wheel wash drain to water treatment device.
5) Construct the water treatment devices and adjust throughout construction period to suit current construction activities.
6) Progressively stabilise site in accordance with TP90.
7) Maintain sediment controls in accordance with TP90.

In the event of a design exceedance event overland flow paths will be directed safely around the construction site. Surface water will flow from the DEB's stabilised spillway to the neighbouring stream.

A spill response plan will be developed to mediate the potential risk of refuelling on site and the effects of fuel on the proposed TP90 controls. There will be no storage of fuel on site; all machines will be refuelled by mini tankers.

3.2.1 Decanting Earth Bund

The DEB will be constructed in the south western corner of the site in accordance with TP90. The outlet will discharge to the neighbouring stream. A stabilised emergency spillway will be constructed to safely convey storm exceedance events from the site to the neighbouring stream.

- The DEB will have a volume of 29 m^3 (3%).
- Live storage volume of 20 m^3.
- Dead storage volume of 9 m^3.
- Will provide treatment efficiency of 75%.

3.2.2 Diversion Bund

Diversion bunds will direct the catchment's sediment laden flow to the DEB as indicated. Lined clean water diversion bunds will direct overland flows from outside of the work area around the construction site. The site will be contoured to direct surface flows to the respective treatment device.

3.2.3 Site access

The site access road will be stabilised with single coat Grade 5 chip seal over basecourse and subbase. An R10 concrete commercial vehicle crossing will be constructed at the exit/entry to the site. A wheel wash will be constructed near the site exit which will drain to the water treatment device.

If the southern vehicle entrance is required, a temporary culvert will be installed to direct the existing private open drain below the site access.

3.2.4 Water treatment devices

A dewatering treatment device, or several devices, will be used on site and adapted to suit the current construction activity. The device(s) will be used to contain ground water extracted during the tunnel shaft construction, vehicle wheel wash runoff and any excess ground water

from the tunnelling process. Clarity and pH balancing will be completed before discharging to the neighbouring stream.

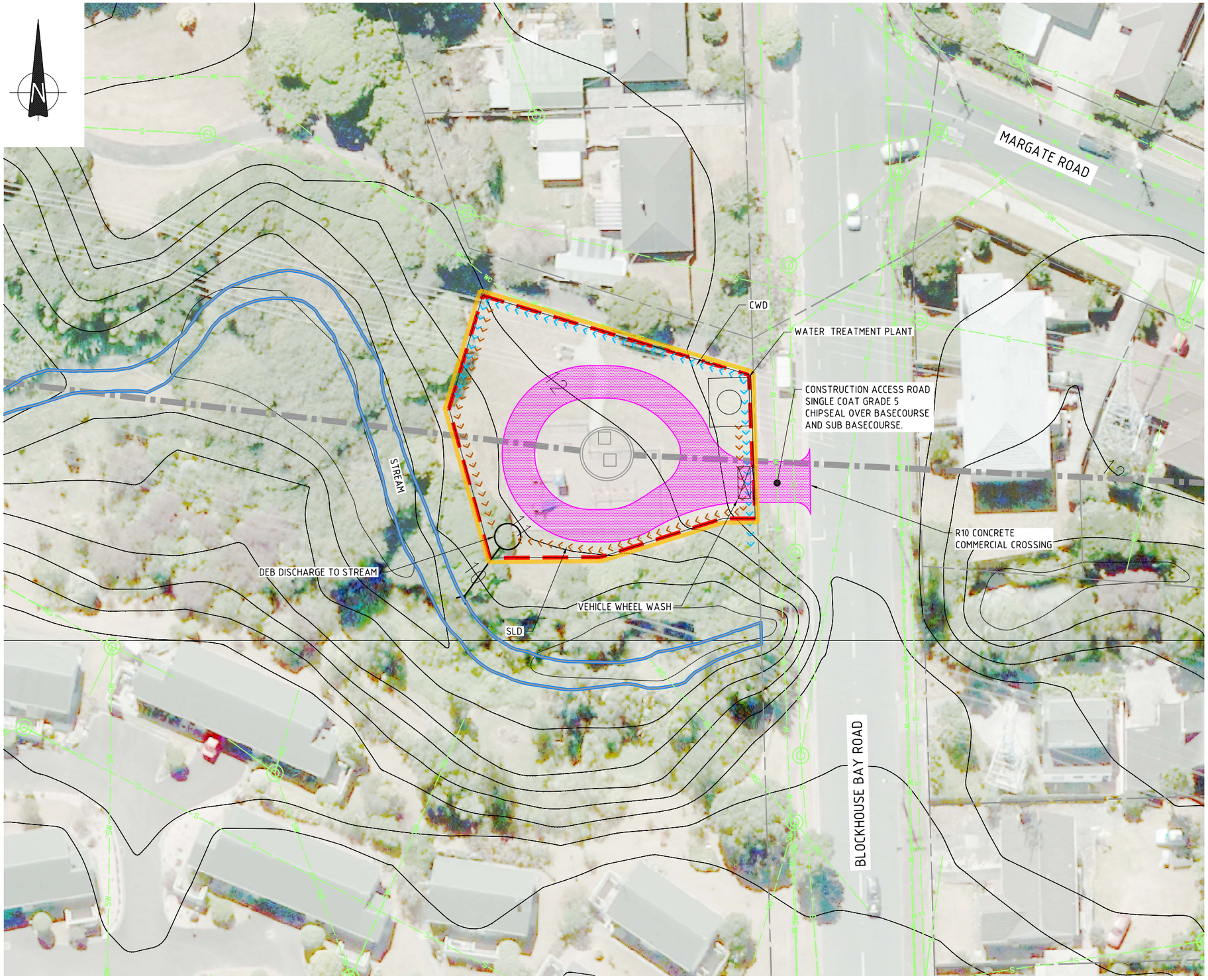
4 USLE Calculations

							USLE Parameters									
Treatment Device	Location	Earthwork Area (ha)	Slope (%)	Slope length (m)	Bare Soil (B) Pasture (P) New Grass (E)	Duration (months)	R	K	LS	C	P	Time	Delivery Ratio	Control Efficiency	Total (tonnes)	T/ha
DEB	L3S2	0.1	7	30	E	8	78	0.1	0.82	0.1	1.00	0.67	0.50	75%	0.01	0.05

5 Stormwater Management Controls

All stormwater discharged from the construction work area will be treated to TP90 standard.

In addition temporary scour protection is provided where the DEB discharges to the stream to mitigate the risk of stream bank and bed erosion.



NOTES

1. REFER TO DWG MAIN-ESCP-1.01 FOR GENERAL NOTES AND LEGEND.
2. REFER TO DRAWING ESCP-1.02 TO ESCP-1.03 FOR TP90 DETAILS.

SCALE 1:250 (A1)

0 5 10 15 20 25m

5 4 3 2 1

CONSENT ISSUE

Plot Date: 12-Dec-12 1:23 PM
File path: I:\AENWA\Projects\AE03786\DELIVERABLES\Drawings\Sketches

ISSUE	DATE	AMENDMENT	BY	APPD.
C	22/11/12	ISSUED FOR CONSENT	YC	TSH
B	18/7/12	UPDATED USLE TABLE – SITE ESTABLISHMENT DURATION	AGT	AC
A	7/6/12	ISSUED FOR CONSENT		

		BY	DATE
DESIGNED	AT		
DES. CHECKED	AC		
DRAWN	LC		
DWG. CHECKED	CTC		
REV'D P.MGR			
APP'D P.DIR			

OPERATIONS

ASSET MANAGER

water Care services limited

CENTRAL INTERCEPTOR
GENERAL
MIRANDA RESERVE (L3S2) – EROSION SEDIMENT CONTROL PLAN

CAD FILE MAIN-ESCP-16.1 DATE 7-Jun-12
ORIGINAL SCALE A1 1:250
CONTRACT No. 0538
DRAWING No. MAIN-ESCP-16.1
ISSUE C

Central Interceptor
Erosion & Sediment and Stormwater Control Plan

Plan No:	MAIN ESCP 17.1 – Whitney Street (L3S3)	
Location:	Whitney Street	
Prepared by:	Aidan Cooper, revised Tomas Ussher	Date: 04/12/2012
Checked by:	Dietmar Londer	Revision: D

1 Introduction

This Erosion & Sediment Control Plan (ESCP) details the required sediment and erosion controls to manage sediment during the construction phase of the Central Interceptor at the L3S3 – Whitney Street construction site.

The ESCP will be finalised by the Contractor to meet council requirements and to suit their methodology following the award of the Construction Contract and submitted to Council prior to commencing work on site.

2 Site Activity

Construction at the L3S3 – Whitney Street site will last 8 months.

Construction activities on the site may include the construction of a jacking/receiving shaft, a further shaft, the tunnel construction, construction of the permanent access structure and reinstatement of the site.

During construction heavy vehicles will remove construction spoil away and deliver construction materials.

During construction the site will include materials stockpile areas, utility buildings and construction staff parking areas.

3 Erosion and Sediment Control Plan

3.1 Introduction

The ESCP details the proposed sediment treatment control devices for the construction phase of the proposed Central Interceptor works at this site. The ESCP was developed considering available LIDAR data and Council services information from GIS.

Sediment controls in the works area will include asphalt clean water diversion bunds to direct clean water from Whitney Street around the works area. Depending on excavation depths silt fences may be required around stormwater cesspits.

The construction site area is 0.04 ha and is located within the Whitney Street road corridor. The site will likely be divided into 2 separate works areas of 0.022 ha and 0.018 ha. The top area will be stabilised with as per the site access road description. If required each work area will be treated by silt fences. Silt fences would provide treatment efficiency of 65%.

3.2 Erosion and Sediment Control Methodology

1) Install silt fences if necessary inside work areas.
2) Construct sediment diversion drains to direct catchment to treatment devices.
3) Construct clean water diversion drains to divert clean water from construction site.
4) Construct stabilised vehicle access and wheel wash. Direct wheel wash drain to treatment device.
5) Construct the water treatment devices and adjust throughout construction period to suit current construction activities.
6) Progressively stabilise site in accordance with TP90.
7) Maintain sediment controls in accordance with TP90.

A spill response plan will be developed to mediate the potential risk of refuelling on site and the effects of fuel on the proposed TP90 controls. There will be no storage of fuel on site; all machines will be refuelled by mini tankers.

3.2.1 Diversion Bund

Install asphalt clean water diversion to direct overland flows from outside of the work area around the construction site.

3.2.2 Silt fences

Install silt fences with returns to ensure work area sediment laden run off is attenuated within works area.

3.2.3 Site access

The site access will be via Whitney Street. Ensure Whitney Street is maintained and kept free of excavation materials.

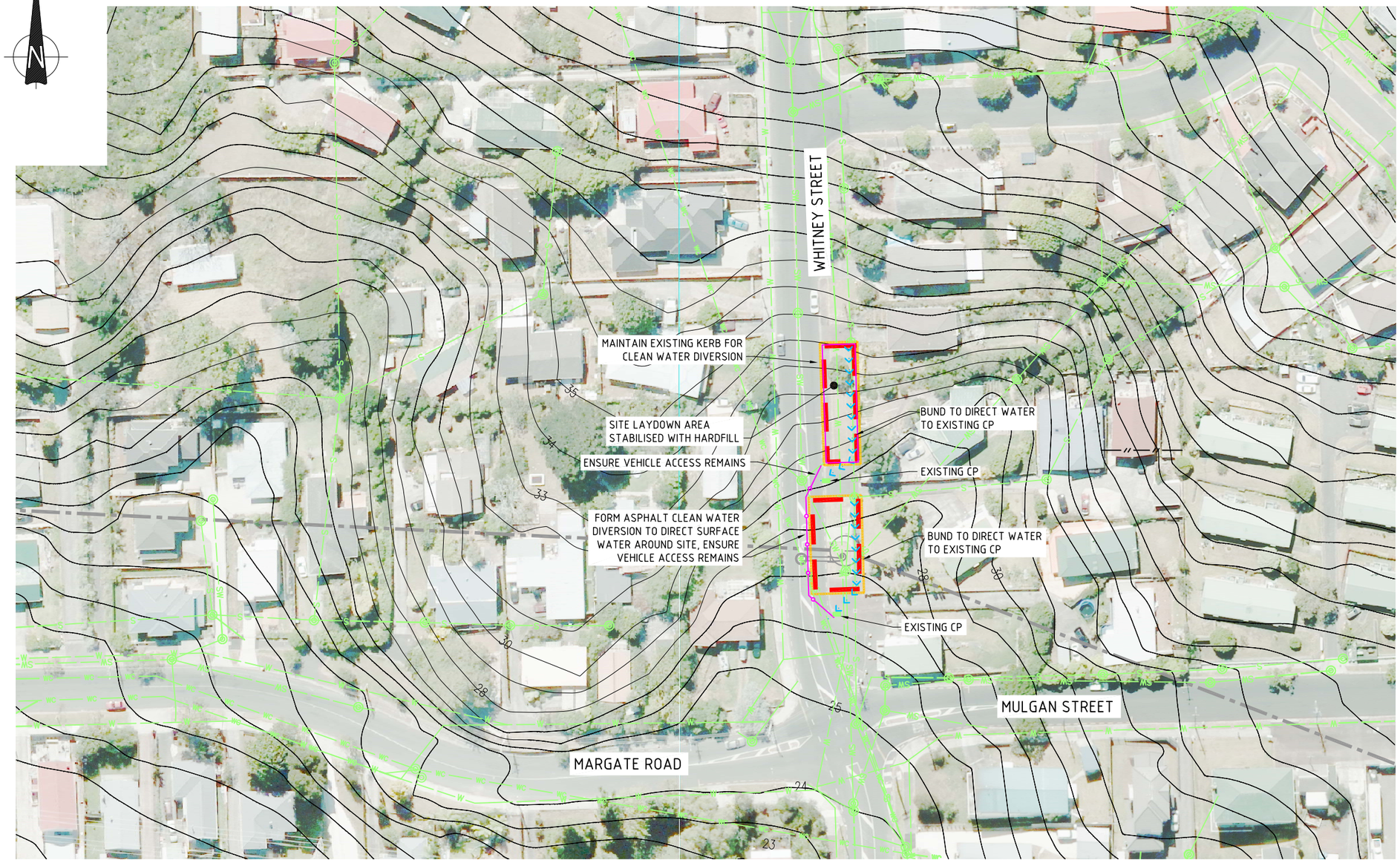
The site access road will be stabilised with single coat Grade 5 chip seal over basecourse and subbase. An R10 concrete commercial vehicle crossing will be constructed at the exit/entry to the site. A wheel wash will be constructed near the site exit which will drain to the water treatment device.

4 USLE Calculations

							USLE Parameters									
Treatment Device	Location	Earthwork Area (ha)	Slope (%)	Slope length (m)	Bare Soil (B) Pasture (P) New Grass (E)	Duration (months)	R	K	LS	C	P	Time	Delivery Ratio	Control Efficiency	Total (tonnes)	T/ha
Silt Fence	L3S3	0.04	16	25	E	8	78	0.1	2.57	0.1	1.00	0.67	0.50	65%	0.01	0.23

5 Stormwater Management Controls

All stormwater discharged from the construction work area will be treated to TP90 standard.



NOTES

1. REFER TO DWG MAIN-ESCP-1.01 FOR GENERAL NOTES AND LEGEND.
2. REFER TO DRAWING ESCP-1.02 TO ESCP-1.03 FOR TP90 DETAILS.
3. CONSTRUCTION ACCESS ROAD LOCATED ON GRASS BERM.

SCALE 1:500 (A1)

0 10 20 30 40 50m
10 8 6 4 2

CONSENT ISSUE

Plot Date: 12-Dec-12 1:27 PM
File path: I:\AECOM\Projects\AE03786\DELIVERABLES\Drawings\Sketches

ISSUE	DATE	AMENDMENT	BY	APPD.
C	22/11/12	ISSUED FOR CONSENT	RM	TSH
B	18/7/12	UPDATED USLE TABLE - SITE ESTABLISHMENT DURATION	AGT	AC
A	7/6/12	ISSUED FOR CONSENT		

DESIGNED	LC		
DES. CHECKED	AC		
DRAWN	LC		
DWG. CHECKED	CTC		
REV'D P.MGR			
APP'D P.DIR			

OPERATIONS

ASSET MANAGER

CENTRAL INTERCEPTOR
GENERAL
WHITNEY STREET (L3S3) - EROSION SEDIMENT CONTROL PLAN

CAD FILE MAIN-ESCP-17.1	DATE 7-Jun-12
ORIGINAL SCALE A1: 1:500	CONTRACT No. 0538
DRAWING No. MAIN-ESCP-17.1	ISSUE C

Central Interceptor
Erosion & Sediment and Stormwater Control Plan

Plan No:	MAIN ESCP 18.1 – Dundale Avenue (L3S4)	
Location:	Dundale Avenue	
Prepared by:	Anna Tyrrell, revised Tomas Ussher	Date: 04/12/12
Checked by:	Dietmar Londer	Revision: D

1 Introduction

This Erosion & Sediment Control Plan (ESCP) details the required sediment and erosion controls to manage sediment during the construction phase of the Central Interceptor at the L3S4 – Dundale Avenue construction site.

The ESCP will be finalised by the Contractor to meet council requirements and to suit their methodology following the award of the Construction Contract and submitted to Council prior to commencing work on site.

2 Site Activity

Construction at the L3S4 – Dundale Avenue site will last 8 months.

Construction activities on the site may include the construction of a jacking/receiving shaft, the tunnel construction, construction of the permanent access structure and reinstatement of the site.

During the construction phase the traffic at this construction site will consist of heavy trucks to cart construction spoil away and deliver construction materials.

During construction the site will include materials stockpile areas, utility buildings and construction staff parking areas.

3 Erosion and Sediment Control Plan

3.1 Introduction

The ESCP details the proposed sediment treatment control devices for the construction phase of the proposed Central Interceptor works at this site. The ESCP was developed considering available LIDAR data and Council services information from GIS.

Sediment controls in the works area will include stabilised clean water diversions and a Decanting Earth Bund (DEB). The DEB should provide a treatment efficiency of 75%.

The construction site area (0.11 ha) will be directed to a DEB which will start treating the catchment immediately.

3.2 Erosion and Sediment Control Methodology

1) Install silt fence, DEB, stabilised spillways and outlets.
2) Construct clean water diversion drains to divert clean water from construction site.
3) Construct stabilised vehicle access and wheel wash. Direct wheel wash drain to treatment device.
4) Progressively stabilise site in accordance with TP90.

5) Maintain sediment controls in accordance with TP90.

In the event of a design exceedance event overland flow paths will be directed safely around the construction site. Surface water will flow from the DEB's stabilised spillway to the neighbouring stream.

A spill response plan will be developed to mediate the potential risk of refuelling on site and the effects of fuel on the proposed TP90 controls. There will be no storage of fuel on site; all machines will be refuelled by mini tankers.

3.2.1 Decanting Earth Bund

The DEB will be constructed in the northern part of the site in accordance with TP90. The DEB outlet will discharge to the neighbouring stream. A stabilised emergency spillway will be constructed to safely convey storm exceedance events from the site to the neighbouring stream.

- The DEB will have a volume of 33 m^3 (3%) and will be connected to the adjoin stream; the DEB's spillway will be directed safely to the stream. The DEB is not flocculated.
- Live storage is 23 m^3.
- Dead storage is 10 m^3.
- Control efficiency is 75%.

3.2.2 Diversion Bund

Lined clean water diversion bunds will direct overland flows from outside of the work area around the construction site. The existing kerb will act as a clean water diversion along the southern boundary. The site will be contoured to direct surface flows to the respective treatment device.

3.2.3 Site access

The site access road will be stabilised with single coat Grade 5 chip seal over basecourse and subbase. An R10 concrete commercial vehicle crossing will be constructed at the exit/entry to the site. A wheel wash will be constructed near the site exit which will drain to the water treatment device.

3.2.4 Water treatment plant

A dewatering treatment device, or several devices, will be used on site and adapted to suit the current construction activity. The device(s) will be used to contain ground water extracted during the tunnel shaft construction, vehicle wheel wash runoff and any excess ground water from the tunnelling process. Clarity and pH balancing will be completed before discharging to the neighbouring stream.

4 USLE Calculations

							USLE Parameters									
Treatment Device	Location	Earthwork Area (ha)	Slope (%)	Slope length (m)	Bare Soil (B) Pasture (P) New Grass (E)	Duration (months)	R	K	LS	C	P	Time	Delivery Ratio	Control Efficiency	Total (tonnes)	T/ha
DEB	L3S4	0.11	4	25	E	8	78	0.1	0.37	0.1	1.00	0.67	0.50	75%	0.00	0.02

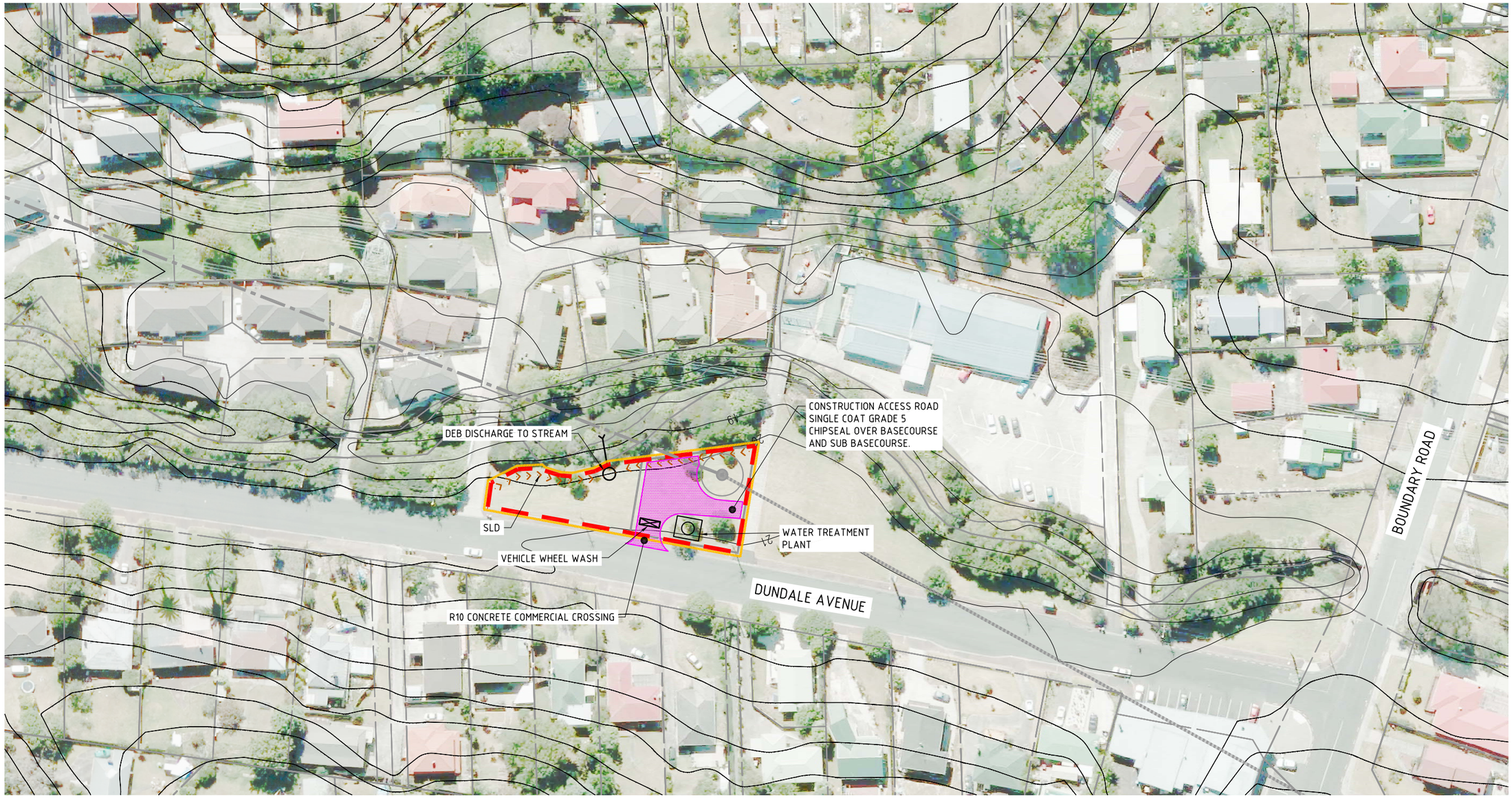
5 Stormwater Management Controls

All stormwater discharged from the construction work area will be treated to TP90 standard.

In addition temporary scour protection is provided where the DEB discharges to the stream to mitigate the risk of stream bank and bed erosion.

NOTES

1. REFER TO DWG MAIN-ESCP-1.01 FOR GENERAL NOTES AND LEGEND.
2. REFER TO DRAWING ESCP-1.02 TO ESCP-1.03 FOR TP90 DETAILS.



SCALE 1:500 (A1)

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10 8 6 4 2

CONSENT ISSUE

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File path: I:\AENWA\Projects\AE03786\DELIVERABLES\Drawings\Sketches

ISSUE	DATE	AMENDMENT	BY	APPD.
C	22/11/12	ISSUED FOR CONSENT	YC	TSH
B	18/7/12	UPDATED USLE TABLE - SITE ESTABLISHMENT DURATION	AGT	AC
A	7/6/12	ISSUED FOR CONSENT		

DESIGNED	AT		
DES. CHECKED	AC		
DRAWN	LC		
DWG. CHECKED	CTC		
REV'D P.MGR			
APP'D P.DIR			

OPERATIONS

ASSET MANAGER

waterCare services limited

CENTRAL INTERCEPTOR
GENERAL
DUNDALE AVENUE (L3S4) - EROSION SEDIMENT CONTROL PLAN

CAD FILE MAIN-ESCP-18.1	DATE 7-Jun-12
ORIGINAL SCALE A1: 1:500	CONTRACT No.: 0538
DRAWING No.: MAIN-ESCP-18.1	ISSUE: C

Central Interceptor
Erosion & Sediment and Stormwater Control Plan

Plan No:	MAIN ESCP 19.1 – Haycock Avenue (L3S5)	
Location:	Haycock Avenue	
Prepared by:	Lance Collier, revised Tomas Ussher	Date: 04/12/12
Checked by:	Dietmar Londer	Revision: D

1 Introduction

This Erosion & Sediment Control Plan (ESCP) details the required sediment and erosion controls to manage sediment during the construction phase of the Central Interceptor at the L3S5 – Haycock Avenue construction site.

The ESCP will be finalised by the Contractor to meet council requirements and to suit their methodology following the award of the Construction Contract and submitted to Council prior to commencing work on site.

2 Site Activity

Construction at the L3S5 – Haycock Avenue site will last 8 months.

Construction activities on the site include the construction of a jacking/receiving shaft, the tunnel construction, construction of the permanent access structure, two chambers and reinstatement of the site.

During the construction phase the traffic at this construction site will consist of heavy trucks to cart construction spoil away and deliver construction materials.

During construction the site will include materials stockpile areas, utility buildings and construction staff parking areas.

3 Erosion and Sediment Control Plan

3.1 Introduction

The ESCP details the proposed sediment treatment control devices for the construction phase of the proposed Central Interceptor works at this site. The ESCP was developed considering available LIDAR data and Council services information from GIS.

Sediment controls in the works area will include stabilised clean water diversions, sediment diversion drains and a Decanting Earth Bund (DEB).

The construction site area (0.07 ha) will be directed to a DEB which will start treating the catchment immediately.

3.2 Erosion and Sediment Control Methodology

1) Install, DEB, stabilised spillways and outlets.
2) Construct sediment diversion drains to direct catchment to treatment devices.
3) Construct clean water diversion drains to divert clean water from construction site.
4) Construct stabilised vehicle access and wheel wash. Direct wheel wash drain to water treatment device.

5) Construct the water treatment devices and adjust throughout construction period to suit current construction activities.
6) Progressively stabilise site in accordance with TP90.
7) Maintain sediment controls in accordance with TP90.

In the event of a design exceedance event overland flow paths will be directed safely around the construction site. Surface water will flow from the DEB's stabilised spillway to the neighbouring stream.

A spill response plan will be developed to mediate the potential risk of refuelling on site and the effects of fuel on the proposed TP90 controls. There will be no storage of fuel on site; all machines will be refuelled by mini tankers.

3.2.1 Decanting Earth Bund

The proposed DEB will be constructed in the south western corner of the site in accordance with TP90. The DEB outlet will discharge to the neighbouring stream via level spreader. A stabilised emergency spillway will be constructed to safely convey storm exceedance events from the site to the neighbouring stream.

- The DEB will receive all 0.07 ha and will have a volume of 20 m^3.
- Live storage volume is 14 m^3.
- Dead storage volume is 6 m^3.
- Will provide treatment efficiency of 75%.

3.2.2 Diversion Bund

Diversion bunds will direct the catchment's sediment laden flow to the DEB as indicated. The site will be contoured to direct surface flows to the treatment device. The site access will be stabilised with road metal.

3.2.3 Site access

The site access road will be stabilised with single coat Grade 5 chip seal over basecourse and subbase. An R10 concrete commercial vehicle crossing will be constructed at the exit/entry to the site. A wheel wash will be constructed near the site exit which will drain to the water treatment device.

If the southern vehicle entrance is required, a temporary culvert will be installed to direct the existing private open drain below the site access.

3.2.4 Water treatment devices

A dewatering treatment device, or several devices, will be used on site and adapted to suit the current construction activity. The device(s) will be used to contain ground water extracted during the tunnel shaft construction, vehicle wheel wash runoff and any excess ground water from the tunnelling process. Clarity and pH balancing will be completed before discharging to the neighbouring stream.

4 USLE Calculations

							USLE Parameters									
Treatment Device	Location	Earthwork Area (ha)	Slope (%)	Slope length (m)	Bare Soil (B) Pasture (P) New Grass (E)	Duration (months)	R	K	LS	C	P	Time	Delivery Ratio	Control Efficiency	Total (tonnes)	T/ha
DEB	L3S5	0.07	6.5	50	E	8	78	0.1	0.96	0.1	1.00	0.67	0.50	75%	0.00	0.06

5 Stormwater Management Controls

All stormwater discharged from the construction work area will be treated to TP90 standard.

In addition temporary scour protection is provided where the DEB discharges to the stream to mitigate the risk of stream bank and bed erosion.

NOTES

1. REFER TO DWG MAIN-ESCP-1.01 FOR GENERAL NOTES AND LEGEND.
2. REFER TO DRAWING ESCP-1.02 TO ESCP-1.03 FOR TP90 DETAILS.

SCALE 1:500 (A1)

0 10 20 30 40 50m
10 8 6 4 2

CONSENT ISSUE

Plot Date: 11-Dec-12 4:22 PM
File path: i:\AENVA\Projects\AE03786\DELIVERABLES\Drawings\Sketches

ISSUE	DATE	AMENDMENT	BY	APPD.			
D	22/11/12	ISSUED FOR CONSENT	RM	TSH			
C	18/7/12	UPDATED USLE TABLE – SITE ESTABLISHMENT DURATION	AGT	AC			
B	29/6/12	ISSUED FOR CONSENT					
A	7/6/12	ISSUED FOR CONSENT					

DESIGNED	LC
DES. CHECKED	AC
DRAWN	LC
DWG. CHECKED	CTC
REV'D P.MGR	
APP'D P.DIR	

OPERATIONS

ASSET MANAGER

water Care services limited

CENTRAL INTERCEPTOR
GENERAL
HAYCOCK AVENUE (L3S5) – EROSION SEDIMENT CONTROL PLAN

CAD FILE MAIN-ESCP-19.1 DATE 7-Jun-12
ORIGINAL SCALE A1: 1:500
CONTRACT No.: 0538
DRAWING No.: MAIN-ESCP-19.1
ISSUE: D