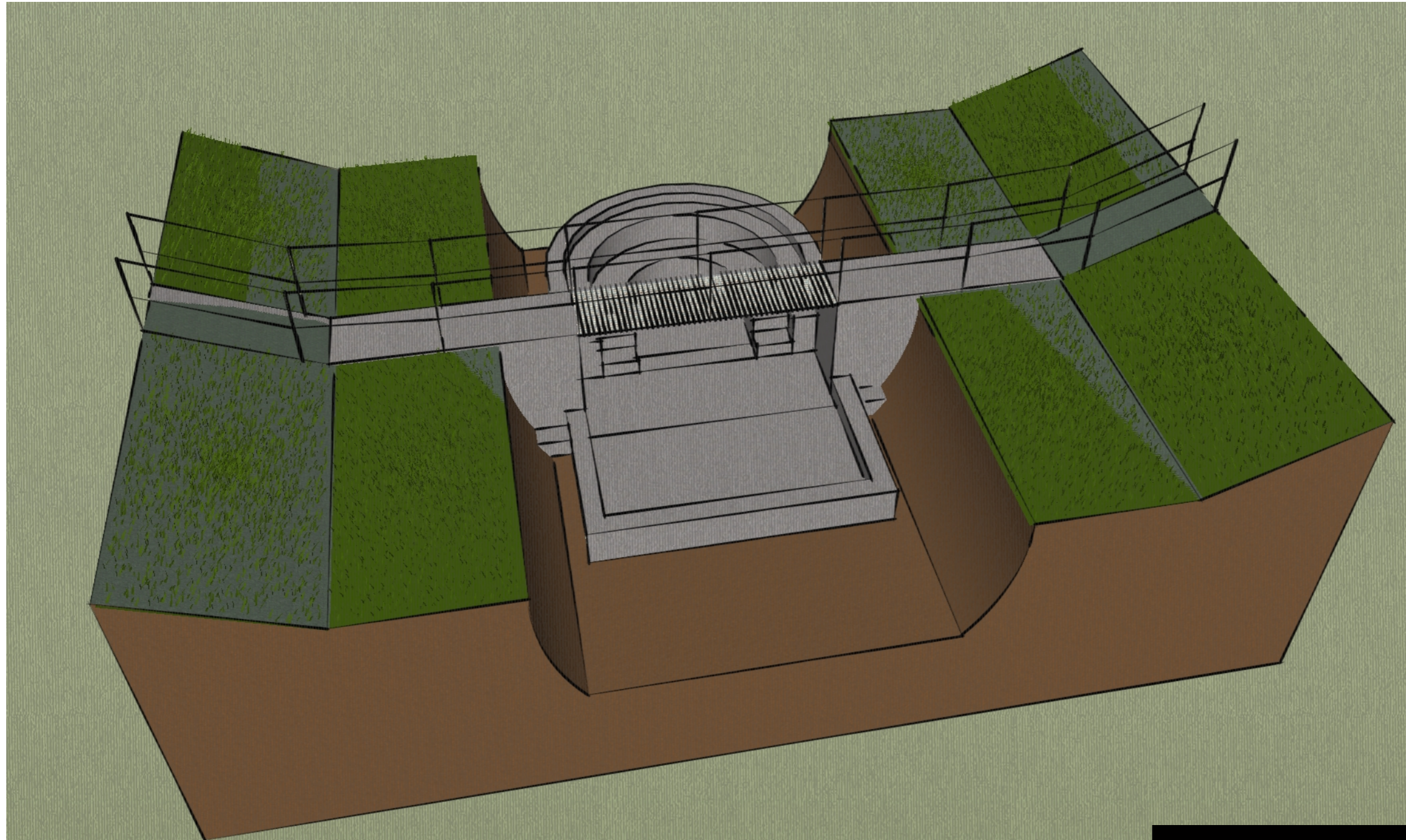


KAALSPRUIT CATCHMENT CONCEPTUAL ENGINEERING DRAWINGS CITY OF EKURHULENI



CONCEPTUAL DRAWING

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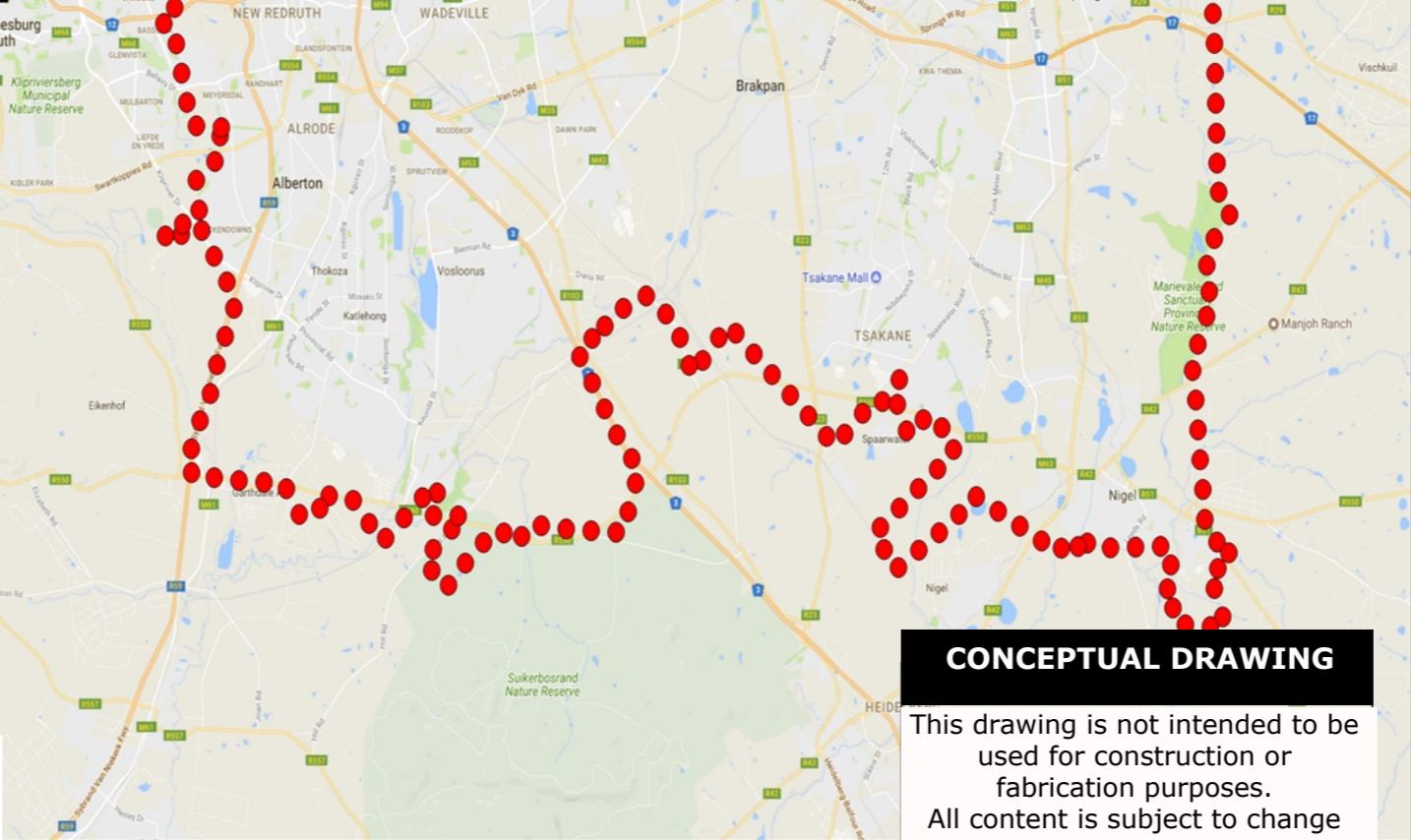
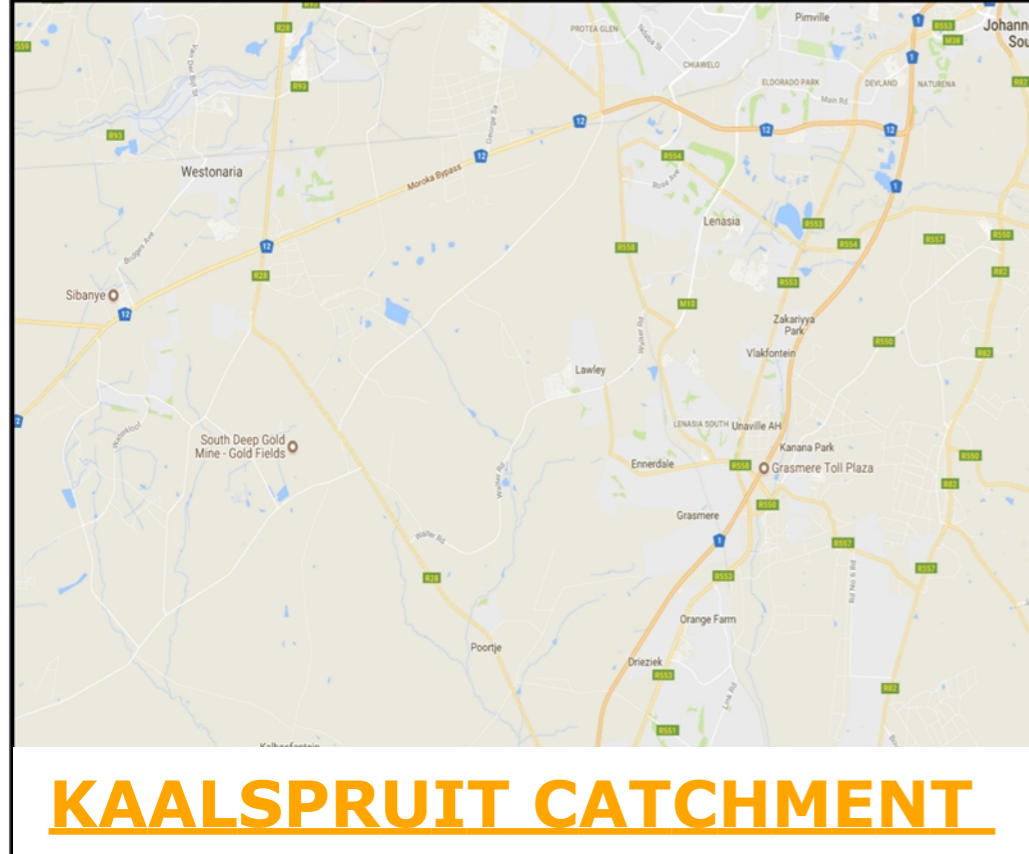
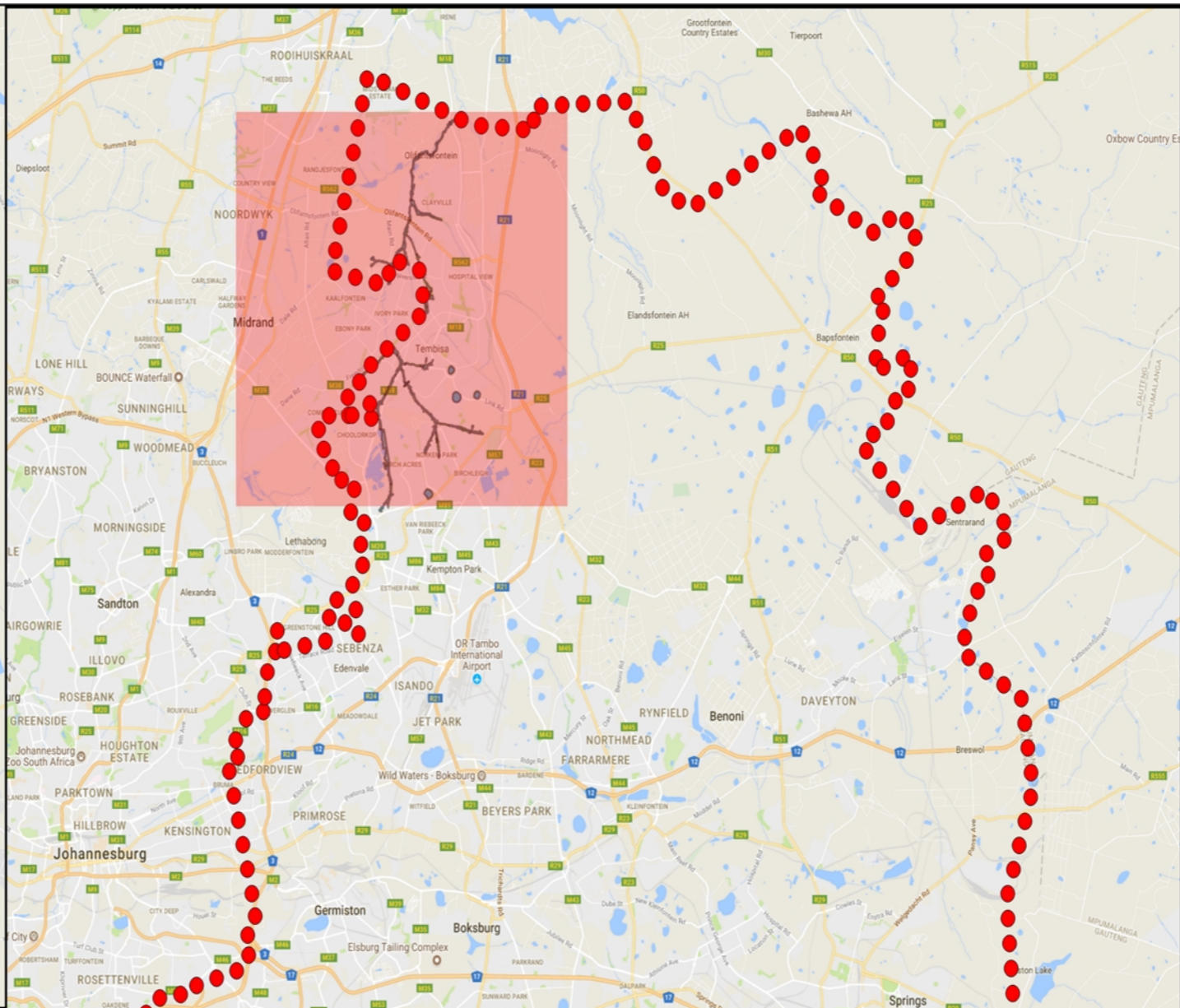
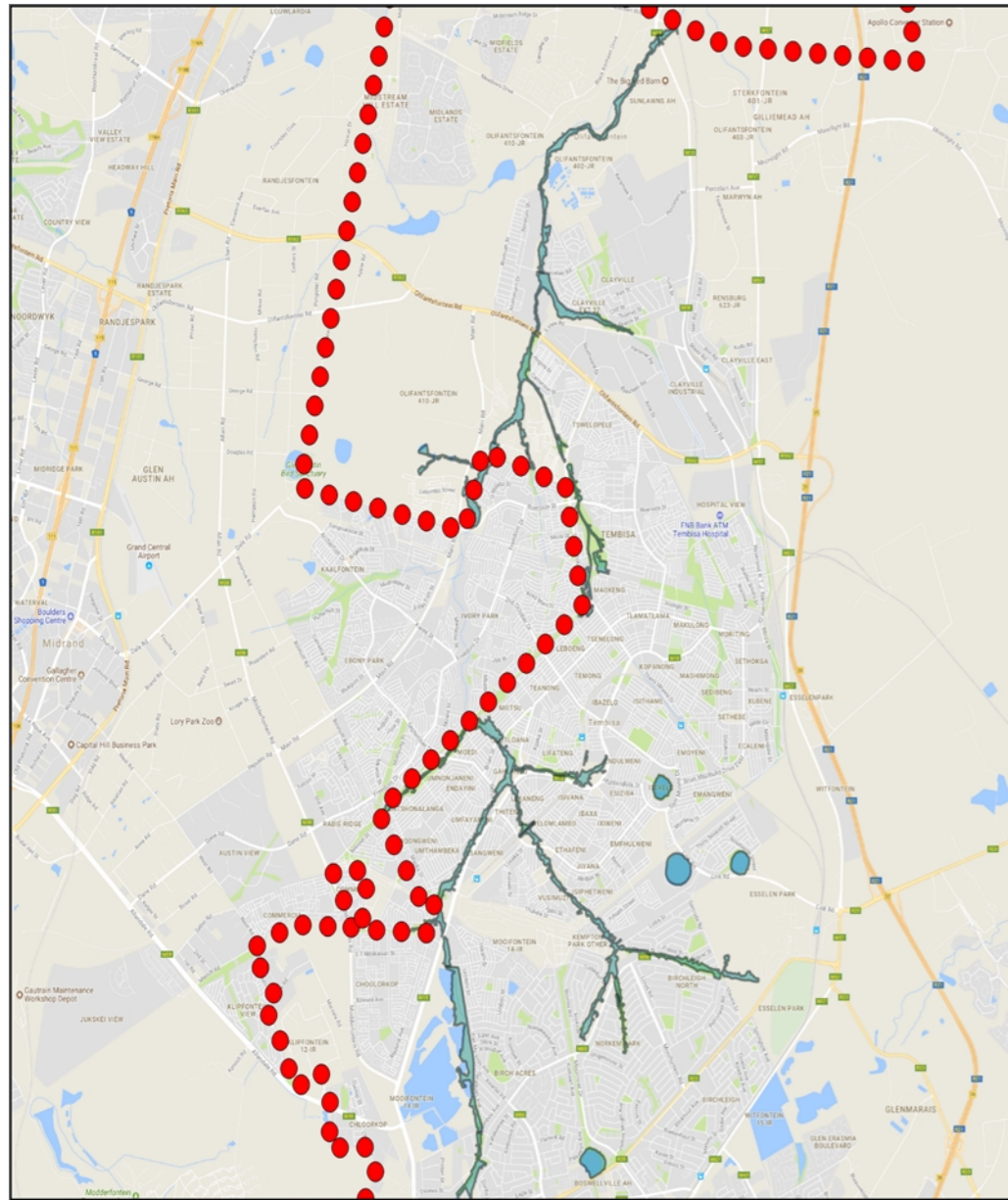
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0181



Cover Page

July 13, 2018

A.01



KAALSPRUIT CATCHMENT

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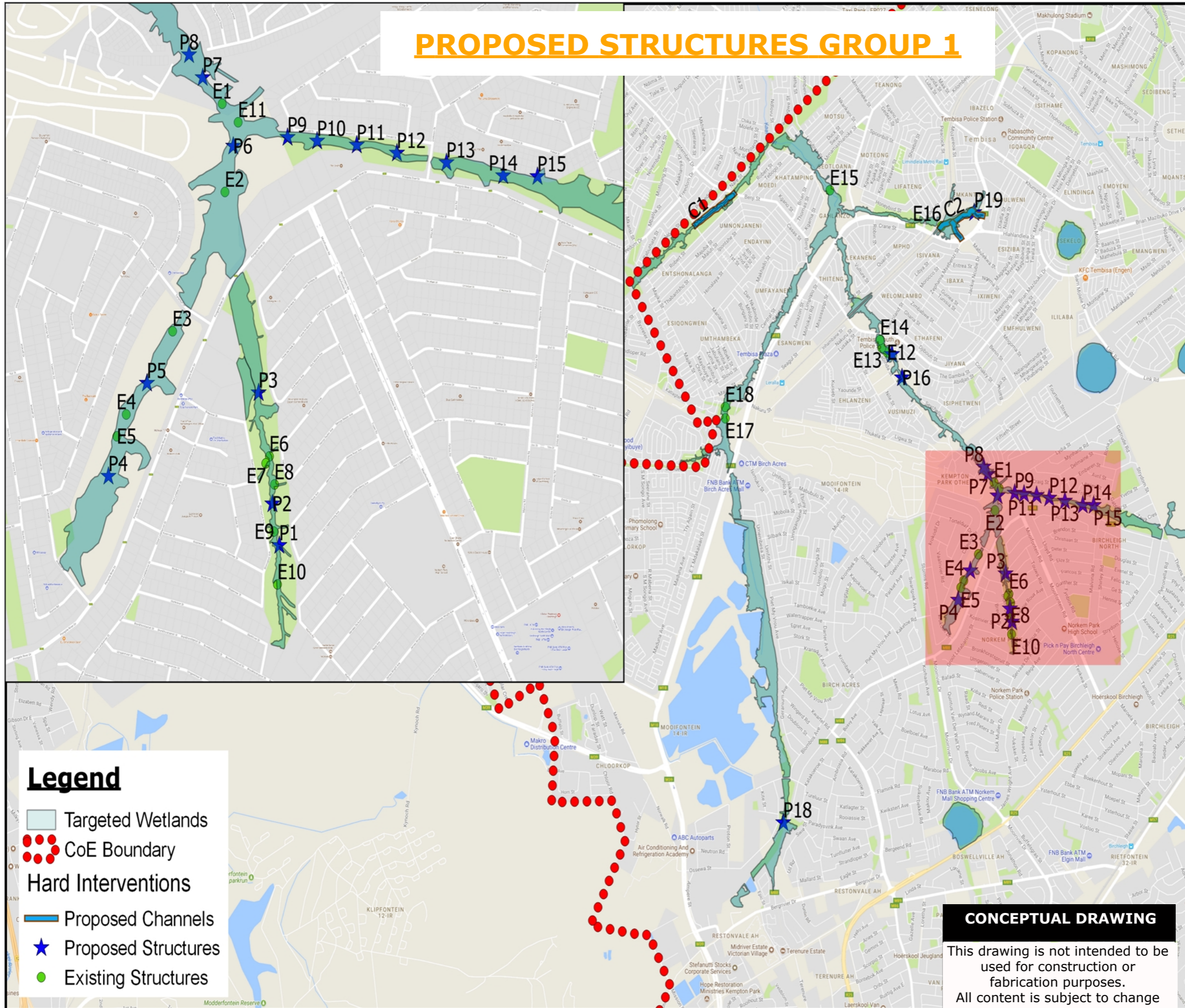


General Arrangement

July 13, 2018

A1.01

PROPOSED STRUCTURES GROUP 1



Legend

- Targeted Wetlands
- CoE Boundary
- Proposed Channels
- Proposed Structures
- Existing Structures

CONCEPTUAL DRAWING

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Proposed and Existing Structures Group 1
 July 13, 2018

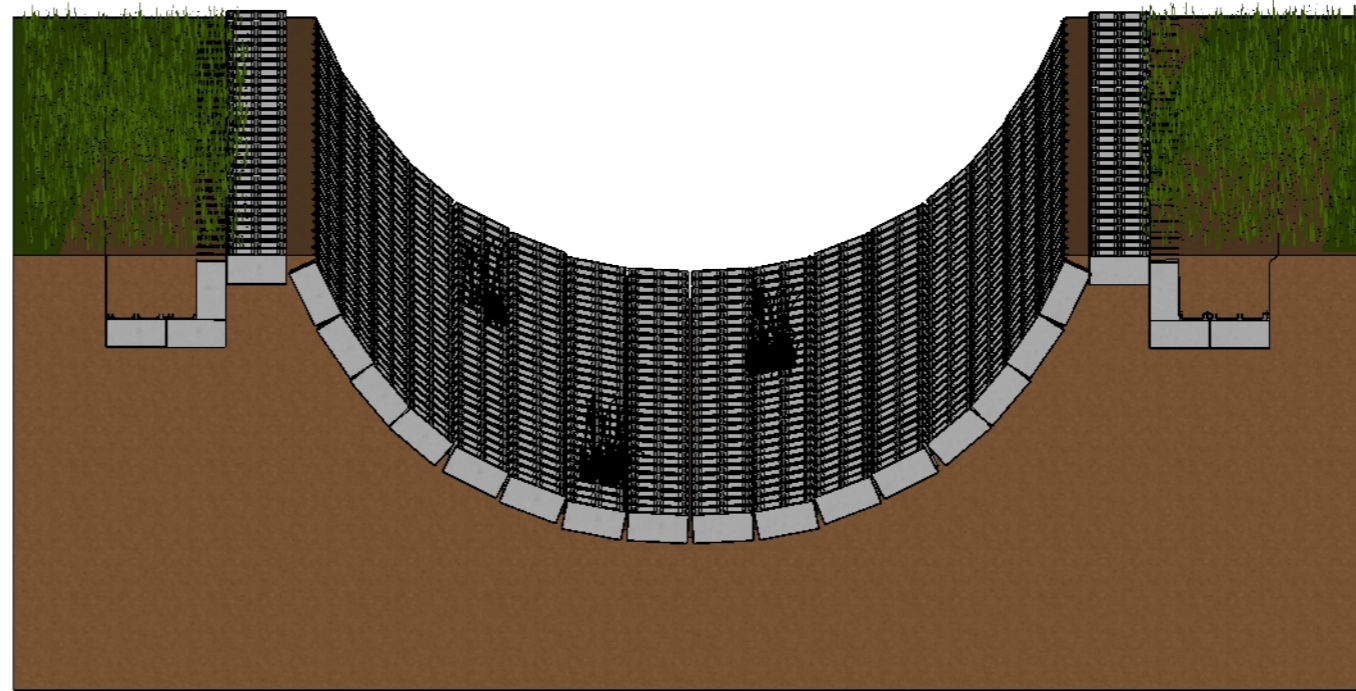
A2.01

ARMORFLEX AND OR MACMAT CHANNEL

STRUCTURE	LATITUDE	LONGITUDE	LENGTH (m)
P1	-26.048820	28.221608	65

Notes:

All the stormwater channels entering the main wetland systems should be formalise to Armorflex channels. Sufficient energy dissipation measure should be constructed before stormwater enters the wetland system. Design connecting the current stormwater outlet and the Armorflex channel should be carefully considered.



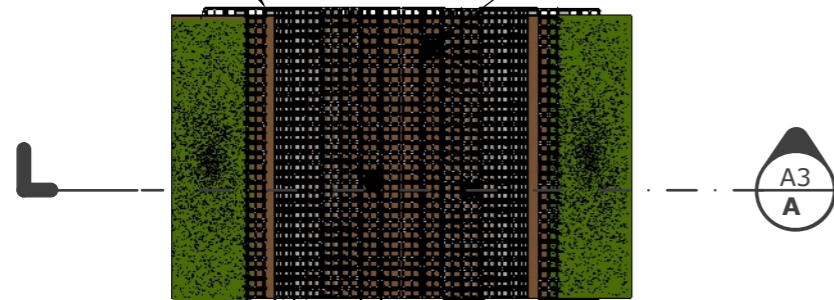
ARMORFLEX CHANNEL

scale: 1:50



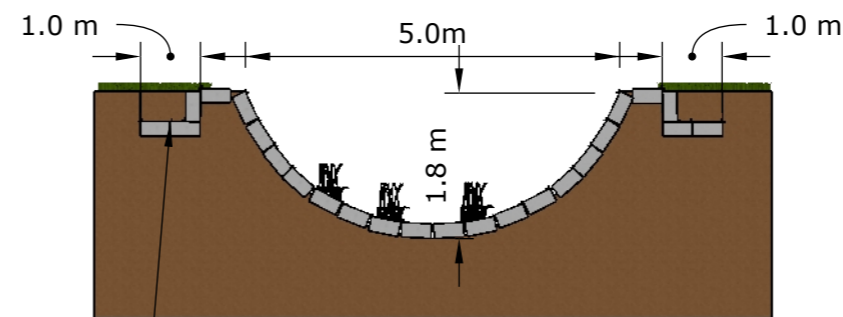
Channel length is approximately 60m

Armorflex block should be seeded



PLAN VIEW

scale: 1:100



CROSS SECTION

scale: 1:100



Anchor trench to be filled with cement stabilised soil and compacted at 95% MOD AASHTO

CONCEPTUAL DRAWING

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Proposed Structure

Group 1.1

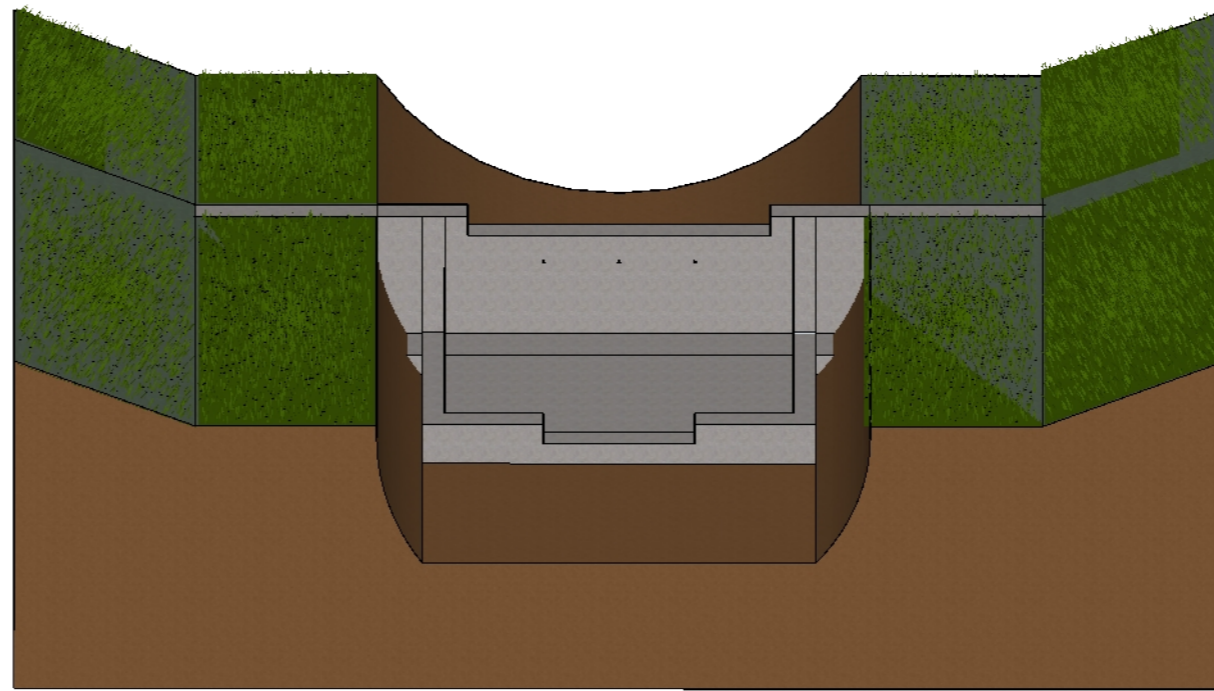
July 13, 2018

CONCRETE WEIR

STRUCTURE	LATITUDE	LONGITUDE	LENGTH (m)
P2	-26.047747	28.221371	16
P11	-26.038467	28.224276	20
P12	-26.038675	28.225659	20
P13	-26.038922	28.227367	20
P15	-26.039281	28.230501	16

Notes:

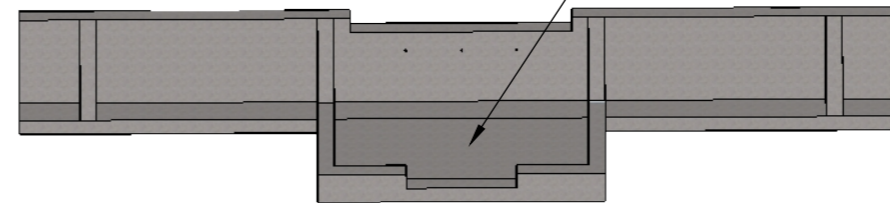
These weirs are not designed for low water pedestrian walkway. Please note that in high flows the water is designed to move over the entire structure and at such time the walkways will not be safe to use. Clear signage should be installed to highlight this. Structure can be optimised during the detailed engineering design phase of the project. Concrete weirs will need to be scaled for each individual point. These sizes should be confirmed in the detailed design.



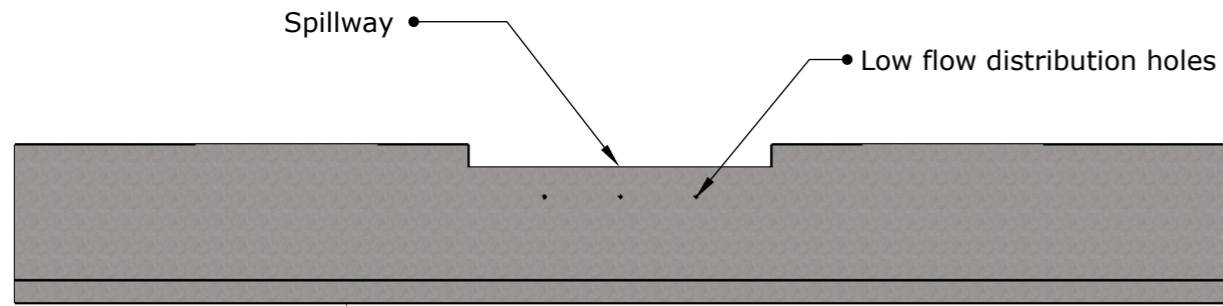
CONCRETE WEIR
scale: 1:100



Plunge pool to help dissipate energy



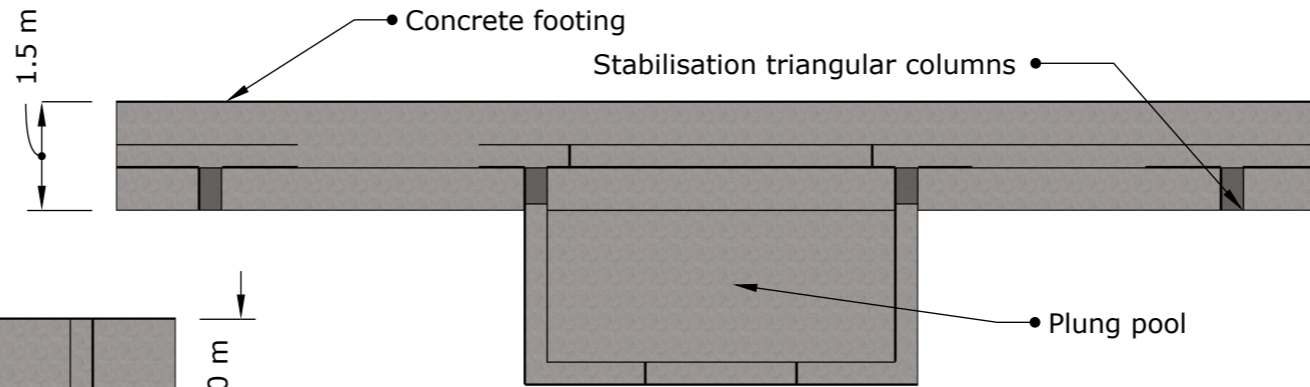
CONCRETE VIEW
scale: 1:NA



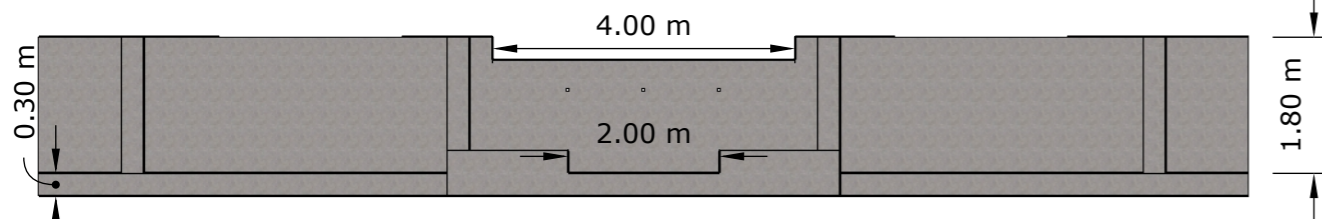
CROSS SECTION (UPSTREAM)
scale: 1:100



Footing foundation needs to be confirmed by geotechnical engineer



PLAN VIEW
scale: 1:100



CROSS SECTION (DOWNSTREAM)
scale: 1:100



CONCEPTUAL DRAWING

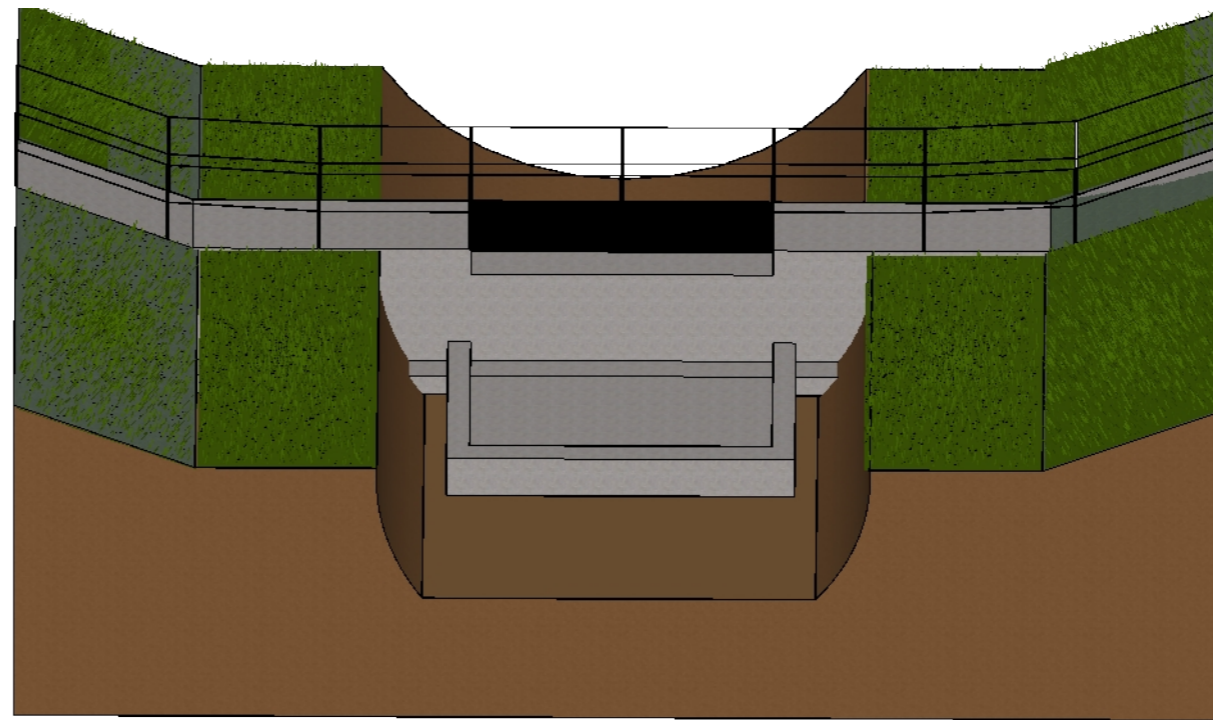
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CONCRETE WEIR WITH WALKWAY

STRUCTURE	LATITUDE	LONGITUDE	LENGTH (m)
P3	-26.044872	28.220895	25
P4	-26.047032	28.215723	16
P5	-26.044625	28.217050	16
P14	-26.039260	28.229319	20

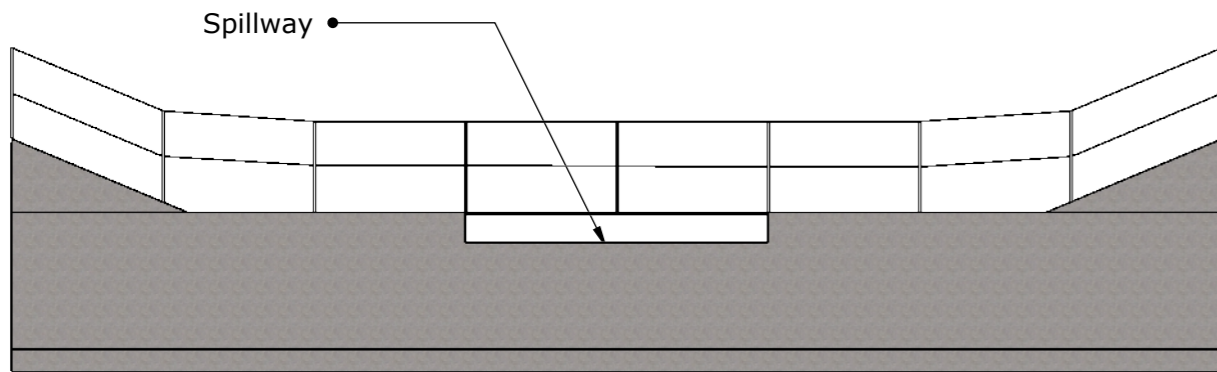
Notes:

All Concrete weir doubles up as a low water pedestrian walkway. Please note that in high flows the water is designed to move over the entire structure and at such time the walkways will not be safe to use. Clear signage should be installed to highlight this. Structure can be optimised during the detailed engineering design phase of the project. Concrete weirs will need to be scaled for each individual point. These sizes should be confirmed in the detailed design.



CONCRETE WEIR WITH WALKWAY

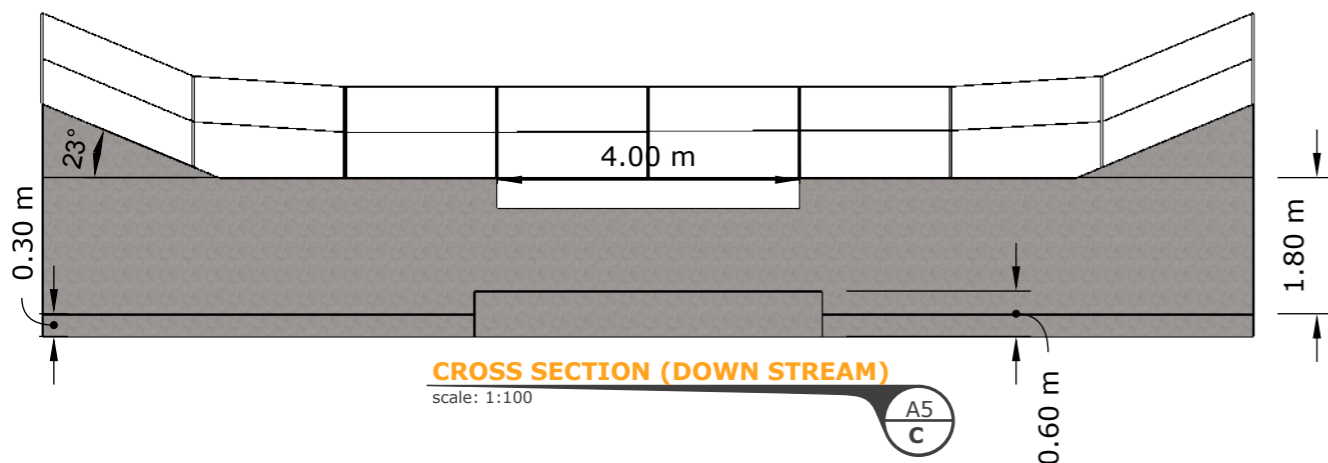
scale: 1:100



CROSS SECTION (UPSTREAM)

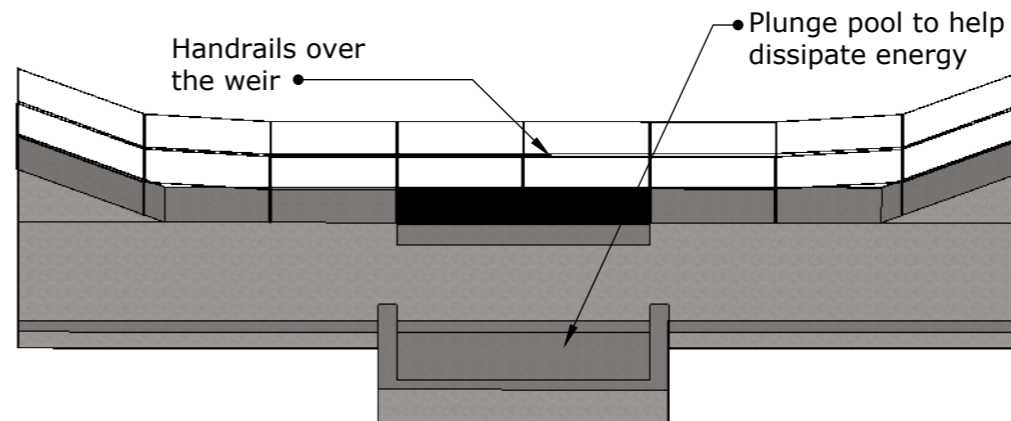
scale: 1:100

Footing foundation needs to be confirmed by geotechnical engineer



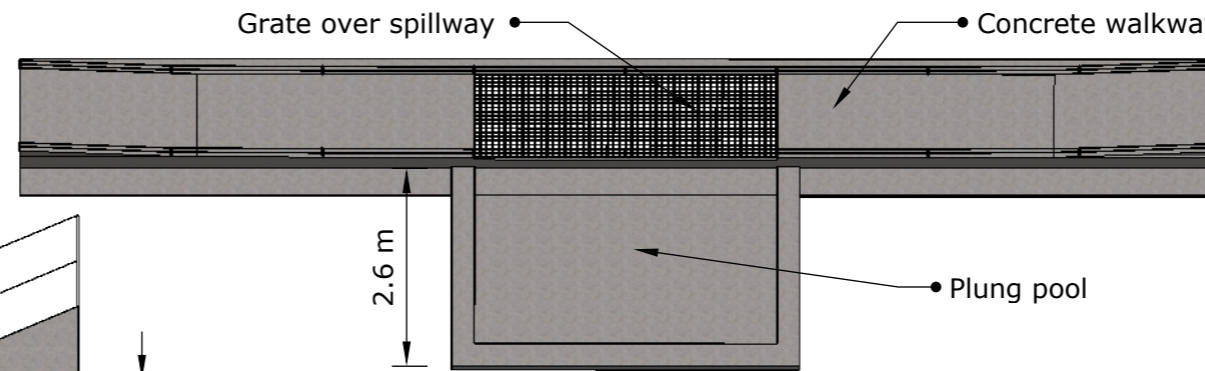
CROSS SECTION (DOWN STREAM)

scale: 1:100



CONCRETE VIEW

scale: 1:NA



PLAN VIEW

scale: 1:100

CONCEPTUAL DRAWING

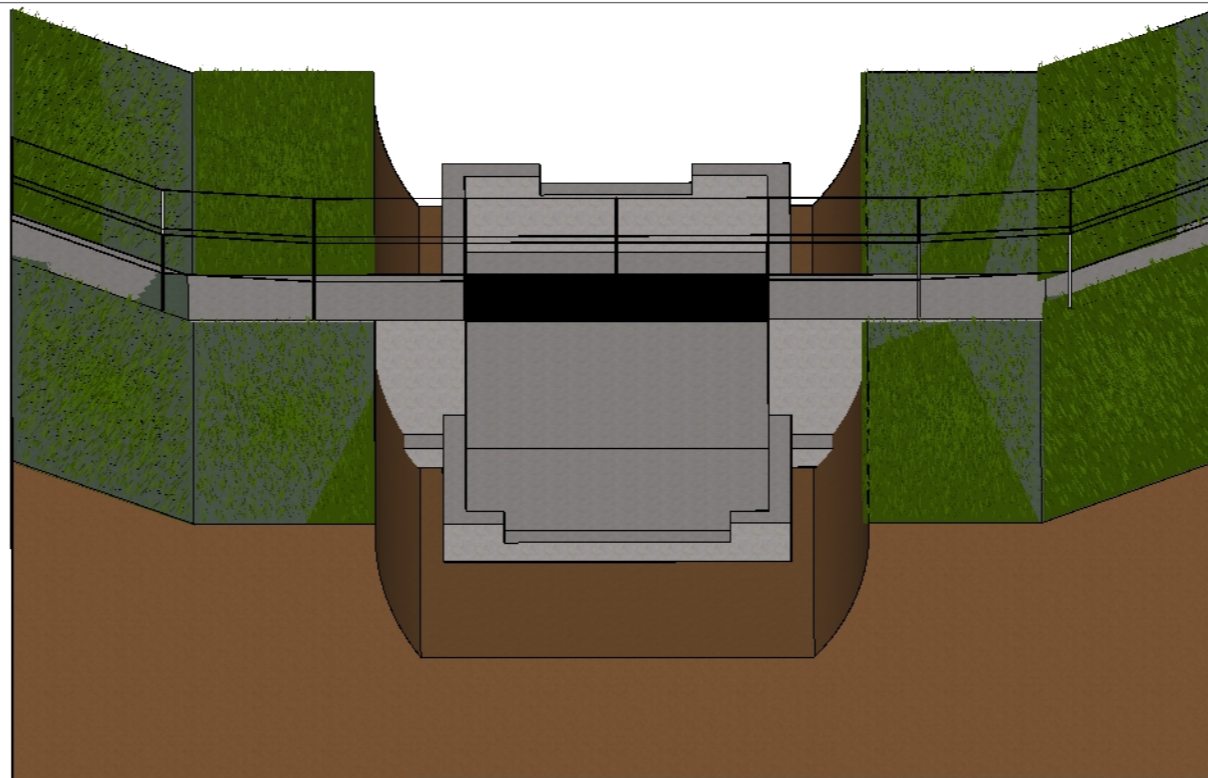
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CONCRETE WEIR WITH WALKWAY AND DROP INLET

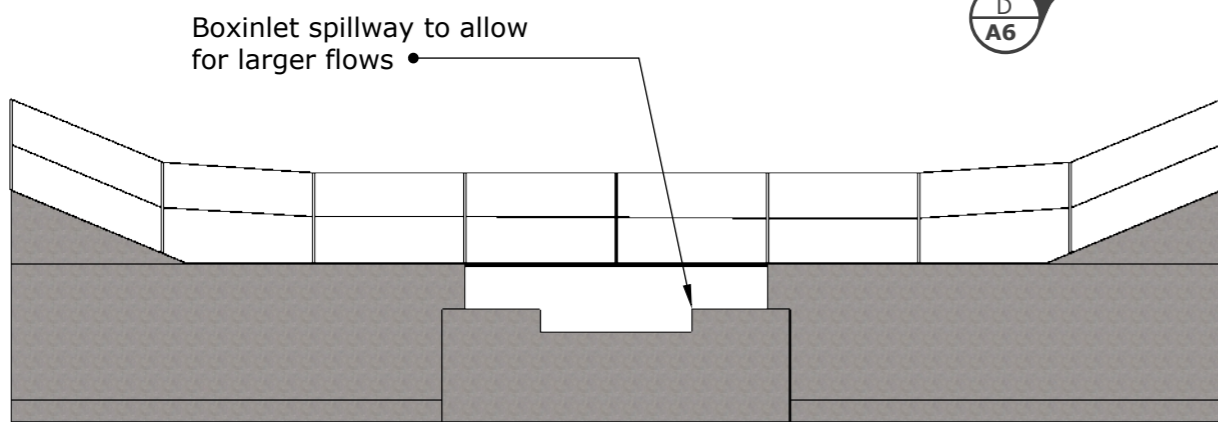
STRUCTURE	LATITUDE	LONGITUDE	LENGTH (m)
P6	-26.038496	28.220022	30
P7	-26.036724	28.218970	30
P8	-26.036132	28.218499	30
P9	-26.038270	28.221891	20
P10	-26.038363	28.222911	20

Notes:

All Concrete weir doubles up as a low water pedestrian walkway. Please note that in high flows the water is designed to move over the entire structure and at such time the walkways will not be safe to use. Clear signage should be installed to highlight this. Structure can be optimised during the detailed engineering design phase of the project. Concrete weirs will need to be scaled for each individual point. These sizes should be confirmed in the detailed design.



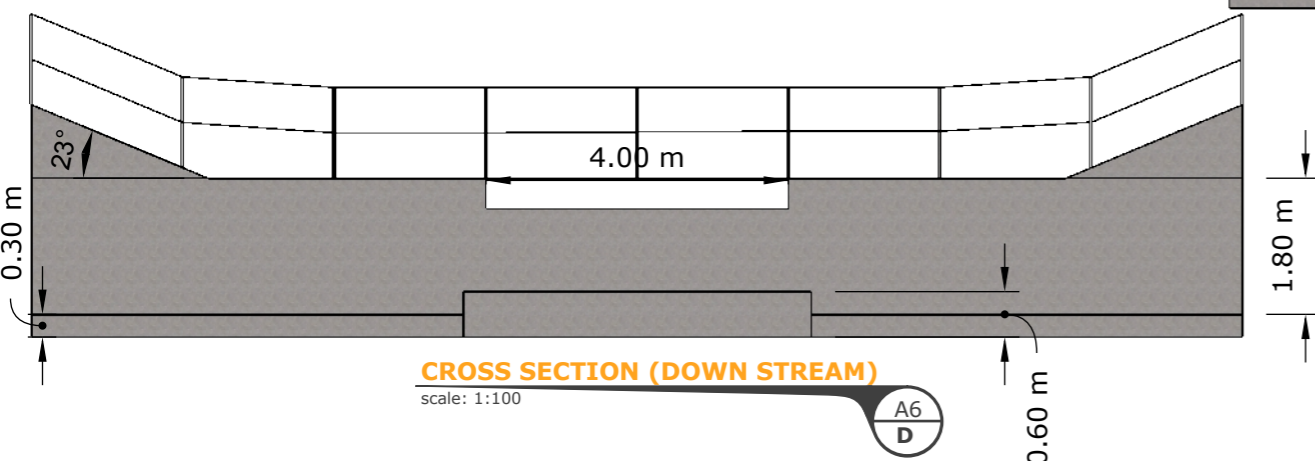
CONCRETE WEIR WITH WALKWAY



CROSS SECTION (UPSTREAM)

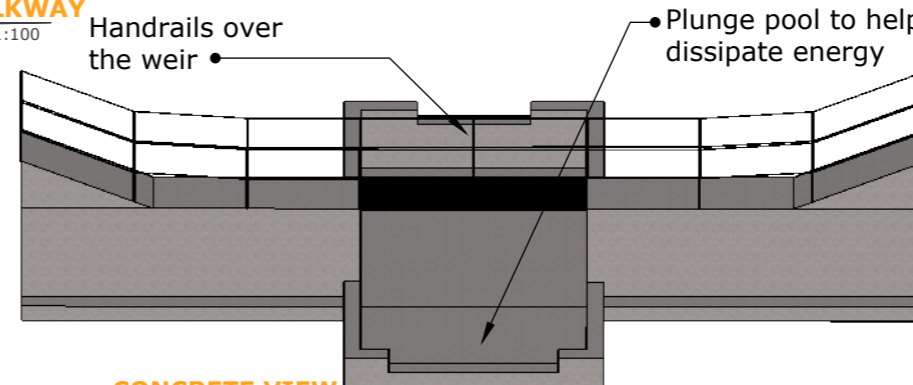
scale: 1:100

Footing foundation needs to be confirmed by geotechnical engineer



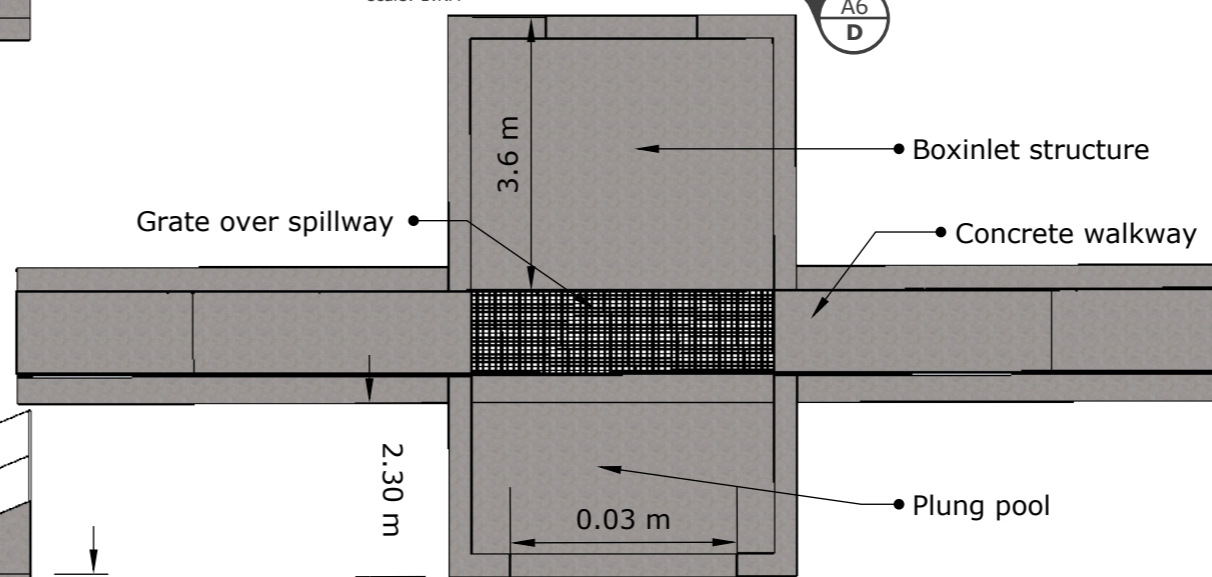
CROSS SECTION (DOWN STREAM)

scale: 1:100



CONCRETE VIEW

scale: 1:NA



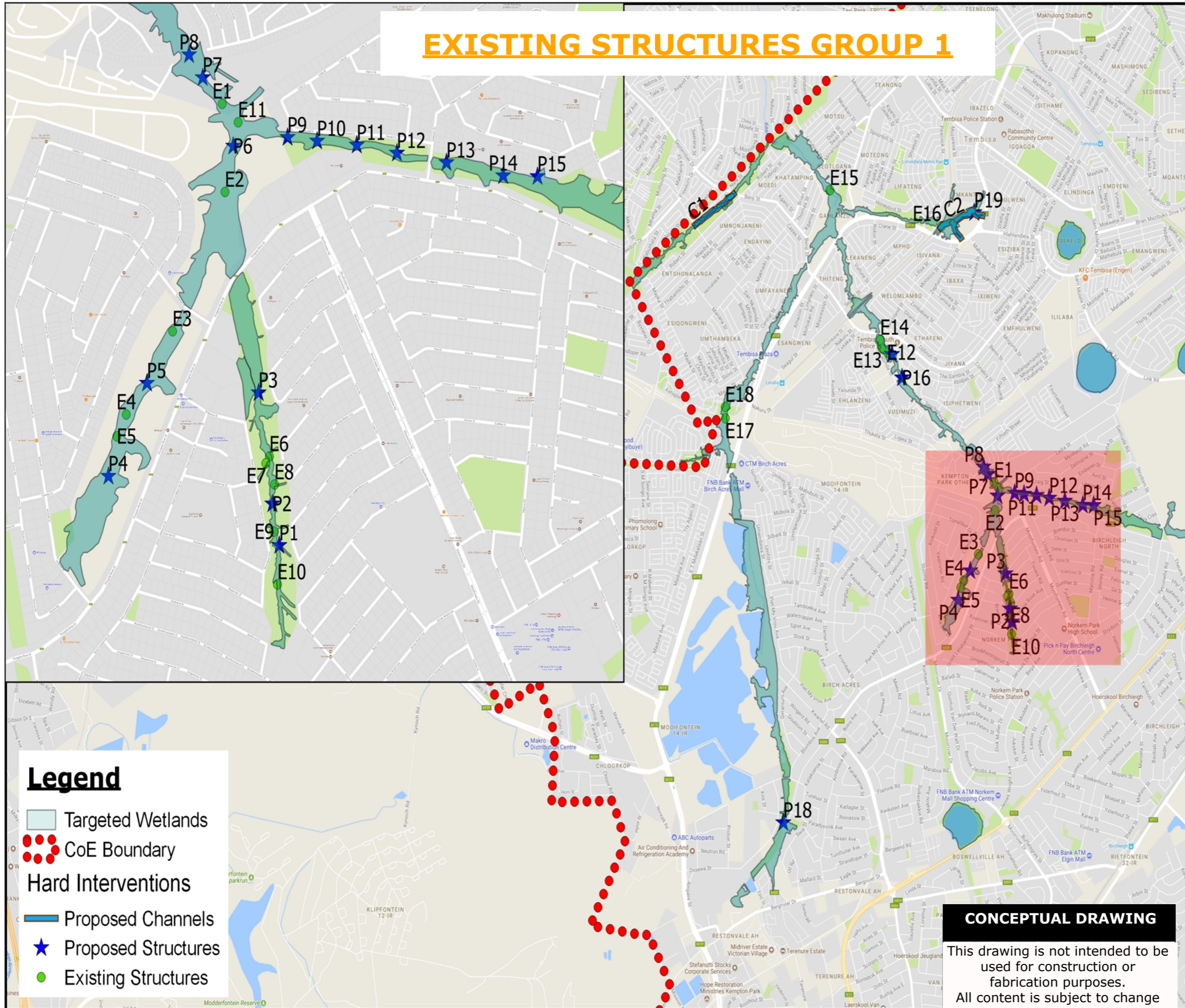
PLAN VIEW

scale: 1:100

CONCEPTUAL DRAWING

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EXISTING STRUCTURES GROUP 1



Legend

- Targeted Wetlands
- CoE Boundary
- Hard Interventions**
- Proposed Channels
- Proposed Structures
- Existing Structures



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Existing Structures
Group 1
 July 13, 2018

A7.01

EXISTING STRUCTURES MAINTENANCE GROUP 1



STRUCTURE	LATITUDE	LONGITUDE	COMMENT	MAINTENANCE
E1	-26.037398	28.219640	Concrete weir, good condition	Extend wingwall a further 10m with reinforced concrete wall
E2	-26.039679	28.219735	Large gabion structure, good condition	Cap gabions with concrete, add right wingwall further 10m
E3	-26.043281	28.217932	Gabion structure, fair condition	Concrete cap gabion baskets add wing walls 5m on boths sides of structure
E4	-26.045433	28.216335	Gabion structure, fair condition	Concrete cap gabion baskets add wing walls 5m on boths sides of structure
E5	-26.045998	28.216012	Gabion structure, fair condition	Concrete cap gabion baskets add wing walls 5m on boths sides of structure
E6	-26.046516	28.221269	Concrete weir, good condition	Extend wingwall a further 5m with reinforced concrete wall on both side structure
E7	-26.046697	28.221142	Gabion stormwater channel, poor condition	Replace gabions with Armoflex or MacMat channel
E8	-26.047243	28.221443	Gabion stormwater channel, poor condition	Replace gabions with Armoflex or MacMat channel
E9	-26.048462	28.221418	Concrete weir, poor condition	Extend wingwall a further 5m with reinforced concrete wall on both side structure
E10	-26.049828	28.221544	Large gabion structure with walkway, fair condition	Concrete cap gabions as well as reinforce foundations
E11	-26.037877	28.220190	Concrete weir, poor condition	Extend wingwall a further 5m with reinforced concrete wall on both side structure

Notes:

All existing structure where designed by other consultants. In the next phase of the project detailed designs of the existing stuctures with the maintenance measure should be undertaken to get exact construction volumes. Not all intervencion could be found. Some areas had access issues and arge portion of intervention where never constructed.

CONCEPTUAL DRAWING

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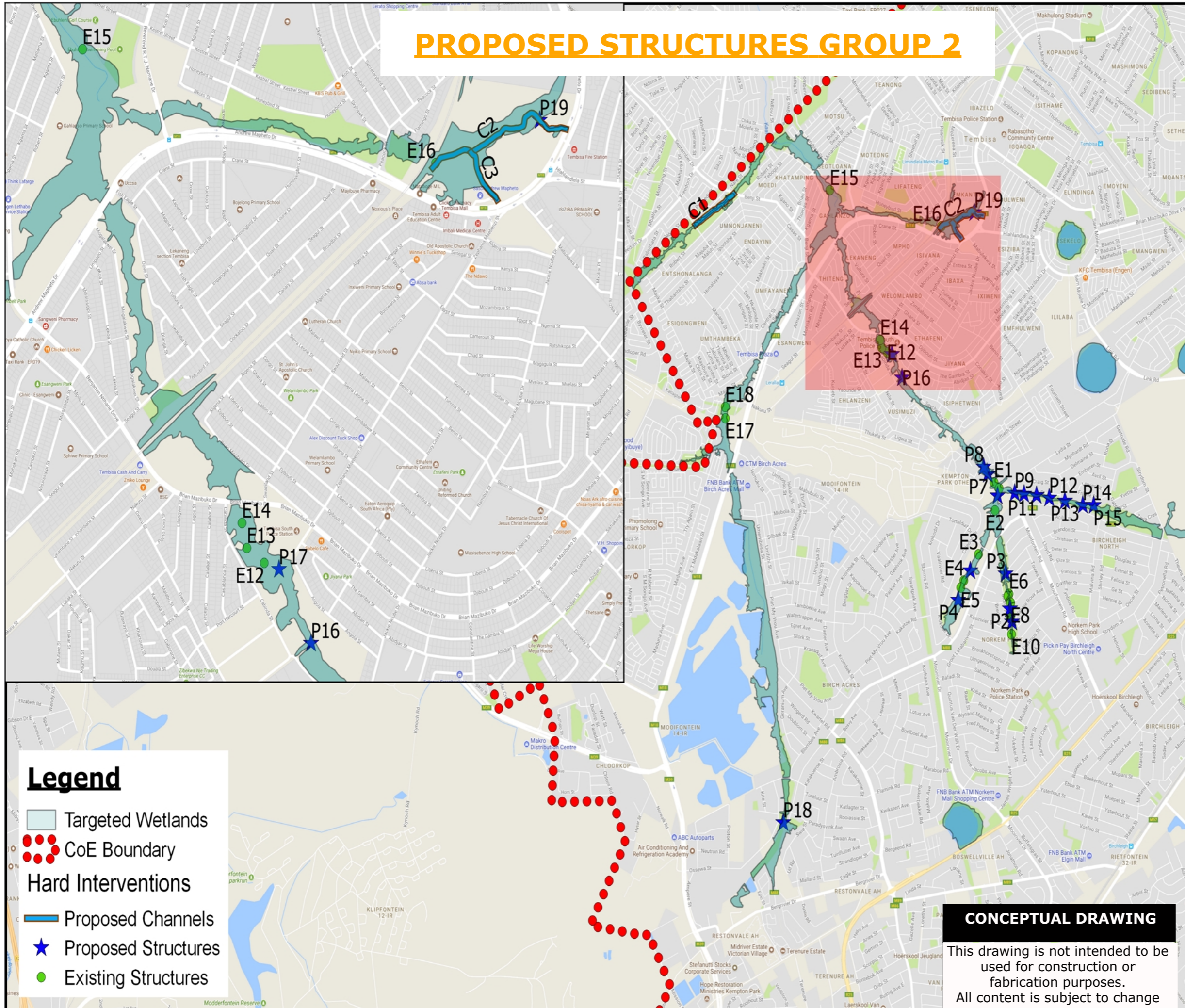
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Existing Structures
Maintenance Group 1
July 13, 2018

A8.01

PROPOSED STRUCTURES GROUP 2



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Proposed and Existing
Structures Group 2
 July 13, 2018

CONCEPTUAL DRAWING
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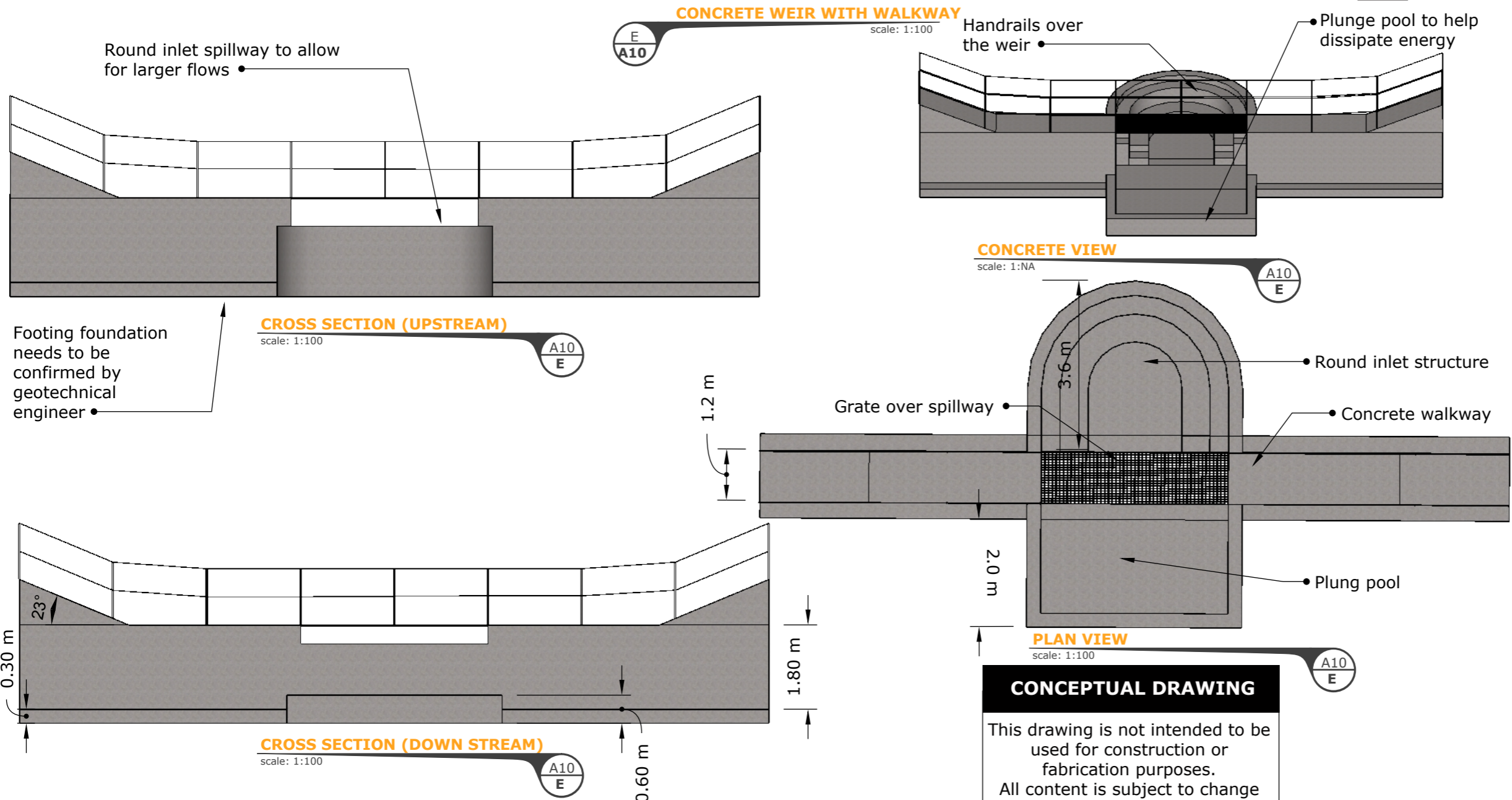
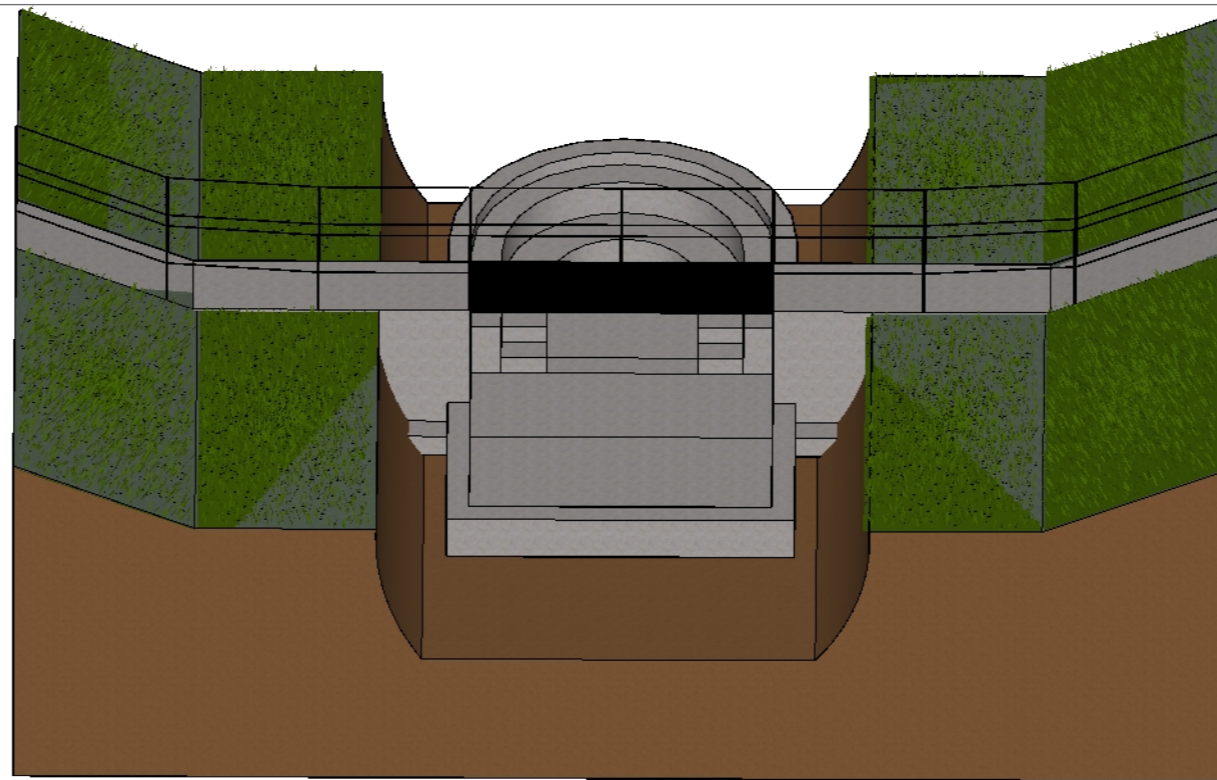
A9.01

CONCRETE WEIR WITH WALKWAY AND ROUND DROP INLET

STRUCTURE	LATITUDE	LONGITUDE	LENGTH (m)
P16	-26.028830	28.209602	30
P17	-26.026916	28.208499	30
P19	-26.015302	28.217478	30

Notes:

All Concrete weir doubles up as a low water pedestrian walkway. Please note that in high flows the water is designed to move over the entire structure and at such time the walkways will not be safe to use. Clear signage should be installed to highlight this. Structure can be optimised during the detailed engineering design phase of the project. Concrete weirs will need to be scaled for each individual point. These sizes should be confirmed in the detailed design.



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Proposed Structure
Group 2.1
July 13, 2018

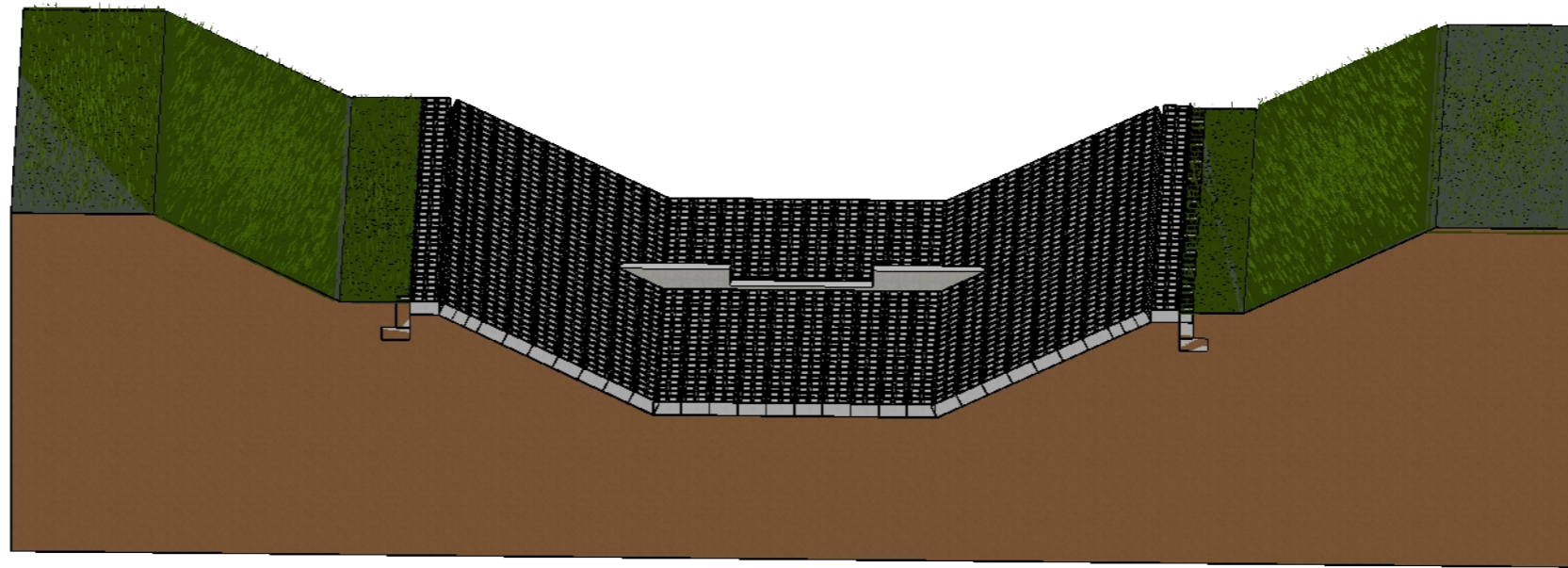
A10.01

ARMORFLEX AND OR MACMAT CHANNEL TWO STEPED LEVELS

STRUCTURE	LENGTH (m)
C2	600
C3	200

Notes:

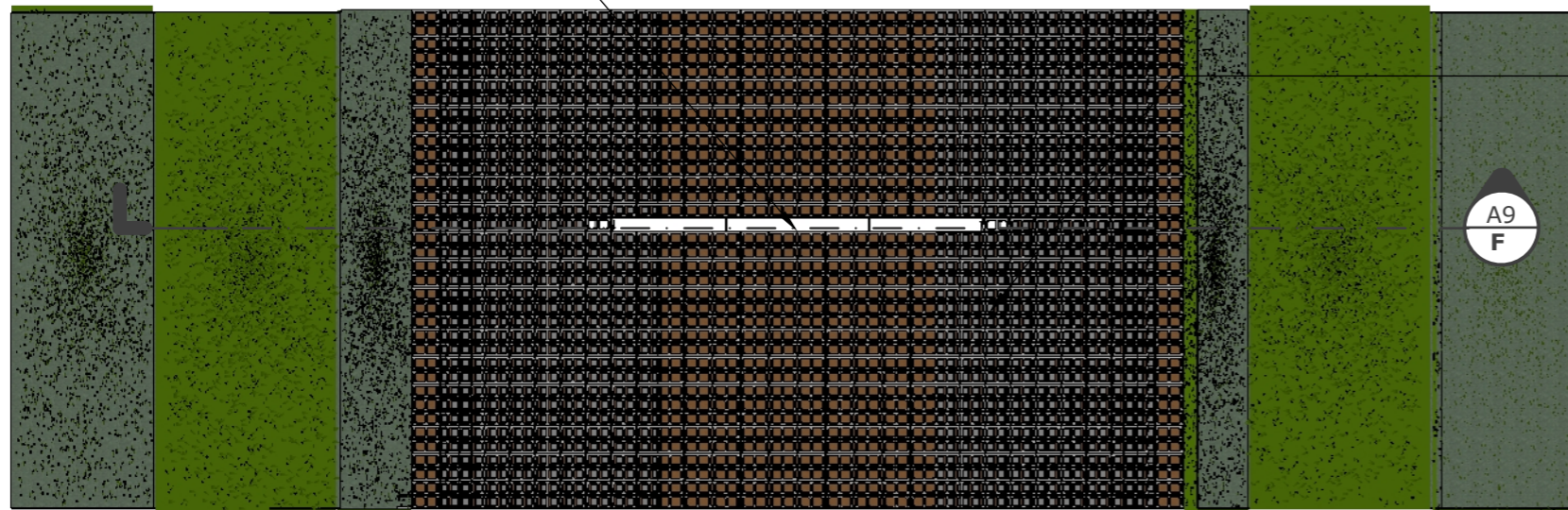
All the stormwater channels entering the main wetland systems should be formalise to Armorflex channels. Sufficient energy dissipation measure should be constructed before stormwater enters the wetland system.



ARMORFLEX CHANNEL

scale: 1:50

Small weirs to reduce flow velocity



Armorflex block should be seeded



CONCEPTUAL DRAWING

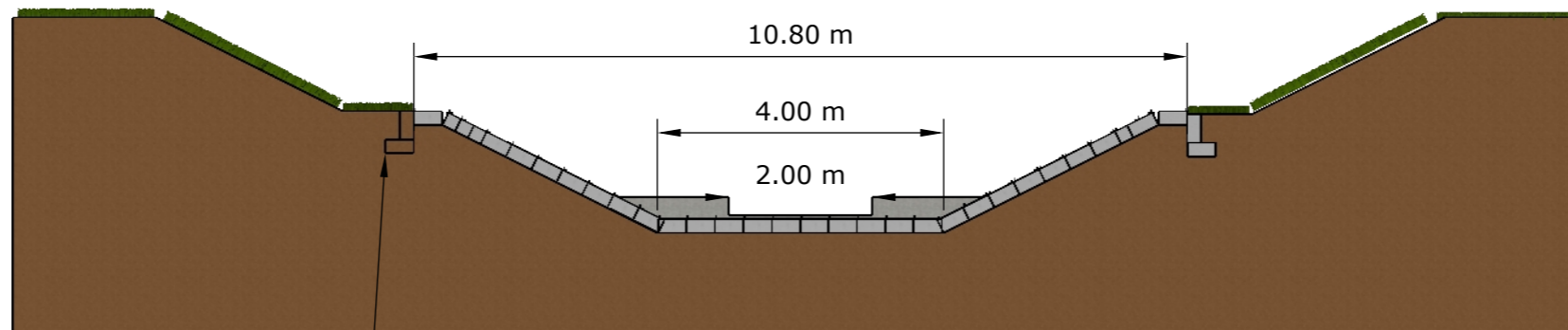
This drawing is not intended to be used for construction or fabrication purposes. All content is subject to change

PLAN VIEW

scale: 1:100



Anchor trench to be filled with cement stabilised soil and compacted at 95% MOD AASHTO



CROSS SECTION

scale: 1:100

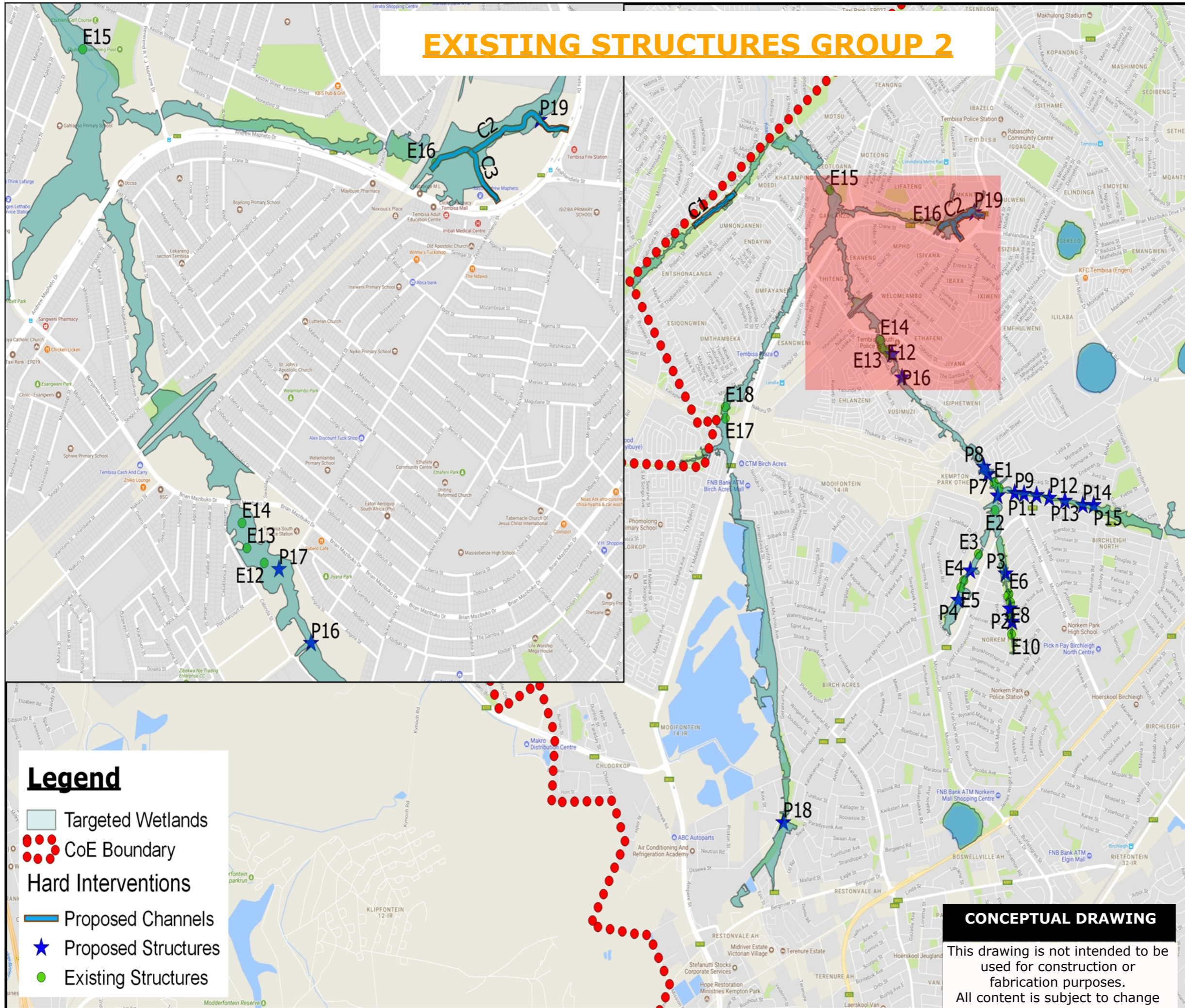


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Proposed Structure
Group 2.2
 July 13, 2018

EXISTING STRUCTURES GROUP 2



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Existing Structures
Group 2
 July 13, 2018

A12.01

EXISTING STRUCTURES MAINTENANCE GROUP 2



STRUCTURE	LATITUDE	LONGITUDE	COMMENT	MAINTENANCE
E12	-26.026751	28.207989	Large concrete weir, good condition	Extend wingwall a further 5m with reinforced concrete wall on both sides of structure
E13	-26.026366	28.207391	Large concrete weir, good condition	Extend wingwall a further 5m with reinforced concrete wall on both sides of structure
E14	-26.025717	28.207225	Large concrete weir, good condition	Extend wingwall a further 5m with reinforced concrete wall on both sides of structure
E15	-26.013464	28.201733	Large low water crossing, fair condition	General concrete repairs

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Existing Structures
Maintenance Group 2
July 13, 2018

Notes:

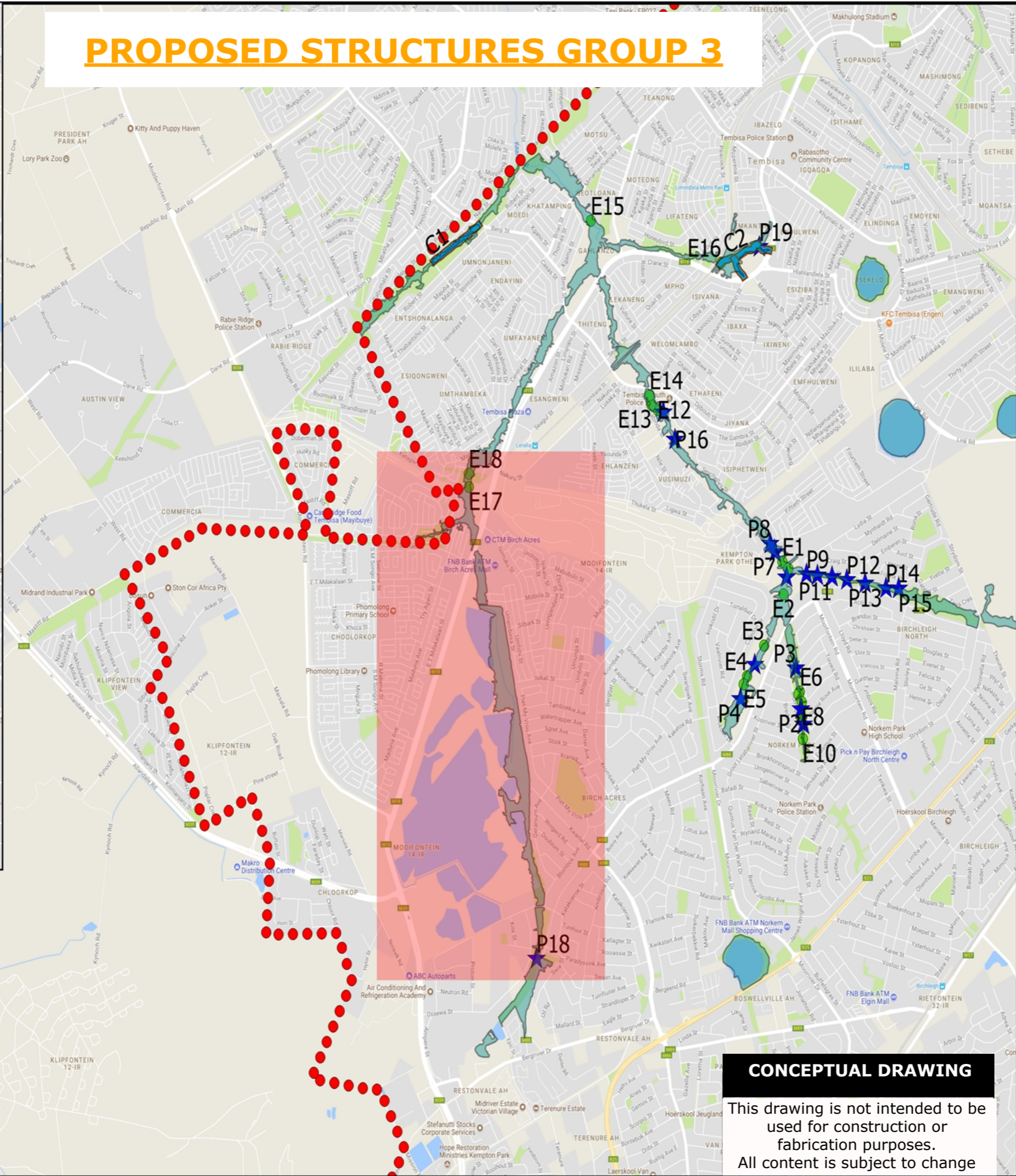
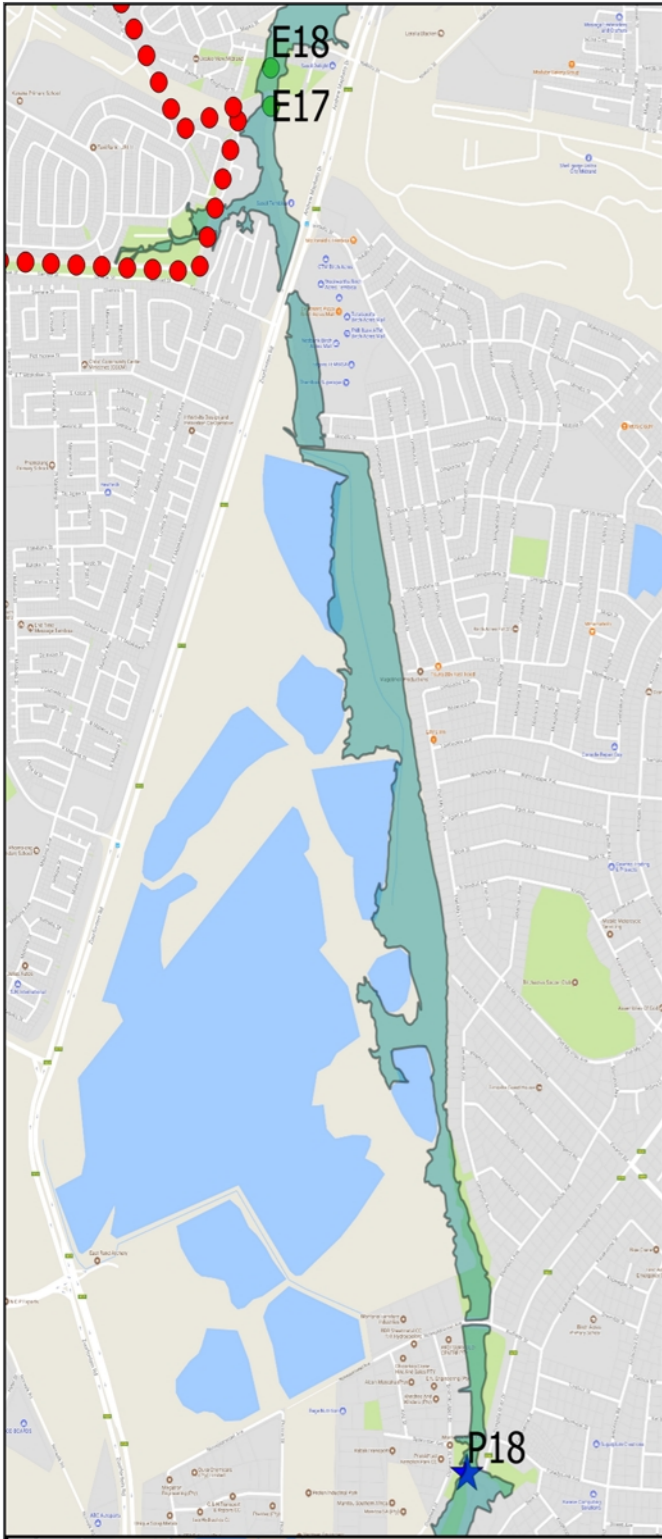
All existing structure where designed by other consultants. In the next phase of the project detailed designs of the existing structures with the maintenance measure should be undertaken to get exact construction volumes. Not all intervention could be found. Some areas had access issues and large portion of intervention where never constructed.

CONCEPTUAL DRAWING

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A13.01

PROPOSED STRUCTURES GROUP 3



- Legend**
- Targeted Wetlands
 - CoE Boundary
 - Hard Interventions
 - Proposed Channels
 - Proposed Structures
 - Existing Structures

CONCEPTUAL DRAWING

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Proposed and Existing Structures Group 3
 July 13, 2018

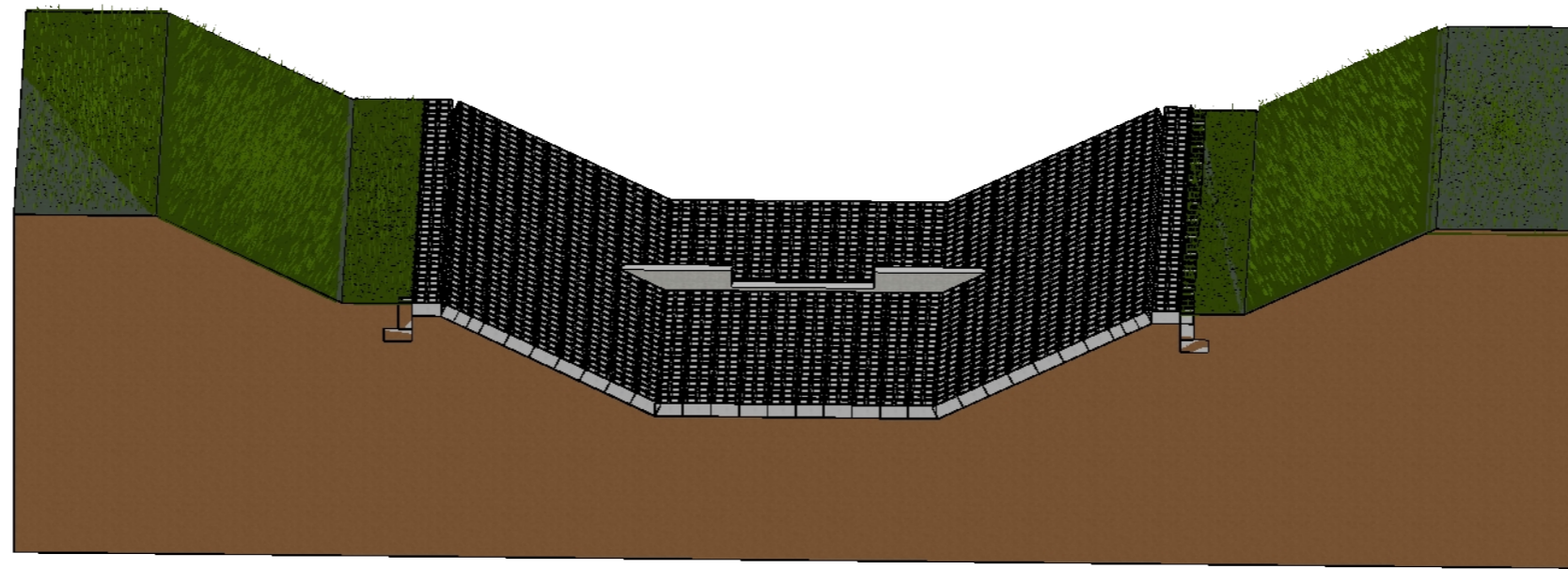
A14.01

ARMORFLEX AND OR MACMAT CHANNEL TWO STEPED LEVELS

STRUCTURE	LENGTH (m)
C1	580

Notes:

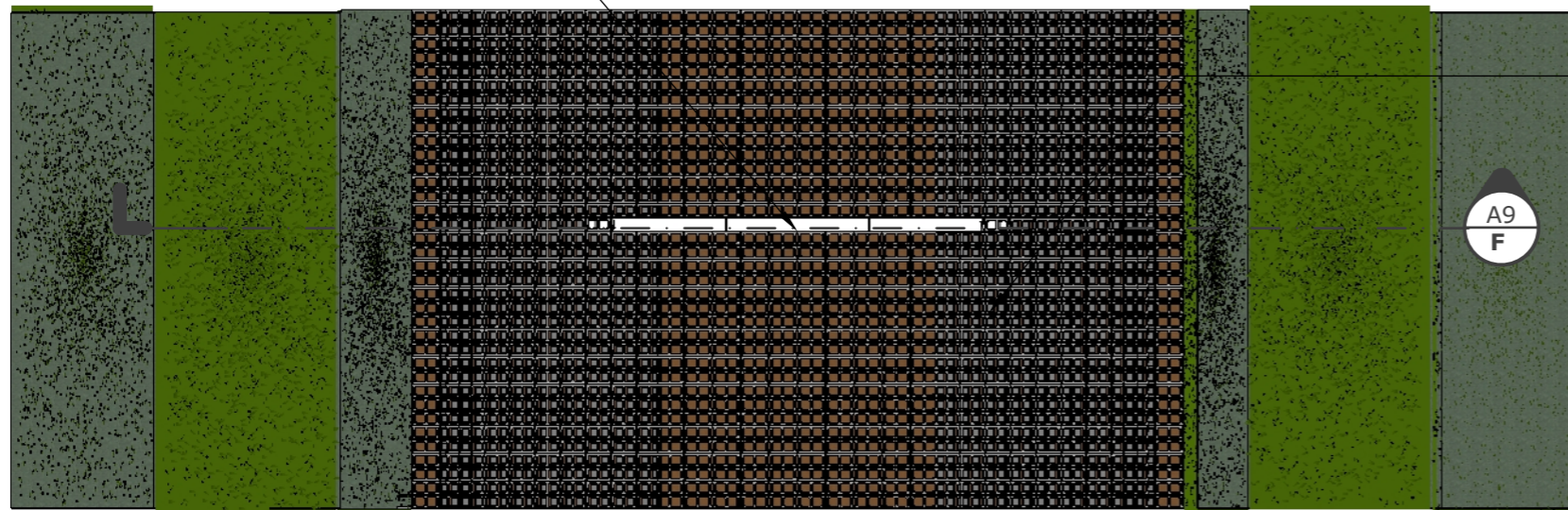
All the stormwater channels entering the main wetland systems should be formalise to Armorflex channels. Sufficient energy dissipation measure should be constructed before stormwater enters the wetland system.



ARMORFLEX CHANNEL

scale: 1:50

Small weirs to reduce flow velocity



Armorflex block should be seeded



CONCEPTUAL DRAWING

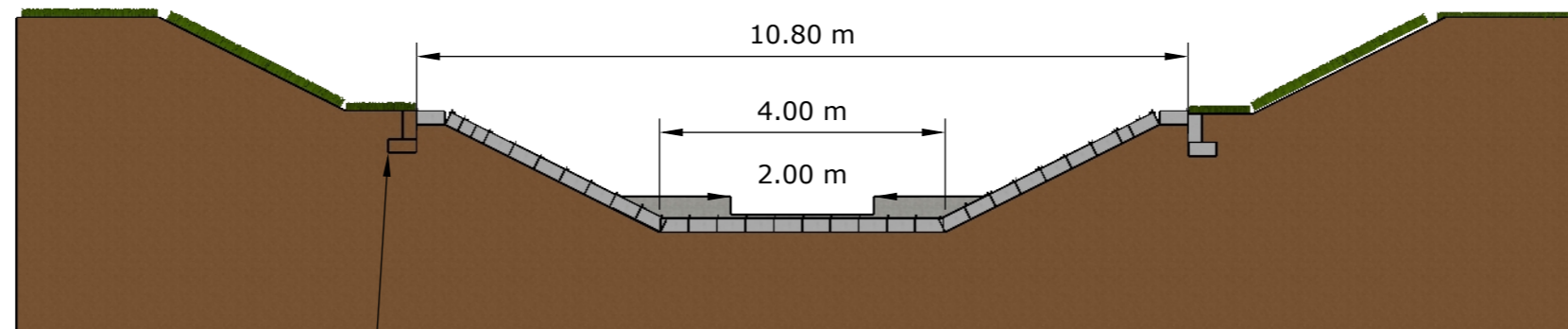
This drawing is not intended to be used for construction or fabrication purposes. All content is subject to change

PLAN VIEW

scale: 1:100



Anchor trench to be filled with cement stabilised soil and compacted at 95% MOD AASHTO



CROSS SECTION

scale: 1:100



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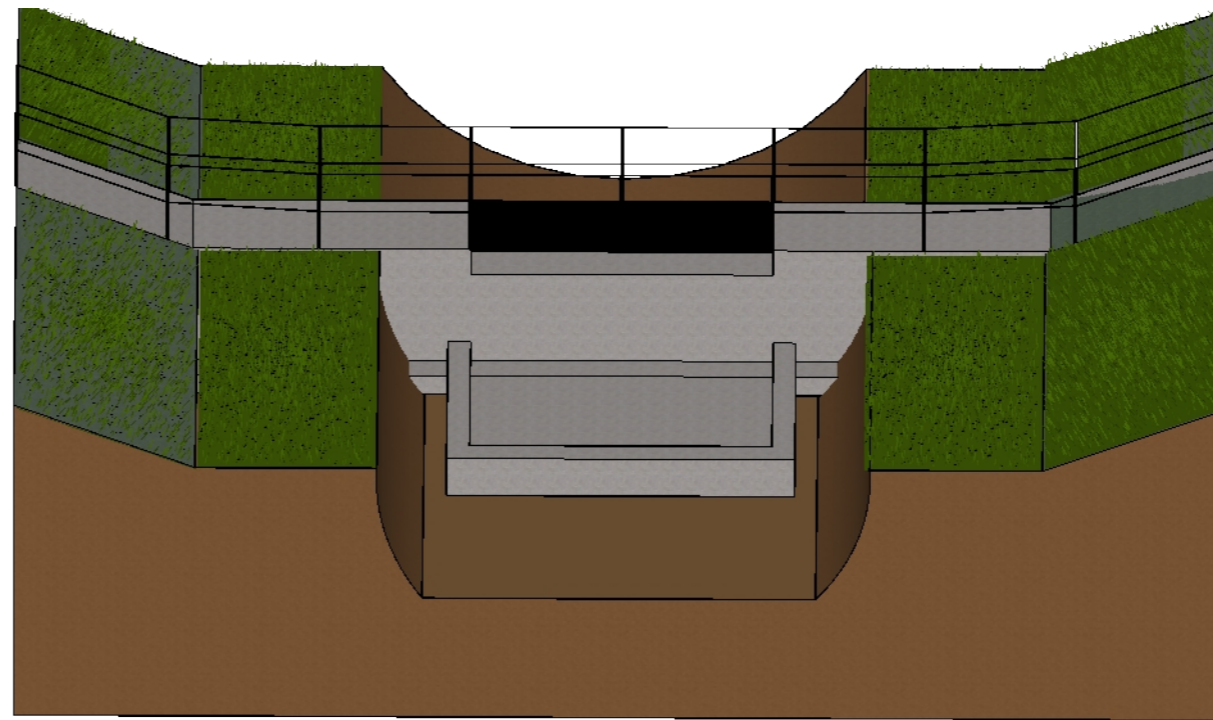
Proposed Structure
Group 3.1
 July 13, 2018

CONCRETE WEIR WITH WALKWAY

STRUCTURE	LATITUDE	LONGITUDE	LENGTH (m)
P18	-26.065250	28.196652	30

Notes:

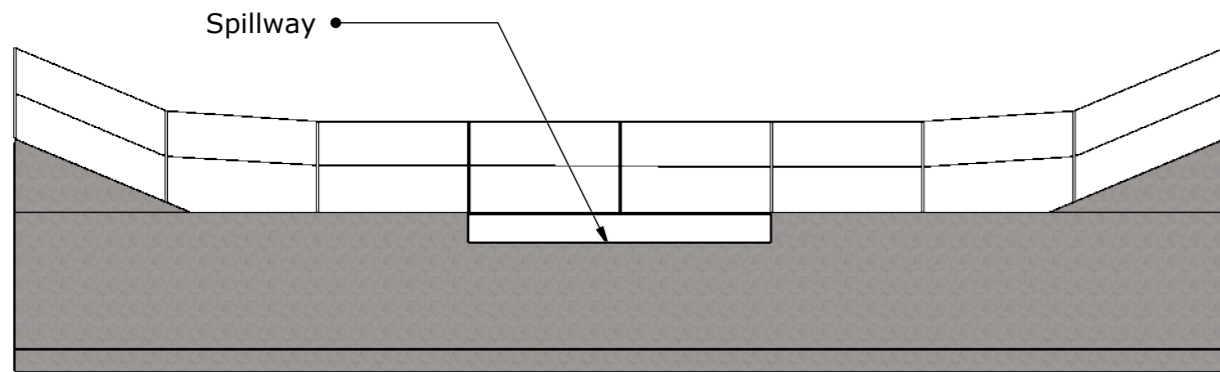
All Concrete weir doubles up as a low water pedestrian walkway. Please note that in high flows the water is designed to move over the entire structure and at such time the walkways will not be safe to use. Clear signage should be installed to highlight this. Structure can be optimised during the detailed engineering design phase of the project. Concrete weirs will need to be scaled for each individual point. These sizes should be confirmed in the detailed design.



CONCRETE WEIR WITH WALKWAY

scale: 1:100

A16
C

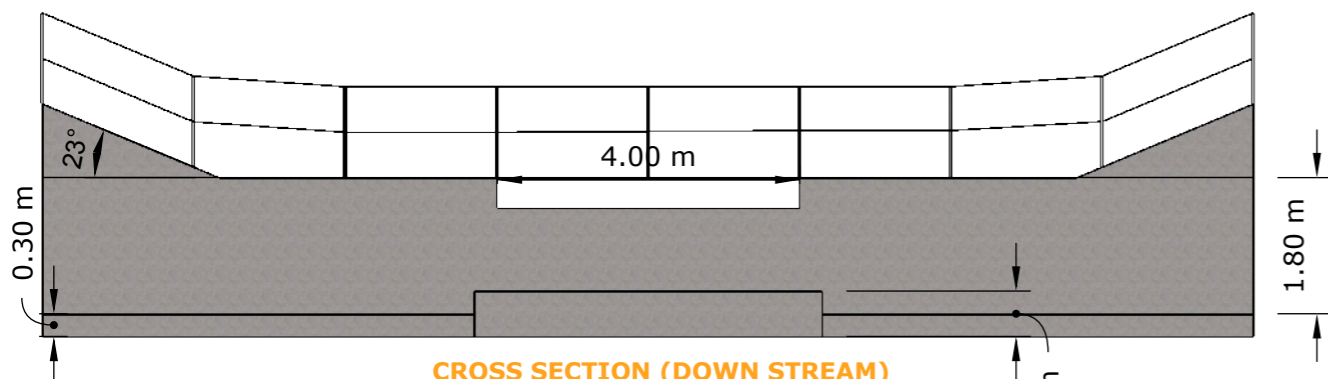


CROSS SECTION (UPSTREAM)

scale: 1:100

A16
C

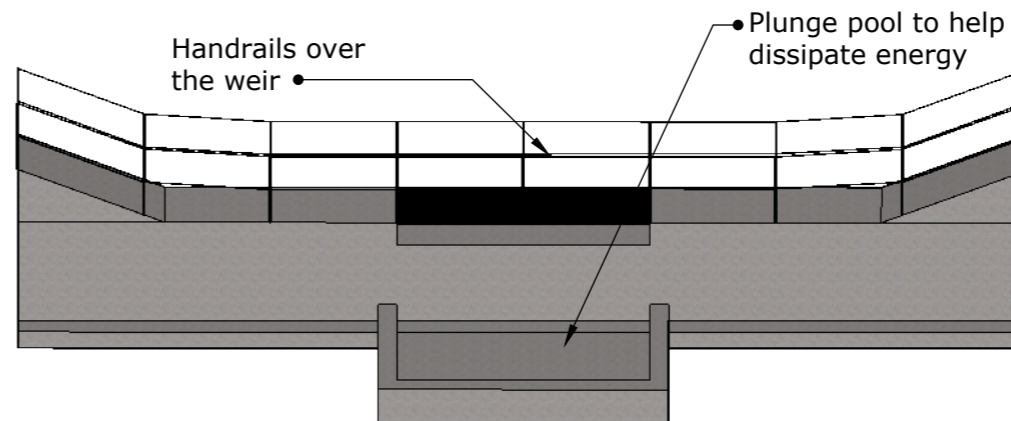
Footing foundation needs to be confirmed by geotechnical engineer



CROSS SECTION (DOWN STREAM)

scale: 1:100

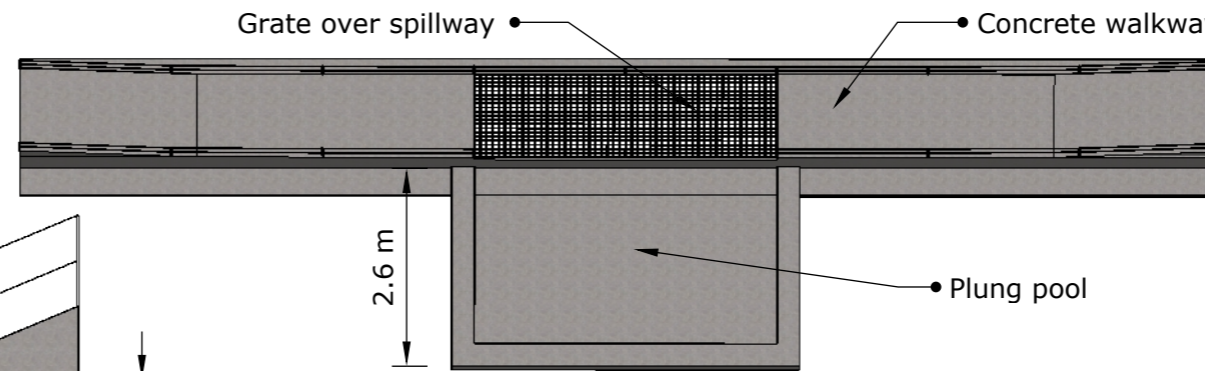
A16
C



CONCRETE VIEW

scale: 1:NA

A16
C



PLAN VIEW

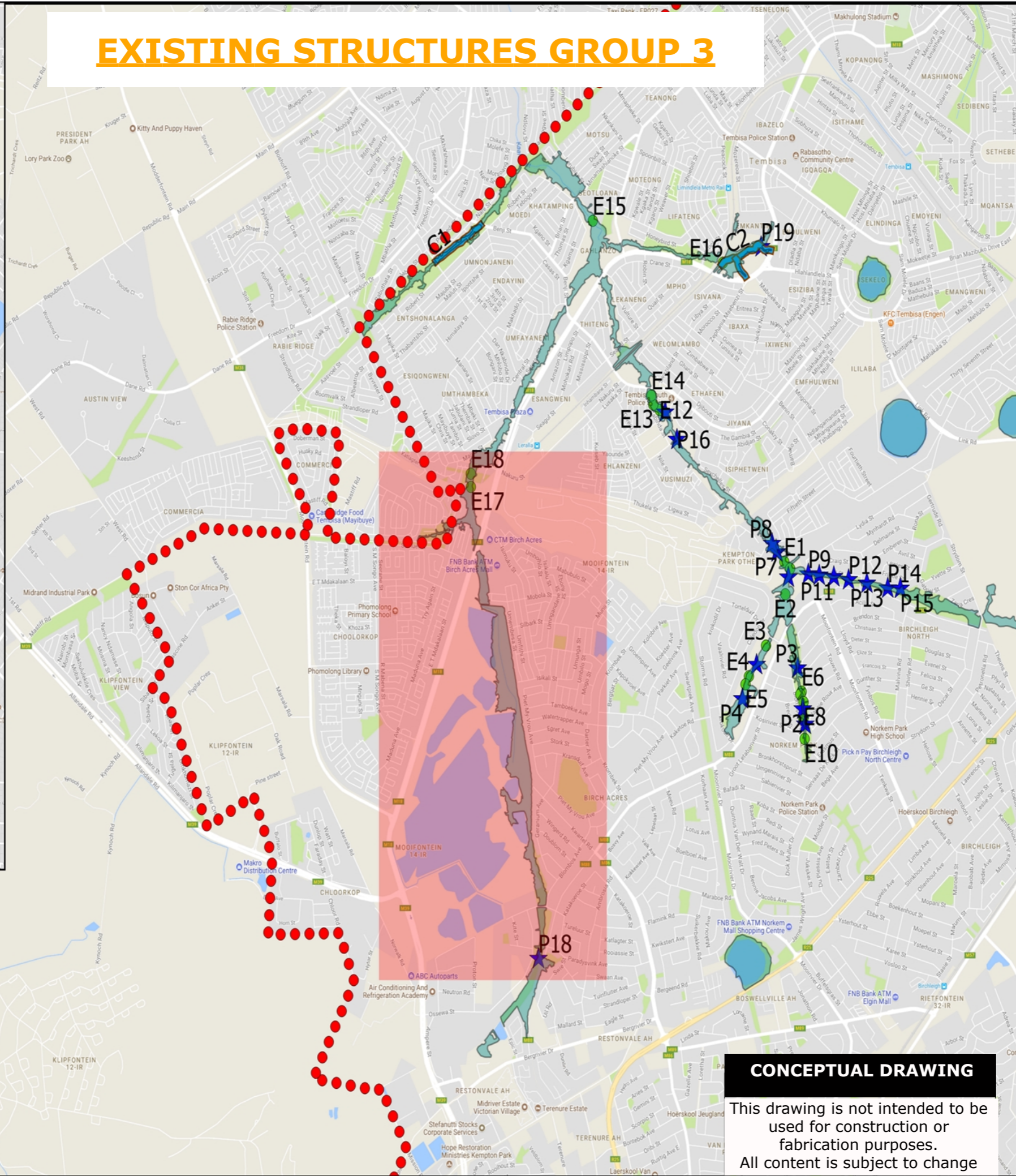
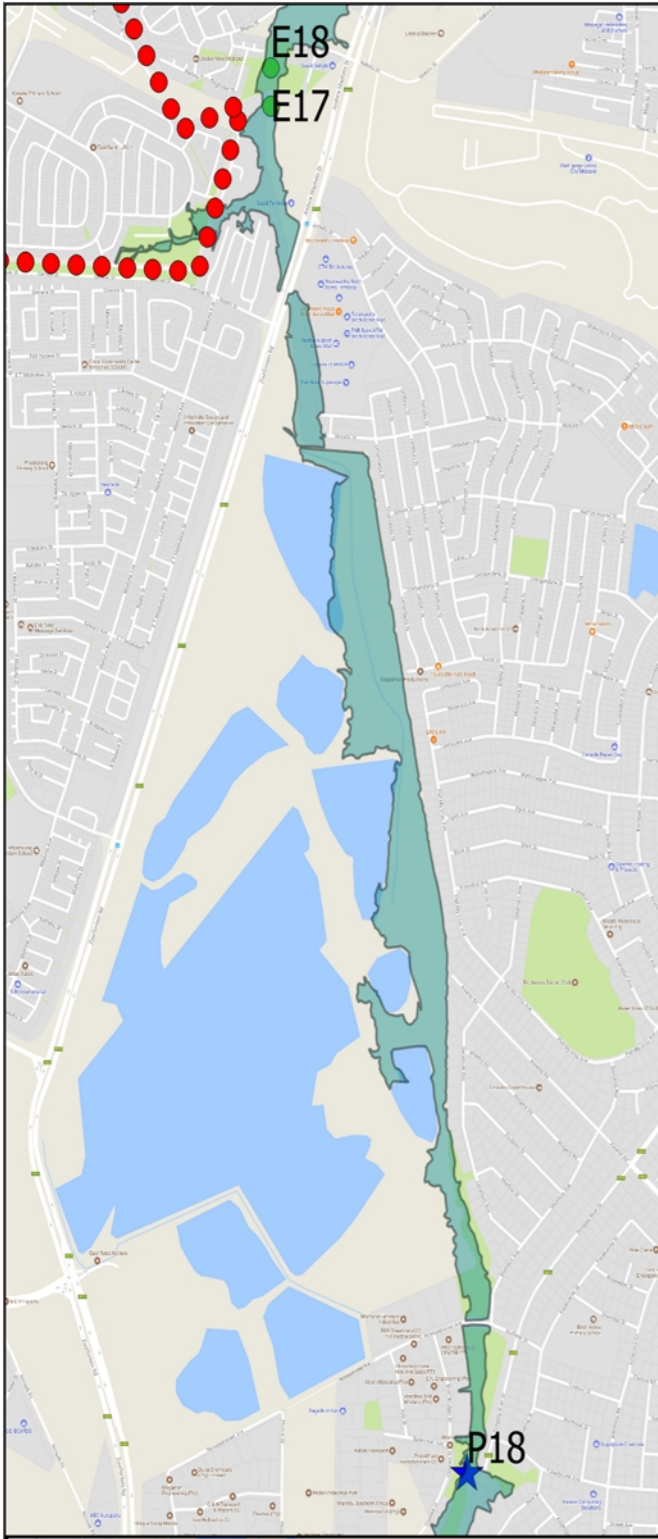
scale: 1:100

A16
C

CONCEPTUAL DRAWING

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EXISTING STRUCTURES GROUP 3



- Legend**
- Targeted Wetlands
 - CoE Boundary
 - Hard Interventions
 - Proposed Channels
 - Proposed Structures
 - Existing Structures

CONCEPTUAL DRAWING

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Environmental Engineering Consultants

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Existing Structures
Group 3
 July 13, 2018

A17.01

EXISTING STRUCTURES MAINTENANCE GROUP 3



STRUCTURE	LATITUDE	LONGITUDE	COMMENT	MAINTENANCE
E16	-26.016409	28.213894	Large concrete weir, good condition	Extend wingwall a further 5m with reinforced concrete wall on one sides of structure
E17	-26.032144	28.190333	Large concrete weir, good condition	General concrete repairs and extend wingwalls a further 2m on both sides
E18	-26.031217	28.190328	Bridge, good condition	Currently under construction 2018

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Environmental Engineering
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Existing Structures
Maintenance Group 3
July 13, 2018

Notes:

All existing structure where designed by other consultants. In the next phase of the project detailed designs of the existing stuctures with the maintenance measure should be undertaken to get exact construction volumes. Not all intervetion could be found. Some areas had access issues and arge portion of intervention where never constructed.

CONCEPTUAL DRAWING

This drawing is not intended to be used for construction or fabrication purposes. All content is subject to change

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