LEGEND

FOR MORE DETAILED SPECS REFER TO
THE BILL OF QUANTITIES +
GENERAL SPECIFICATIONS DOCUMENTS

LEGEND:

HARD LANDSCAPE: Paving & Surfaces

	P1: General walkways Bosun 200x100x50 Bevel Bond paver Colour: Autumn blend Basket weave pattern	1455m²
	P1.1: Edging Bosun 200x100x50 Bevel Bond paver Colour: Granite Header course pattern	185m²
P2	P2: Safety rubber (10mm low impact for workout area)	275m²
P3	P3: Safety rubber (50mm high impact for play area)	540m²

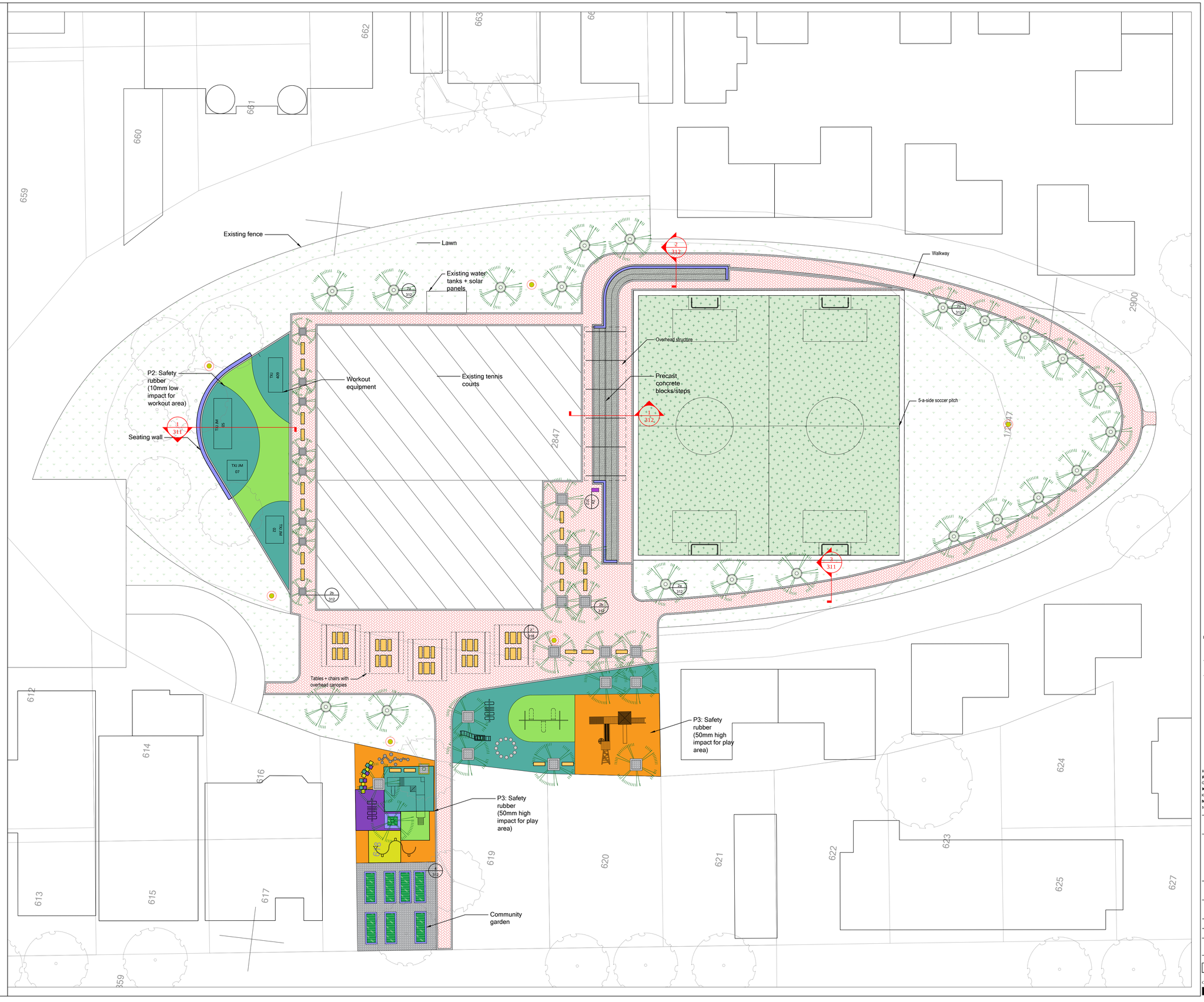
HARD LANDSCAPE: walls & fencing
(refer to engineer's details and specifications

	440mm wide Raised seating wall (Refer to detail 1 | 311)	
	Precast concrete blocks/steps (refer to detail 1 | 312)	
	Balustrade	
	Clearvu fence as per manufacturer's specifications	
	Pedestrian Security gates design and supplied to manufacturer's detail	1unit

HARD LANDSCAPE: Furniture & lighting

	Solar lights (in sandhatter)	7
	Varnstone Eureka Bench 1600 x 500e x 500mm , colour: Smooth natural grey concrete.	37
	Wilson Stone Fairground Swing litter bin	6
	Park signage with drinking fountain (Refer to detail 1a | 310)	1
	Pre-cast tree ring in lawn Refer to detail 3b | 311	19
	Varnstone Eureka Table 1600 x 800 x 800 Finish: Smooth natural grey concrete. Refer to detail 2a | 310	10units

SOFT LANDSCAPE: REFER TO LAYOUT 200-	m²	qty
Lawn Kikuyu instant lawn sods	3000m²	
Community garden planters	35m² (total)	
New trees		40



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No.	DATE	REVISION
01	29.10.2020	Addition of pavilion canopy

project name: 00.00_L/XXX
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discipline
LANDSCAPE ARCHITECTURE

project description
EASTERN GATEWAY_OVAL PARK

drawing title
LANDSCAPE REFERENCE PLAN

stage
4: DOCUMENTATION + PROCUREMENT

scale 1:250 (A1) | drawn ML
date 2020-10-28 | checked ML

drawing number
20.31/L/100_001_T

drawing status
INFORMATION | TENDER | CONSTRUCTION

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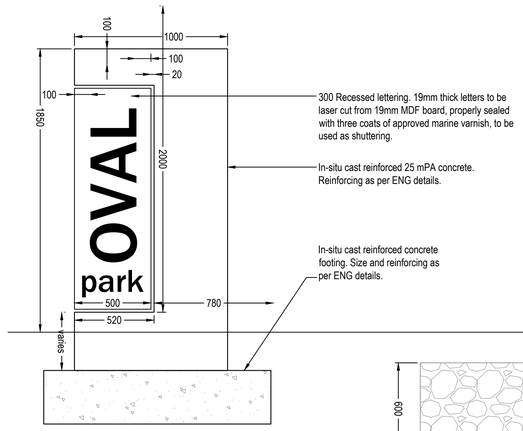
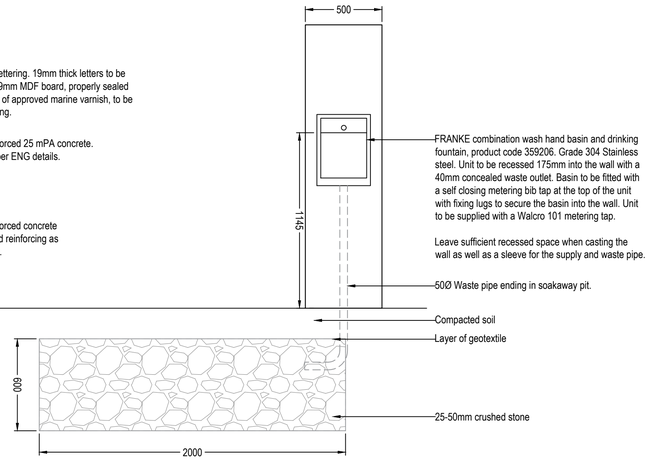
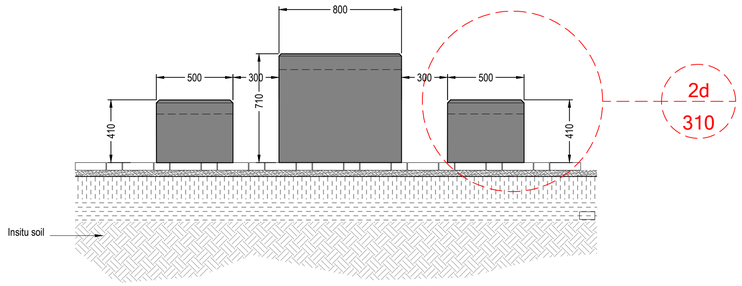


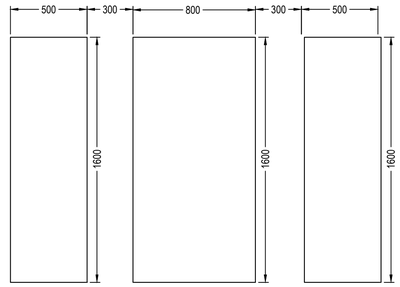
1a Signage/drinking fountain
Scale: 1:20



1b Signage/drinking fountain
Scale: 1:20



2a Table + benches
Scale: 1:20



2b Table + benches_plan view
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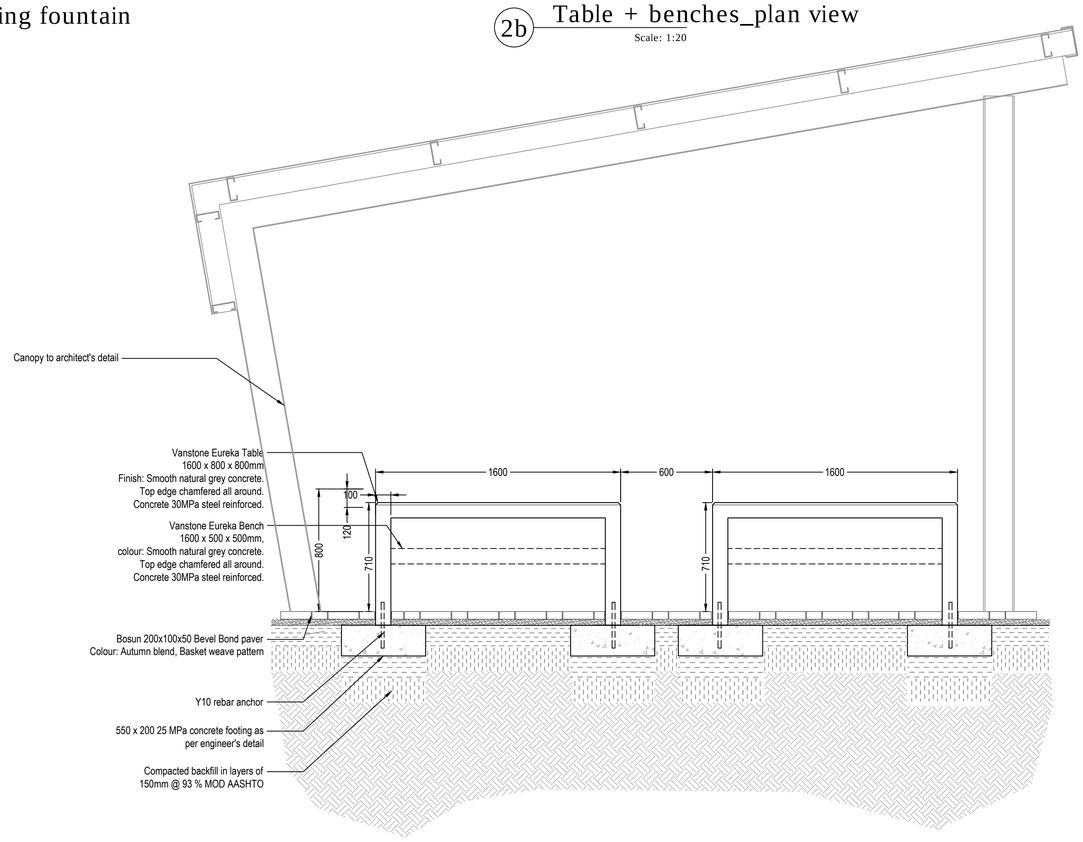
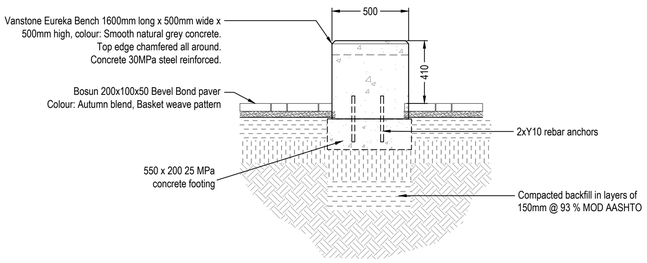


2c Table detail
Scale: 1:20



2d Bench detail
Scale: 1:20

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discipline: LANDSCAPE ARCHITECTURE
project description: EASTERN GATEWAY_OVAL PARK
drawing title: DETAIL SHEET 1
stage: 4: DOCUMENTATION + PROCUREMENT
scale 1:20 (A1)
drawn ML
date 2020-10-28
checked ML
drawing number: 20.31/L/310_000_T
drawing status: INFORMATION | TENDER | CONSTRUCTION
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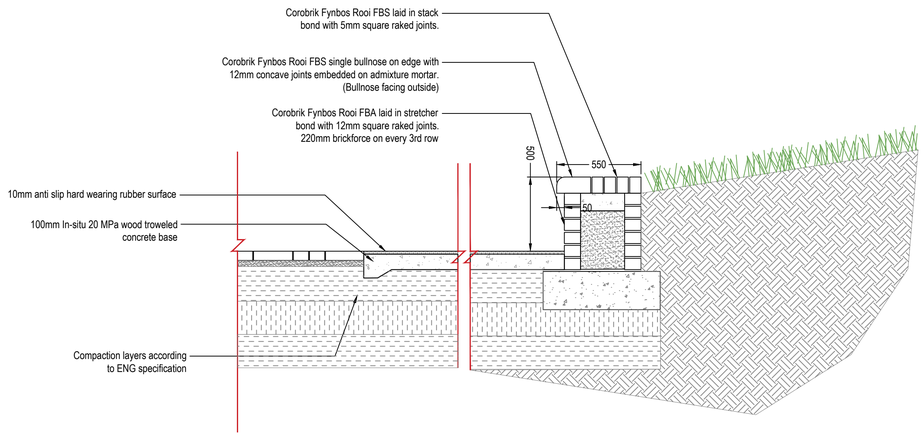
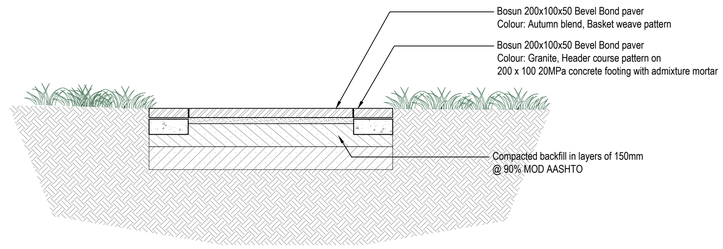


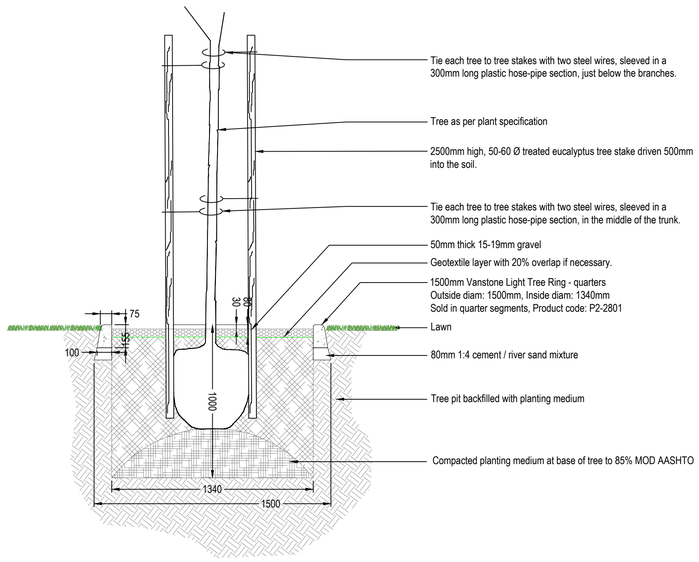
1 Seating wall at gym area

Scale: 1:20



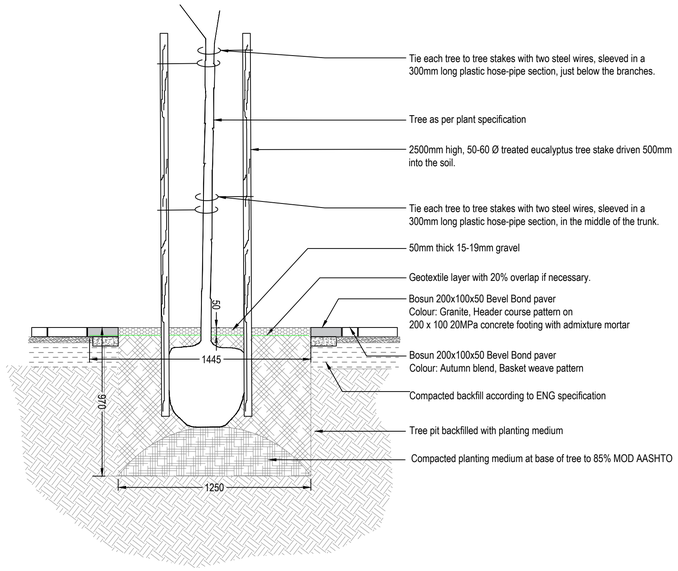
3 Typical walkway detail

Scale: 1:20



2a Tree hole within lawn

Scale: 1:20



2b Tree hole within paving

Scale: 1:20

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discipline
LANDSCAPE ARCHITECTURE

project description
EASTERN GATEWAY_OVAL PARK

drawing title
DETAIL SHEET 2

stage
4: DOCUMENTATION + PROCUREMENT

scale 1:20 (A1)
drawn ML
date 2020-10-28
checked ML

drawing number
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drawing status
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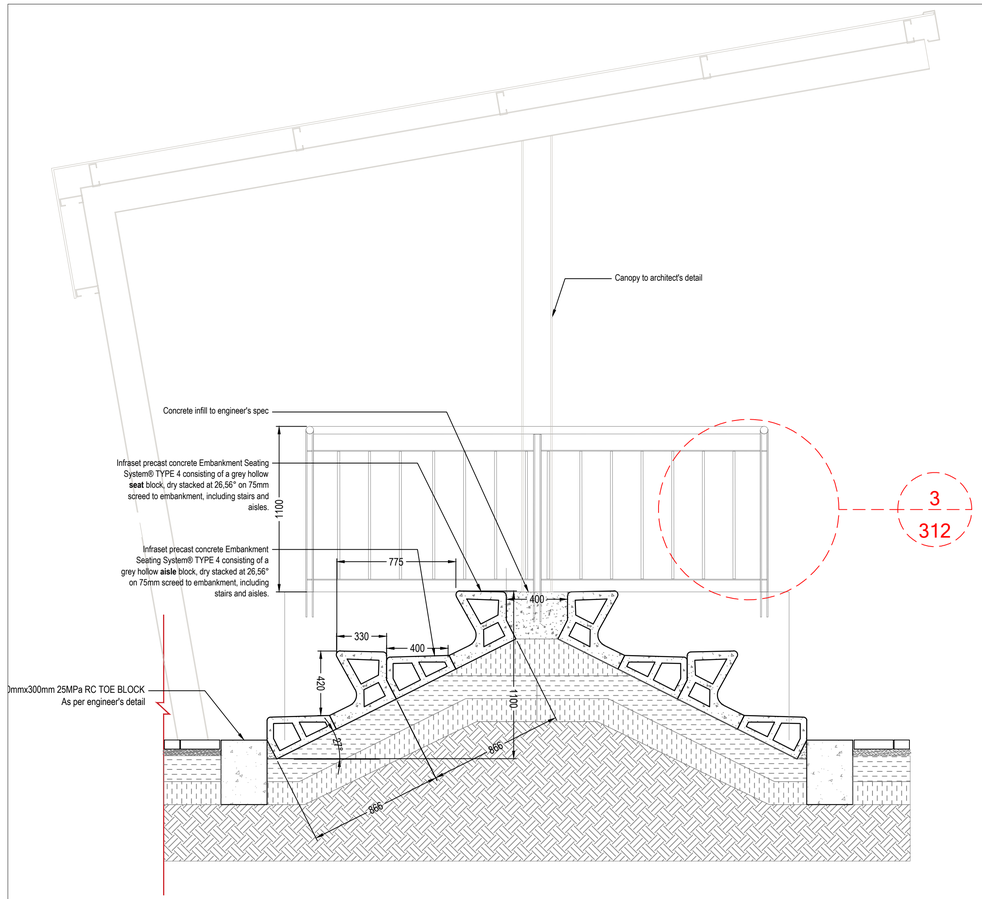
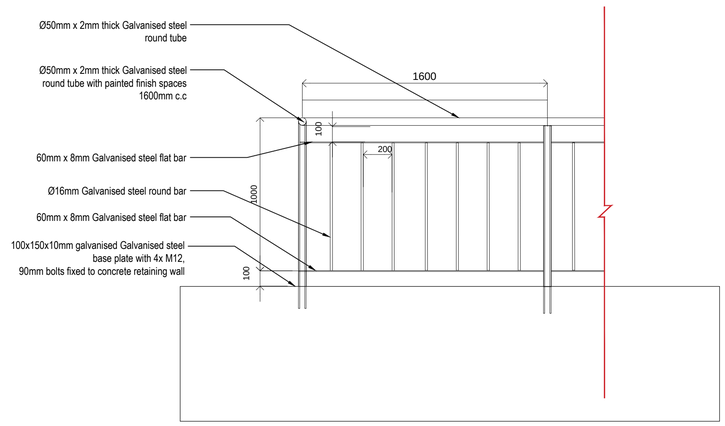


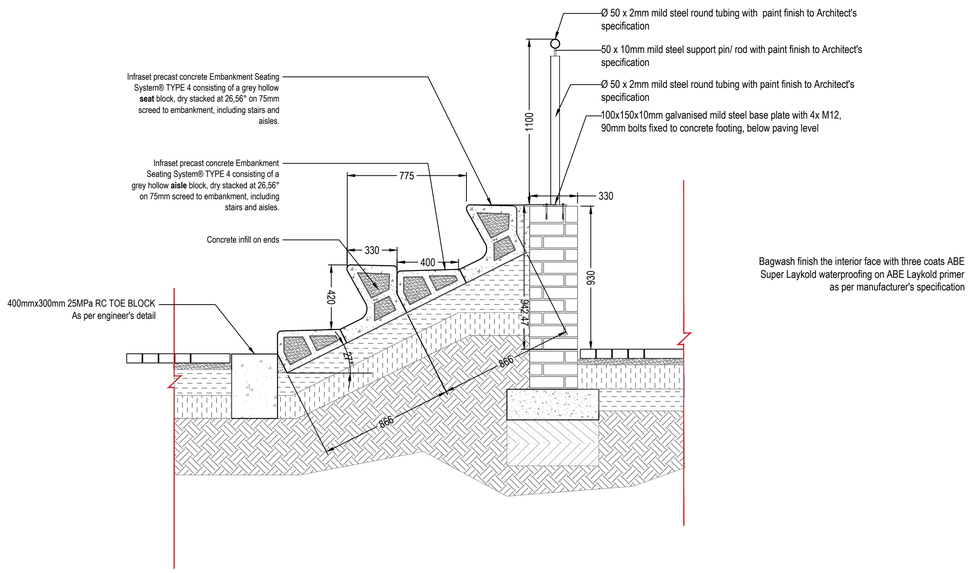
1 Retaining blocks/seats

Scale: 1:20



3 Ballustrade detail

Scale: 1:20



2 Retaining blocks/seats

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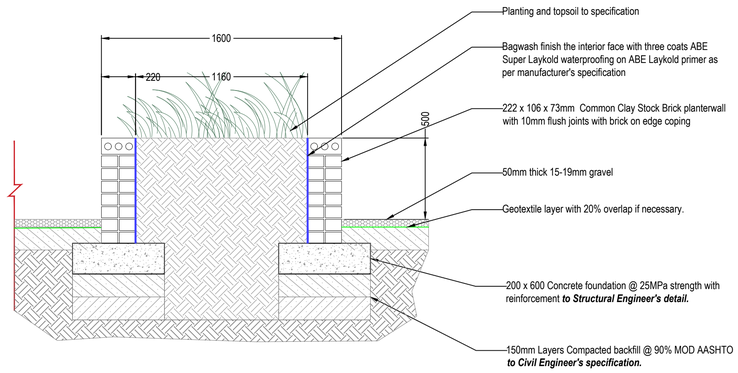

4 Community garden planter

Scale: 1:20

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discipline: LANDSCAPE ARCHITECTURE

project description: EASTERN GATEWAY_OVAL PARK

drawing title: DETAIL SHEET 3

stage: 4: DOCUMENTATION + PROCUREMENT

scale 1:20 (A1) | drawn ML
date 2020-10-28 | checked ML

drawing number: 20.31/L/312_000_T

drawing status: INFORMATION | TENDER | CONSTRUCTION

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LEGEND

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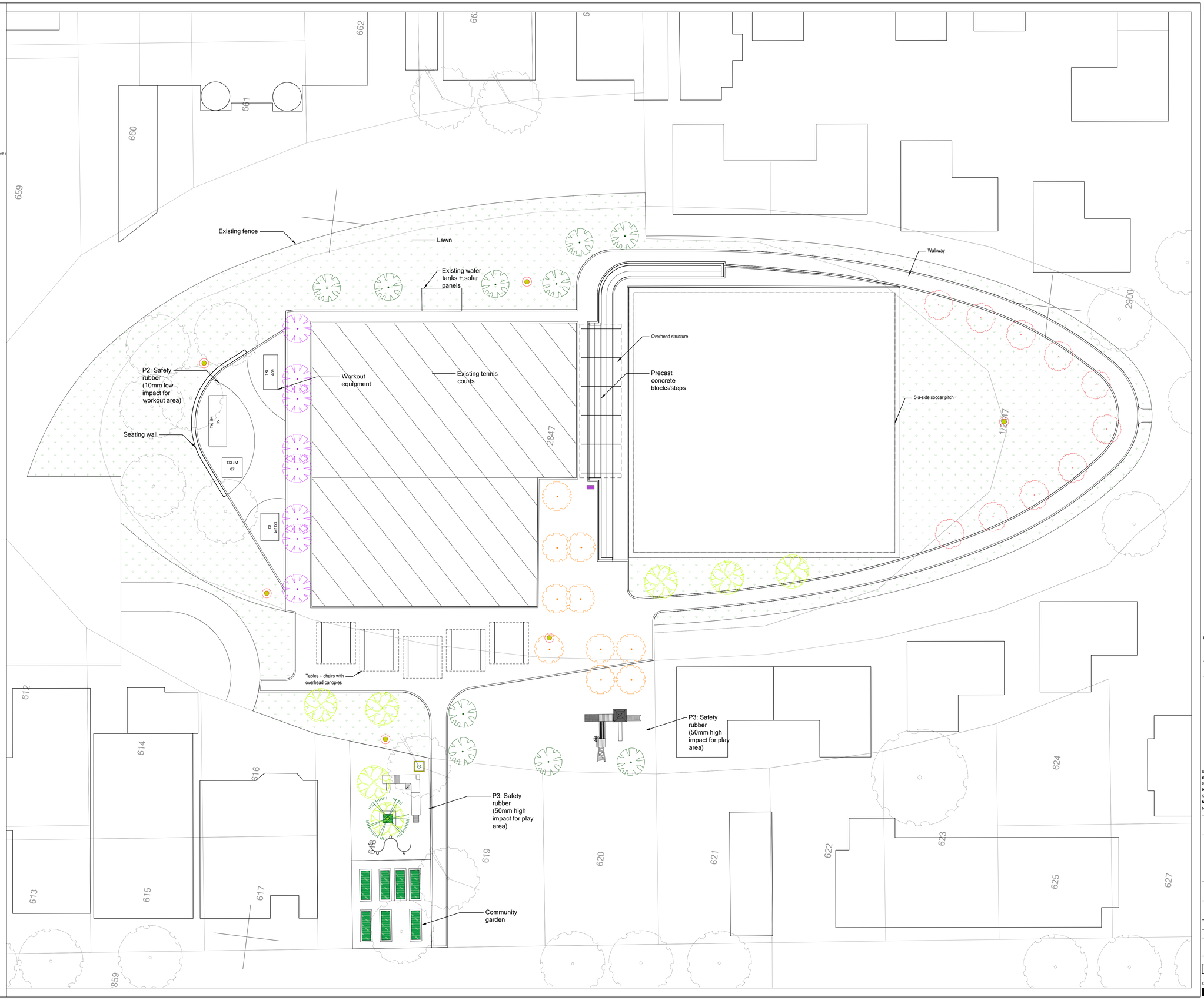
SOFT LANDSCAPE:	m²	qty
Lawn Kikuyu instant lawn sods	3000m²	
Beetroot seedlings @ 6/m²	20m²	120
Cabbage seedlings @ 6/m²	20m²	120
Spinach seedlings @ 6/m²	20m²	120
Tomato seedlings @ 6/m²	20m²	120
Chilli seedlings @ 6/m²	10m²	60
Pumpkin seedlings @ 3/m²	10m²	30
Butternut seedlings @ 3/m²	10m²	30
Onion seedlings @ 12/m²	15m²	180
Celery seedlings @ 12/m²	10m²	120
Carrot seedlings @ 12/m²	20m²	240

TREES
(200L Trees: 2500mm stem height and 2000mm wide crown after planting with a diameter of 80-100mm
measured 300mm above soil level.)

Ilex mitis (2006)	6
Harpephyllum caffrum (2006)	10
Kiggelaria africana (2006)	10
Celtis africana (2006)	8
Combretum erythrophyllum (2006)	10
Existing trees	



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discipline
LANDSCAPE ARCHITECTURE

project description
EASTERN GATEWAY_OVAL PARK

drawing title
SOFT LANDSCAPE PLAN

stage
4: DOCUMENTATION + PROCUREMENT

scale 1:250 (A1)
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date 2020-11-02
checked ML

drawing number
20.31/L/200_000_T

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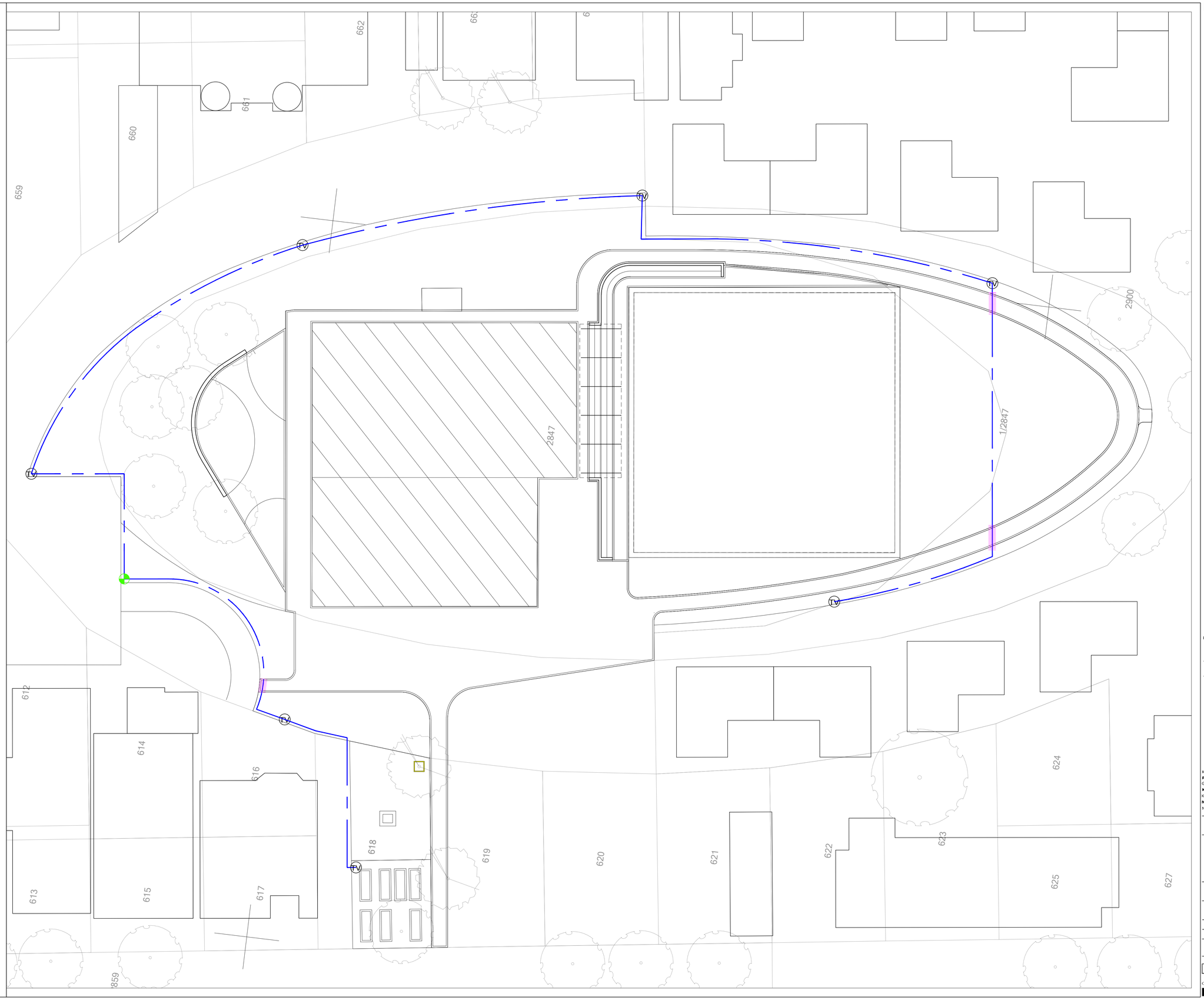
- 50mm. H.D.P.E PIPE PE100 CLASS 8 (SABS) TO BE INSTALLED 500mm BELOW THE SURFACE
- 25mm. AQUA PLASTIC TURF VALVE TO BE INSTALLED ACCORDING TO DETAIL 10
- 32mm WATER CONNECTION POINT 110L/MIN TO 65L/MIN
- 110mm. SLEEVE TO BE INSTALLED TO THE CIVIL ENGINEER SPECIFICATIONS (By Others) ALL SLEEVES NEED TO BE CLEARLY MARKED WITH A FLAG AND A DRAW WIRE MUST BE SUPPLIED. A MINIMUM DEPTH OF 500mm



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discipline
LANDSCAPE ARCHITECTURE

project description
EASTERN GATEWAY_OVAL PARK

drawing title
IRRIGATION PLAN

stage
4: DOCUMENTATION + PROCUREMENT

scale 1:250 (A1)
drawn ML
date 2020-11-02
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20.31/L/400_000_T

drawing status
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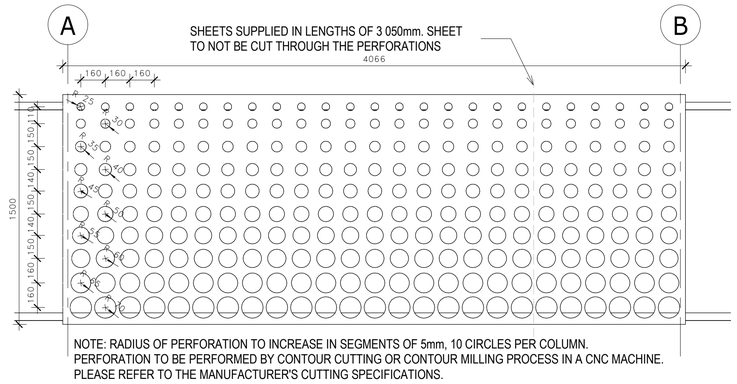
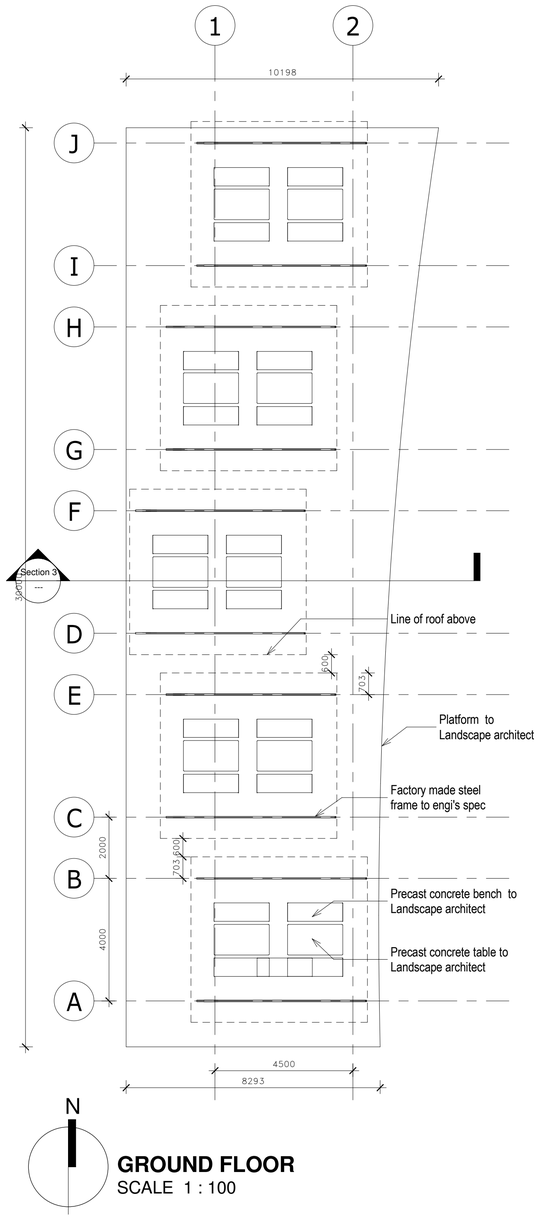


NOTE: RADIUS OF PERFORATION TO INCREASE IN SEGMENTS OF 5mm, 10 CIRCLES PER COLUMN.
PERFORATION TO BE PERFORMED BY CONTOUR CUTTING OR CONTOUR MILLING PROCESS IN A CNC MACHINE.
PLEASE REFER TO THE MANUFACTURER'S CUTTING SPECIFICATIONS.

DIBOND DETAIL
SCALE 1 : 20

FLASHING DETAIL
SCALE 1 : 10



GROUND FLOOR
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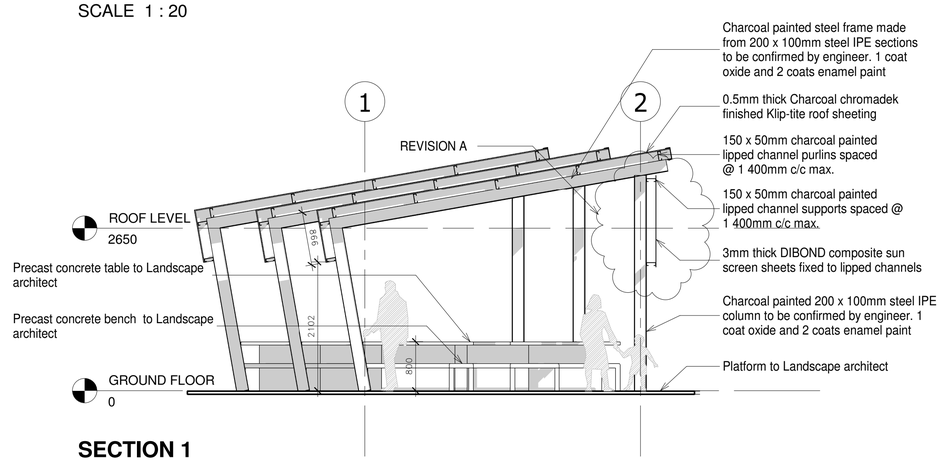
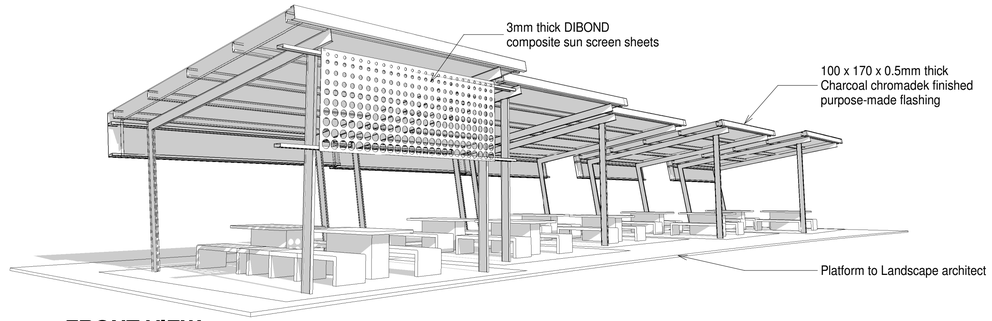
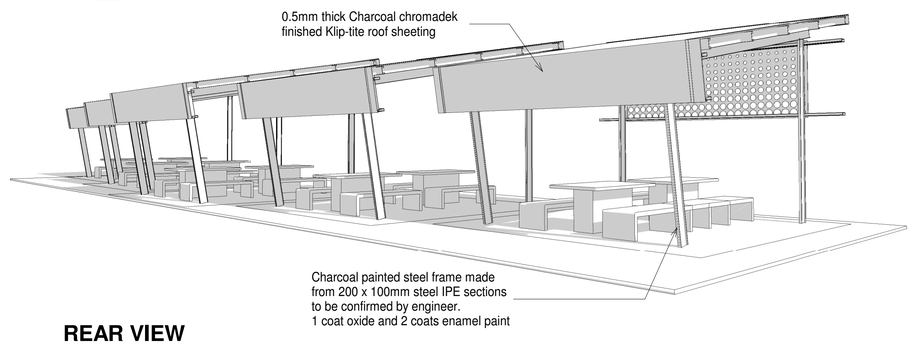


SECTION 1
SCALE 1 : 50



FRONT VIEW
SCALE



REAR VIEW
SCALE

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No.	DATE	REVISION
A	29/10/2020	Addition of lipped channel to support DiBond board.

DRAINAGE NOTE:

BATH 50mm Ø WP
SINK 50m Ø WP
WHB 40mm Ø WP, 2 x WHB 50mm Ø WP's
SHOWER 50mm Ø WP
WC 110mm Ø SP
SEWER PIPES 110mm Ø AMD 150mm Ø PVC
FALL 1:60 TO MUNICIPAL CONNECTION POINT
ALL CE's TO GROUND LEVEL
2-WAY VENT VALVES TO STUB STACKS
ANTI-VAC TRAPS TO ALL FIRST FLOOR WHB
ALL WORK TO COMPLY TO SABS 0400
MINIMUM INVERT LEVEL = 450mm (MIN) BELOW NGL
IE's TO ALL SEWER PIPE TURNS AND BENDS
DRAINAGE TO COMPLY WITH SANS 10400-P

GAS NOTE:

GAS INSTALLATION TO COMPLY WITH SANS 10087 PART 1

GLAZING NOTE:

NOMINAL GLASS THICKNESS:		MAXIMUM PANE SIZE:
3mm	-	0,75 m²
4mm	-	1,5 m²
5mm	-	2,1 m²
6mm	-	3,2 m²

GLAZING TO COMPLY WITH SANS 10400-N. 6mm SAFETY GLASS TO ALL GLASS DOORS. ALL SAFETY GLASS TO HAVE MARKERS. OBSCURE GLASS IN ALL BATHROOM WINDOWS

GEYSER NOTE:

GEYSER INSTALLATION TO COMPLY WITH SANS 10254
SOLAR HOT WATER HEATING SYSTEM TO COMPLY WITH SANS 10106 AND SANS 1307. THE INSTALLATION THEREOF TO COMPLY WITH SANS 10254

AREAS:

project name: 17.14_PEU EASTERN GATEWAY
page type: A1

ADP/TN

Engineer signature | Client signature

info@kwpcreate.com
www.kwpcreate.com
+ 27 (0) 343 9141

kwpCREATE
architects
urban designers
landscape architects
project managers &
mentors

KWPCREATE (Pty) Ltd Registration Number 83 / 06223 / 07
Pretoria 181 Blackwood Street Arcadia 0083 PO Box 332 Groenkloof 0027 **Tel** +27(0)123439141 **Fax** +27(0)123439524
KemptonPark Central Prof. Suite 20 Cent. Ave PO Box 3789 Kempton Park 1620 **Tel** +27(0)119703343 **Fax** +27(0)119703342
Nelspruit 3 Zebrina Crescent West Acres PO Box 1879 Nelspruit 1200 **Tel** +27(0)137412188 **Fax** +27(0)7412188

discipline: ARCHITECTURE

project description: EASTERN GATEWAY
OVAL PARK

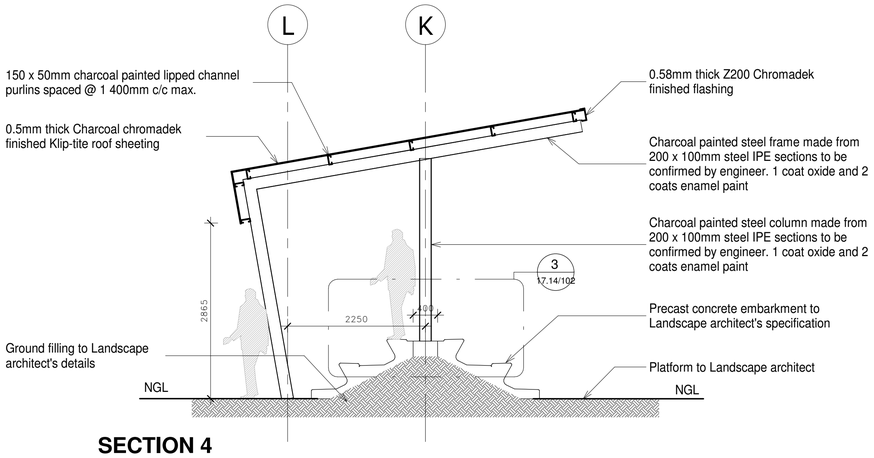
SHADE STRUCTURES

drawing name: SHADE STRUCTURES

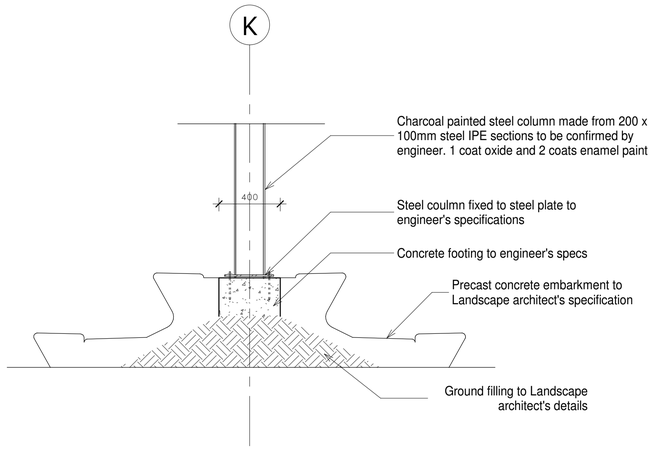
phase: STAGE 4

scale: As indicated | drawn: TN
date: 29/10/2020 | checked: ADP

drawing number: 17.14/101 REV 02



SECTION 4
SCALE 1 : 50



COLUMN FIXING DETAIL
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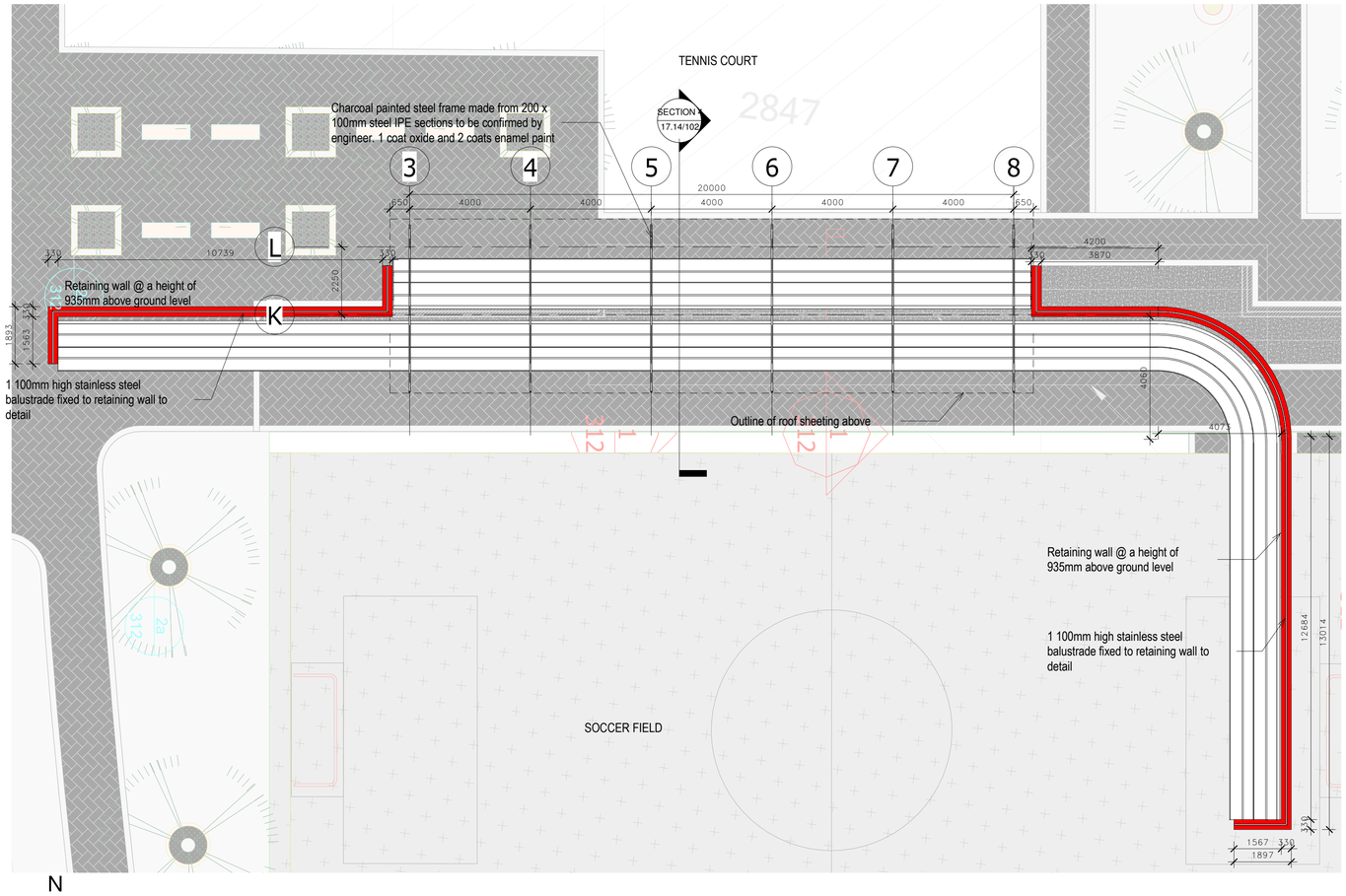

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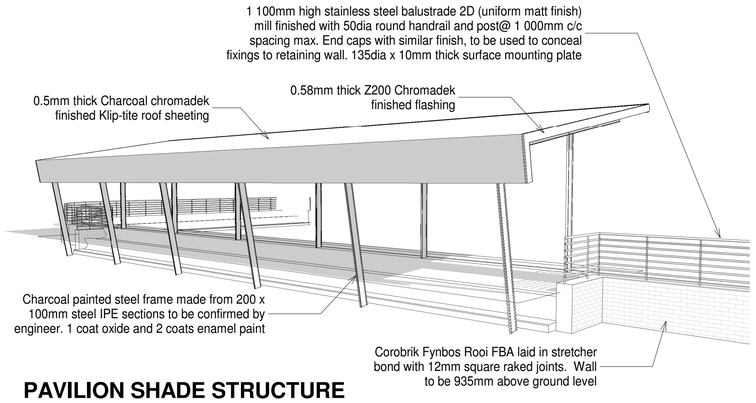
FLOOR PLAN
SCALE 1 : 100



PAVILION SHADE STRUCTURE
SCALE

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17.14_PEU EASTERN GATEWAY
page type
A1

ADP/TN

Engineer signature
Client signature

info@kwpcreate.com
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discipline
ARCHITECTURE

project description
EASTERN GATEWAY
OVAL PARK

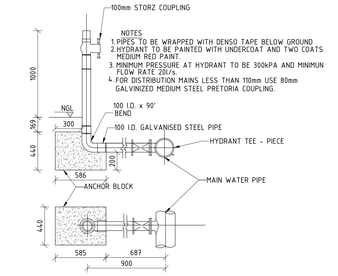
SHADE STRUCTURES

drawing name
PAVILION SHADE STRUCTURES

phase
STAGE 4

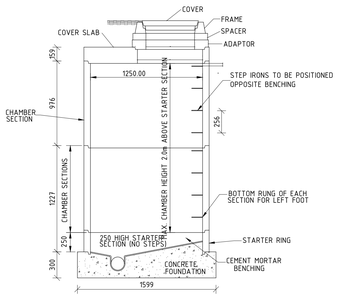
scale As indicated
drawn TN
date 29/10/2020
checked ADP

drawing number
17.14/102



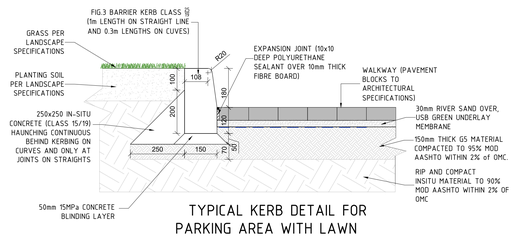
TYPICAL FIRE HYDRANT DETAIL

SCALE 1:25



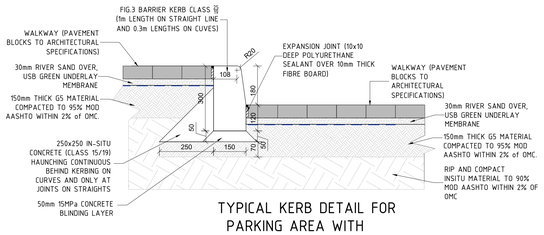
TYPICAL SEWER MANHOLE DETAIL

SCALE 1:25



TYPICAL KERB DETAIL FOR PARKING AREA WITH LAWN BEHIND

SCALE 1:10



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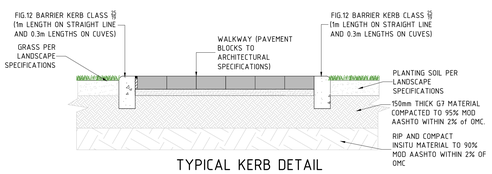
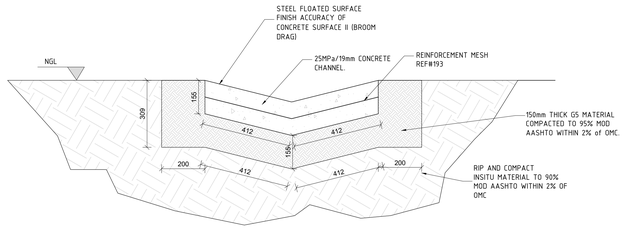
SCALE 1:10



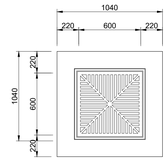
TYPICAL KERB DETAIL WITH WALKWAY THROUGH GRASS.

SCALE 1:10



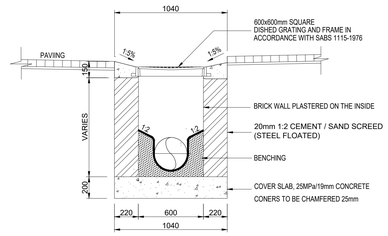
OPEN CHANNEL TYPICAL SECTION

SCALE 1:10



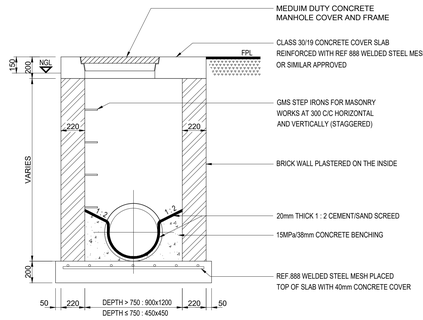
GRID INLET PLAN VIEW

SCALE 1:20

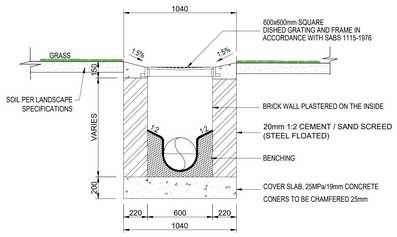


TYPICAL SECTION THROUGH STORMWATER GRID INLET IN THE PAVEMENT.

SCALE 1:20

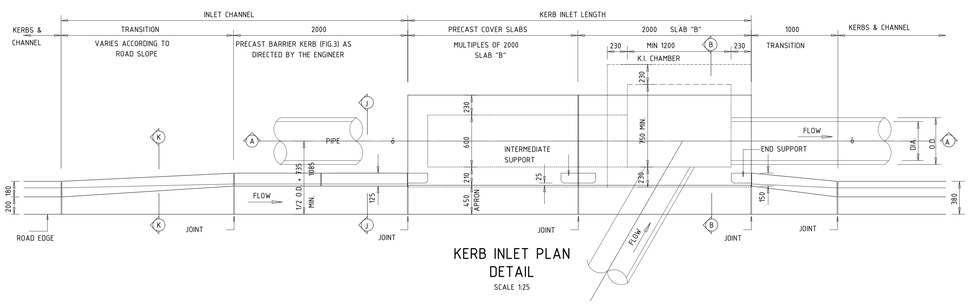


TYPICAL SECTION THROUGH STORMWATER MANHOLE



TYPICAL SECTION THROUGH STORMWATER GRID INLET IN THE LAWN.

SCALE 120



KERB INLET PLAN DETAIL

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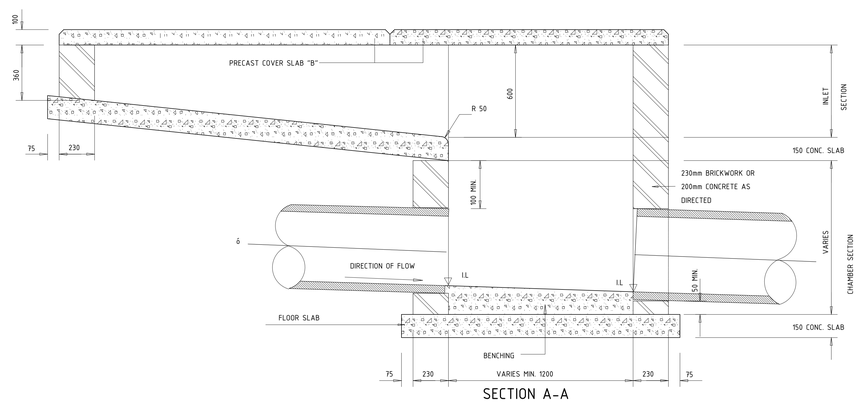
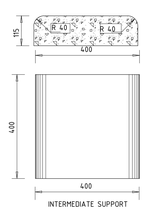
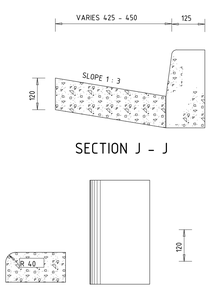


SECTION A-A





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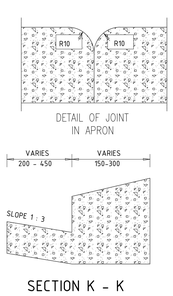


SECTION K - K

FOR COSTING

DRAWING NOTES:

REVISION TABLE

NO.	DATE	ID	DESCRIPTION
00	22/05/2020	TN	FOR TENDER

MARANJE CONSULTING
115 Bishop Square, Cnr 6th Road and Leogem Place, Erand Gardens, Midrand, 1687
TEL - (011) 056 6990 MOBILE - 076 037 0670
TshilidziN@Maranje.co.za

CLIENT:

JDA Johannesburg Development Agency

PROJECT NAME:

EASTERN GATEWAY OVAL PARK

DRAWING DESCRIPTION:

TYPICAL CROSS SECTION

PROJECT NUMBER:

CP053

DRAWING DEVELOPMENT

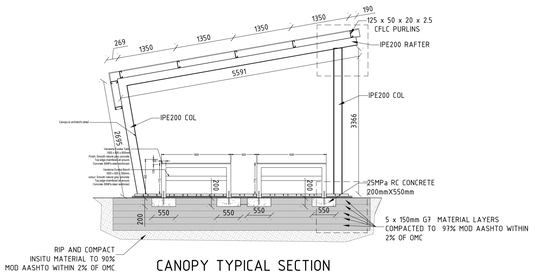
DESIGNED BY:	PM
DRAWN BY:	PM
CHECKED BY:	TN

DRAWING APPROVAL

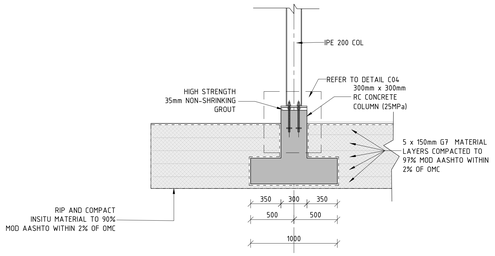
NAME: T. NEMARANZHE
ECSA NO: 20140318

SIGNATURE: _____ DATE:29/10/2020

DRAWING NO:	SHEET NO:	REV
CP053-OVP-TPS-001	1 of 1	0



CANOPY TYPICAL SECTION
SCALE 1:50



CANOPY PAD FOOTING DETAIL
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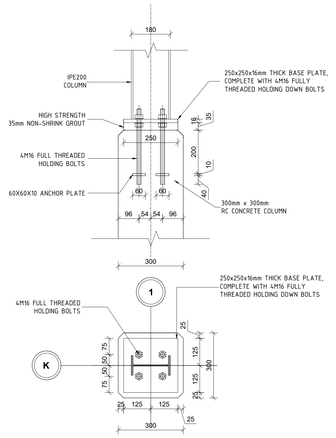

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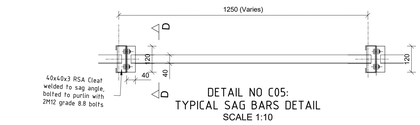

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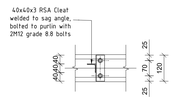

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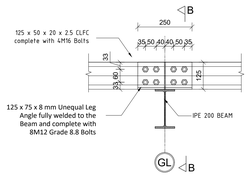

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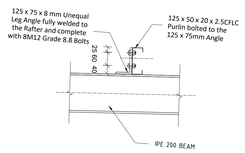

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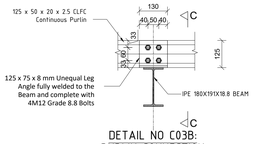

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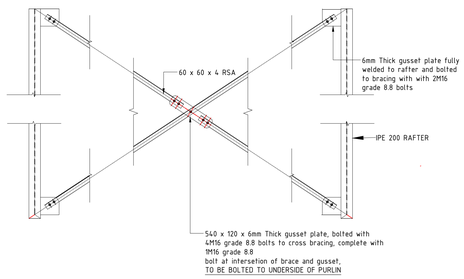

TYPICAL ROOF BRACING DETAILS
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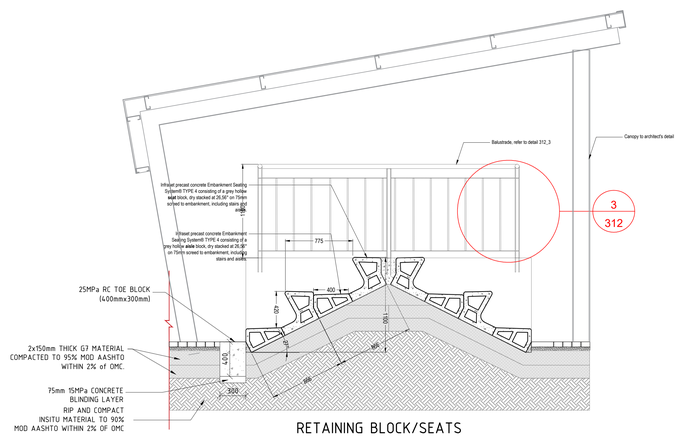
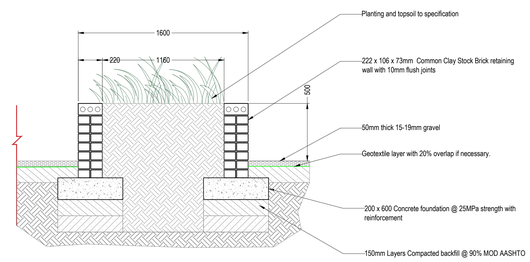
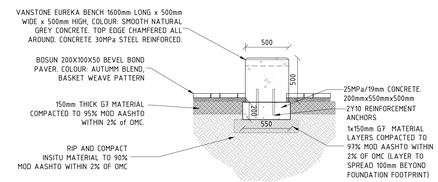


RETAINING BLOCK/SEATS
TYPICAL SECTION
SCALE 1:25





BENCH TYPICAL SECTION
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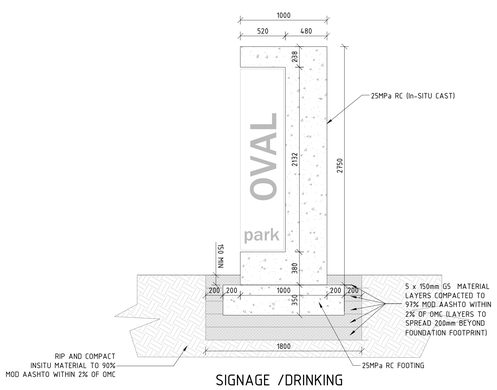

SIGNAGE /DRINKING FOUNTAIN DETAIL
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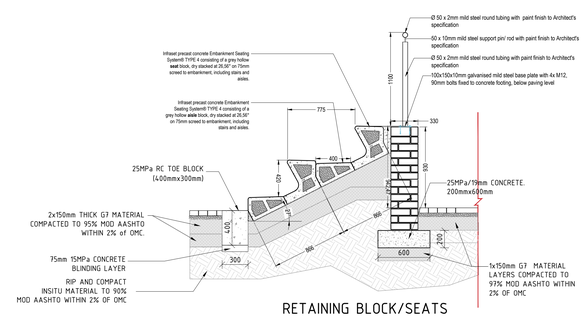

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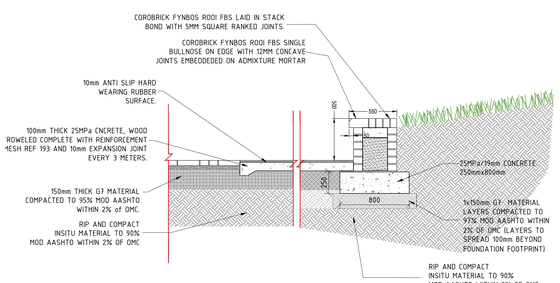
SCALE 1:25



SEATING TYPICAL SECTION
SCALE 1:25

FOR COSTING

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TshilidziN@Maranje.co.za

CLIENT:

JDA Johannesburg Development Agency

PROJECT NAME:

EASTERN GATEWAY
OVAL PARK

DRAWING DESCRIPTION:

TYPICAL DETAIL LAYOUT

PROJECT NUMBER:
CP053

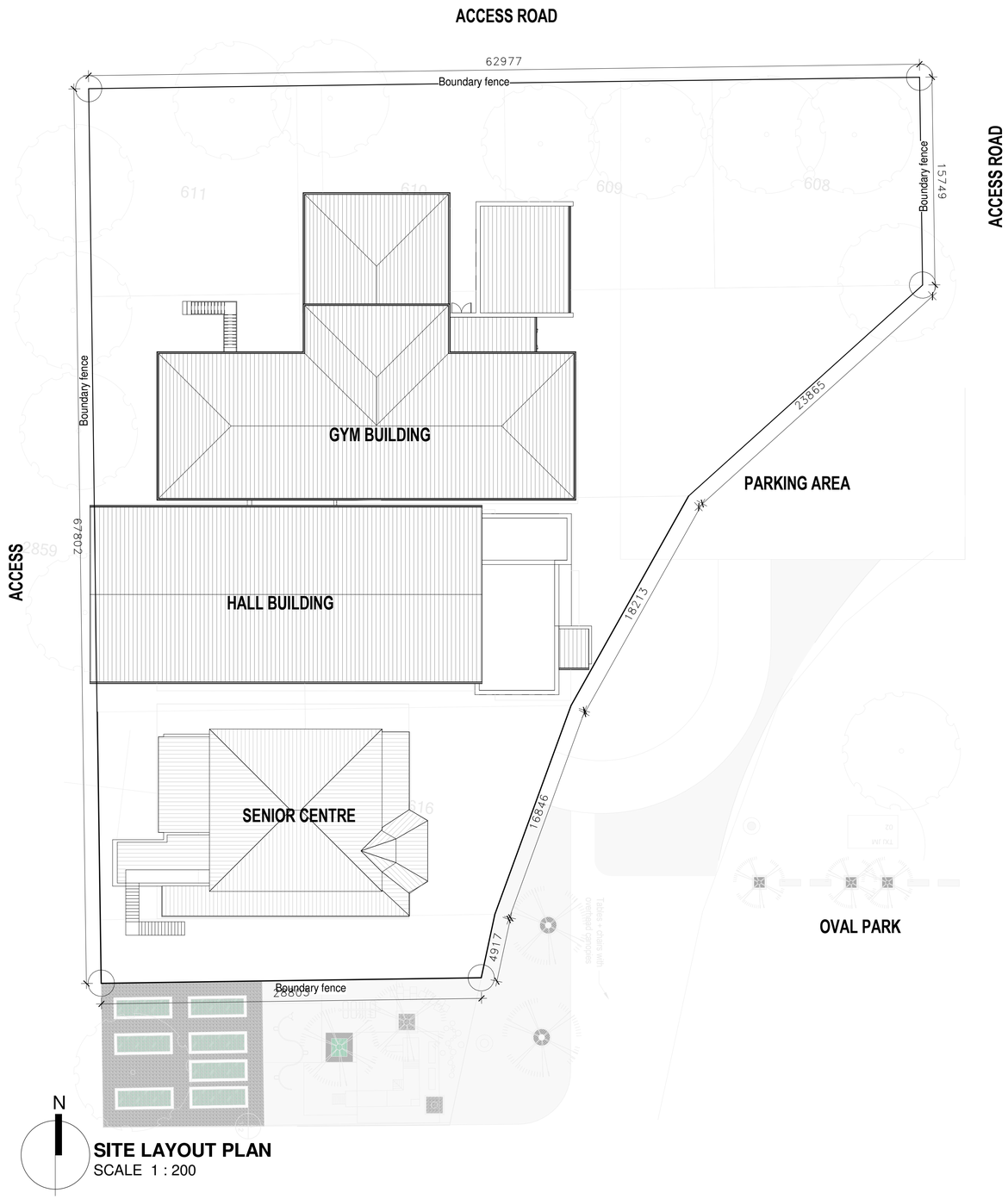
DRAWING DEVELOPMENT

DESIGNED BY:	PM
DRAWN BY:	PM
CHECKED BY:	TN

DRAWING APPROVAL

NAME: T. NEMARANZHE
ECSA NO: 2014:0318
SIGNATURE: _____ DATE:22/10/2020

DRAWING NO:	SHEET NO:	REV
CP053-OVP-002	1 of 1	0



SITE LAYOUT PLAN
SCALE 1 : 200

NOTE

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AREAS:

project name	page type
17.14	A1

Designer

Engineer signature	Client signature

info@kwpcreate.com
www.kwpcreate.com
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Kempton Park Central Prof. Suite 20 Cent. Ave PO Box 3789 Kempton Park 1620 **Tel** +27(0)119703343 **Fax** +27(0)119703342
Nelspruit 3 Zebrina Crescent West Acres PO Box 1879 Nelspruit 1200 **Tel** +27(0)137412188 **Fax** +27(0)7412188

discipline
ARCHITECTURE

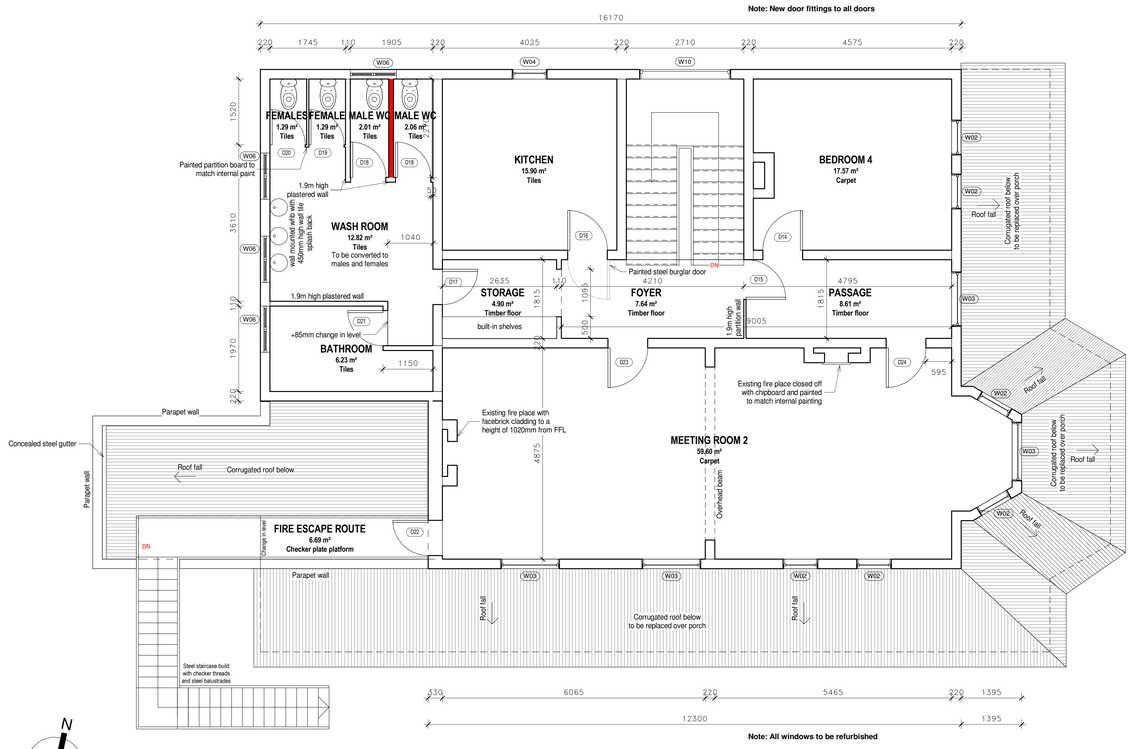
project description
SENIOR CTR, GYM & COMMUNITY HALL
JDA
BERTHA SOLOMON RECREATION CENTRE, JEPPESTOWN

drawing name
SITE LAYOUT PLAN

phase
STAGE 4

scale 1 : 200	drawn TN
date 05/11/2020	checked ADP/NS

drawing number
17.14/206



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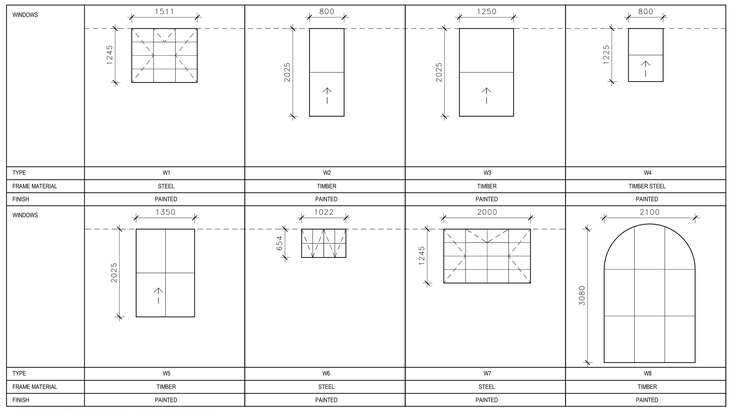
FIRST FLOOR
SCALE 1 : 50



WINDOW SCHEDULE
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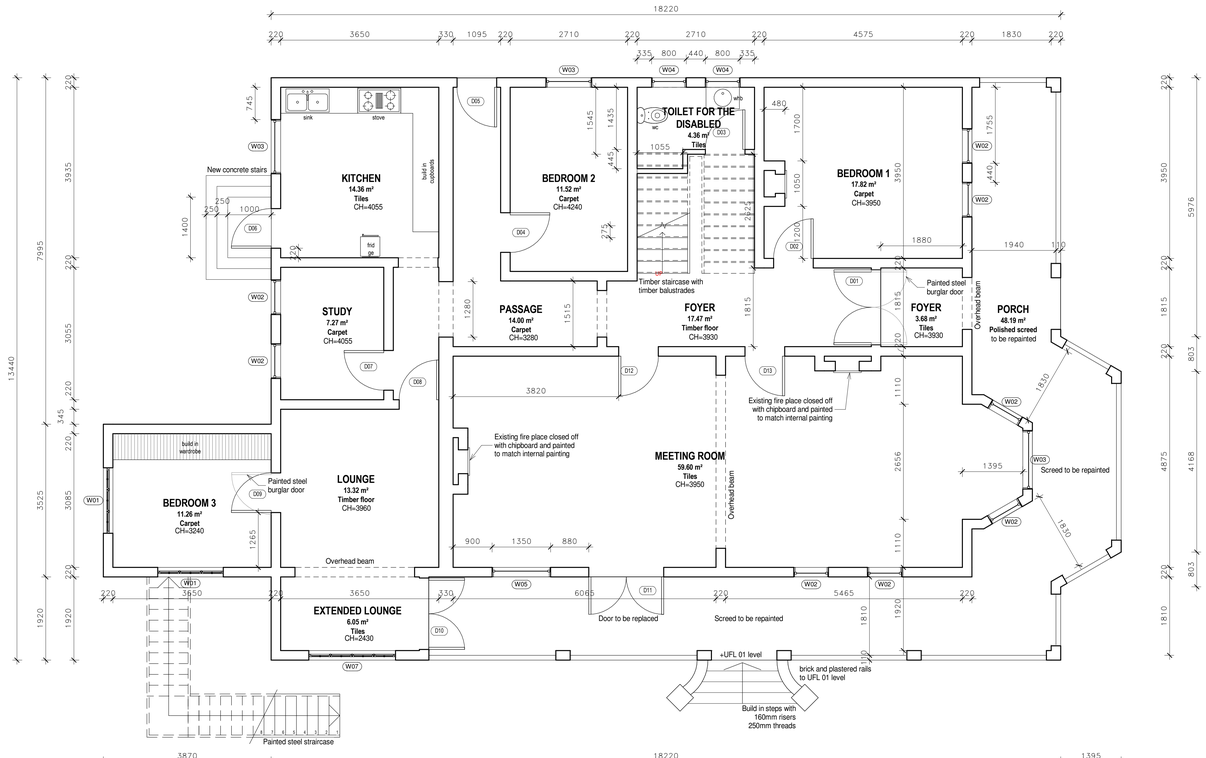

N

GROUND FLOOR
SCALE 1 : 50

NOTE

1. ALL LEVELS AND DIMENSIONS TO BE CHECKED ON SITE PRIOR TO THE COMMENCING OF WORK.
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4. THE ARCHITECT MUST BE NOTIFIED OF ANY DISCREPANCIES IMMEDIATELY.

No.	DATE	REVISION
01	03/11/2020	Toilet convertions, roof to be replaced, new doors and steep @ kitchen

DRAINAGE NOTE:

BATH 50mm Ø WP
SINK 50m Ø WP
WHB 40mm Ø WP, 2x WHB 50mm Ø WP's
SHOWER 50mm Ø WP
WC 110mm Ø SP
SEWER PIPES 110mm Ø AND 150mm Ø PVC
FALL 1:60 TO MUNICIPAL CONNECTION POINT
ALL CE's TO GROUND LEVEL
2-WAY VENT VALVES TO STUB STACKS
ANTI-VAC TRAPS TO ALL FIRST FLOOR WHB
ALL WORK TO COMPLY TO SABS 0400
MINIMUM INVERT LEVEL = 450mm (MIN) BELOW NGL
IE's TO ALL SEWER PIPE TURNS AND BENDS
DRAINAGE TO COMPLY WITH SANS 10400-P

GAS NOTE:

GAS INSTALLATION TO COMPLY WITH SANS 10087 PART 1

GLAZING NOTE:

NOMINAL GLASS THICKNESS:		MAKSIMUM PANE SIZE:
3mm	-	0,75 m²
4mm	-	1,5 m²
5mm	-	2,1 m²
6mm	-	3,2 m²

GLAZING TO COMPLY WITH SANS 10400-N
6mm SAFETY GLASS TO ALL GLASS DOORS
ALL SAFETY GLASS TO HAVE MARKERS
OBSCURE GLASS IN ALL BATHROOM WINDOWS

GEYSER NOTE:

GEYSER INSTALLATION TO COMPLY WITH SANS 10254
SOLAR HOT WATER HEATING SYSTEM TO COMPLY WITH SANS 10106 AND SANS 1307. THE INSTALLATION THEREOF TO COMPLY WITH SANS 10254

AREAS:

project name: 17.14_PEU EASTERN GATEWAY
page type: A0
Designer
Engineer signature
Client signature

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www.kwpcreate.com
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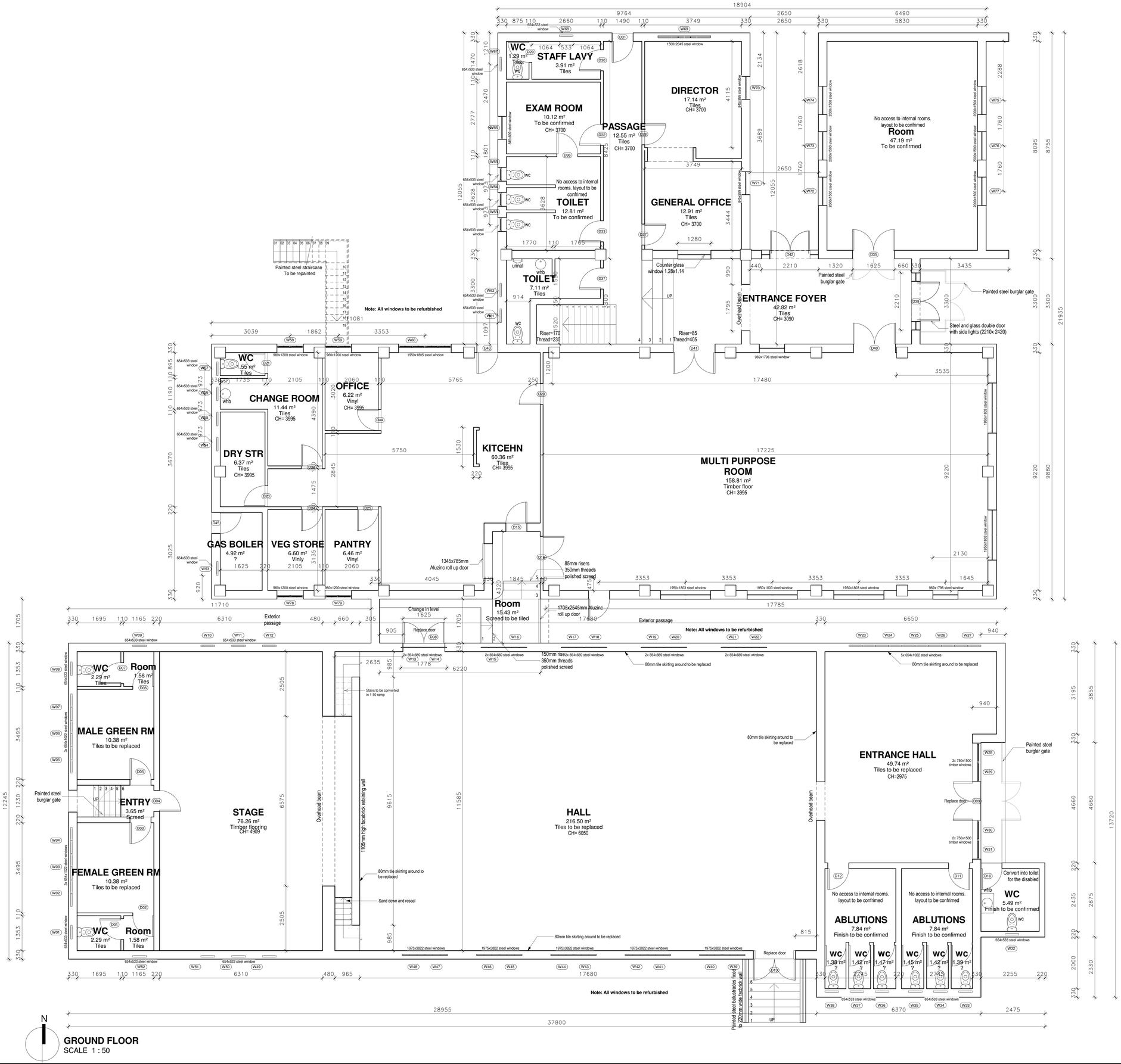
Nelspruit 3 Zebrina Crescent West Acres PO Box 1879 Nelspruit 1200 **Tel**+27(0)13 741 2188 **Fax** +27(0)7 412 188

discipline: ARCHITECTURE

project description:
SENIOR CENTRE
FOR JDA
BERTHA SOLOMON RECAREATION CENTRE, JEPPESTOWN

drawing name: SENIOR CENTRE
phase: STAGE 4
scale 1 : 50
drawn TN
date 03/11/2020
checked ADP
drawing number
17.14/201 REV 01



NOTE

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No.	DATE	REVISION

DRAINAGE NOTE:

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SINK 50m Ø WP
WHB 40mm Ø WP, 2x WHB 50mm Ø WP's
SHOWER 50mm Ø WP
WC 110mm Ø SP
SEWER PIPES 110mm Ø AND 150mm Ø PVC
FALL 1:60 TO MUNICIPAL CONNECTION POINT
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ALL WORK TO COMPLY TO SABS 0400
MINIMUM INVERT LEVEL = 450mm (MIN) BELOW NGL
IE's TO ALL SEWER PIPE TURNS AND BENDS
DRAINAGE TO COMPLY WITH SANS 10400-P

GAS NOTE:

GAS INSTALLATION TO COMPLY WITH SANS 10087 PART 1

GLAZING NOTE:

NOMINAL GLASS THICKNESS:		MAKSIMUM PANE SIZE:
3mm	-	0,75 m²
4mm	-	1,5 m²
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6mm	-	3,2 m²

GLAZING TO COMPLY WITH SANS 10400-N
6mm SAFETY GLASS TO ALL GLASS DOORS
ALL SAFETY GLASS TO HAVE MARKERS
OBSCURE GLASS IN ALL BATHROOM WINDOWS

GEYSER NOTE:

GEYSER INSTALLATION TO COMPLY WITH SANS 10254
SOLAR HOT WATER HEATING SYSTEM TO COMPLY WITH SANS 10106 AND SANS 1307. THE INSTALLATION THEREOF TO COMPLY WITH SANS 10254

AREAS:

NOTE: CH refers to ceiling height measured from finished floor level

project name	page type
17.14	A1

Designer

Engineer signature	Client signature

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www.kwpcreate.com
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KemptonPark Central Prof. Suite 20 Cent. Ave PO Box 3789 Kempton Park 1620 **Tel** +27(0)11 970 3343 **Fax** +27(0)11 970 3342
Nelspruit 3 Zebrina Crescent West Acres PO Box 1879 Nelspruit 1200 **Tel** +27(0)13741218 8 **Fax** +27(0)741218 8

discipline
ARCHITECTURE

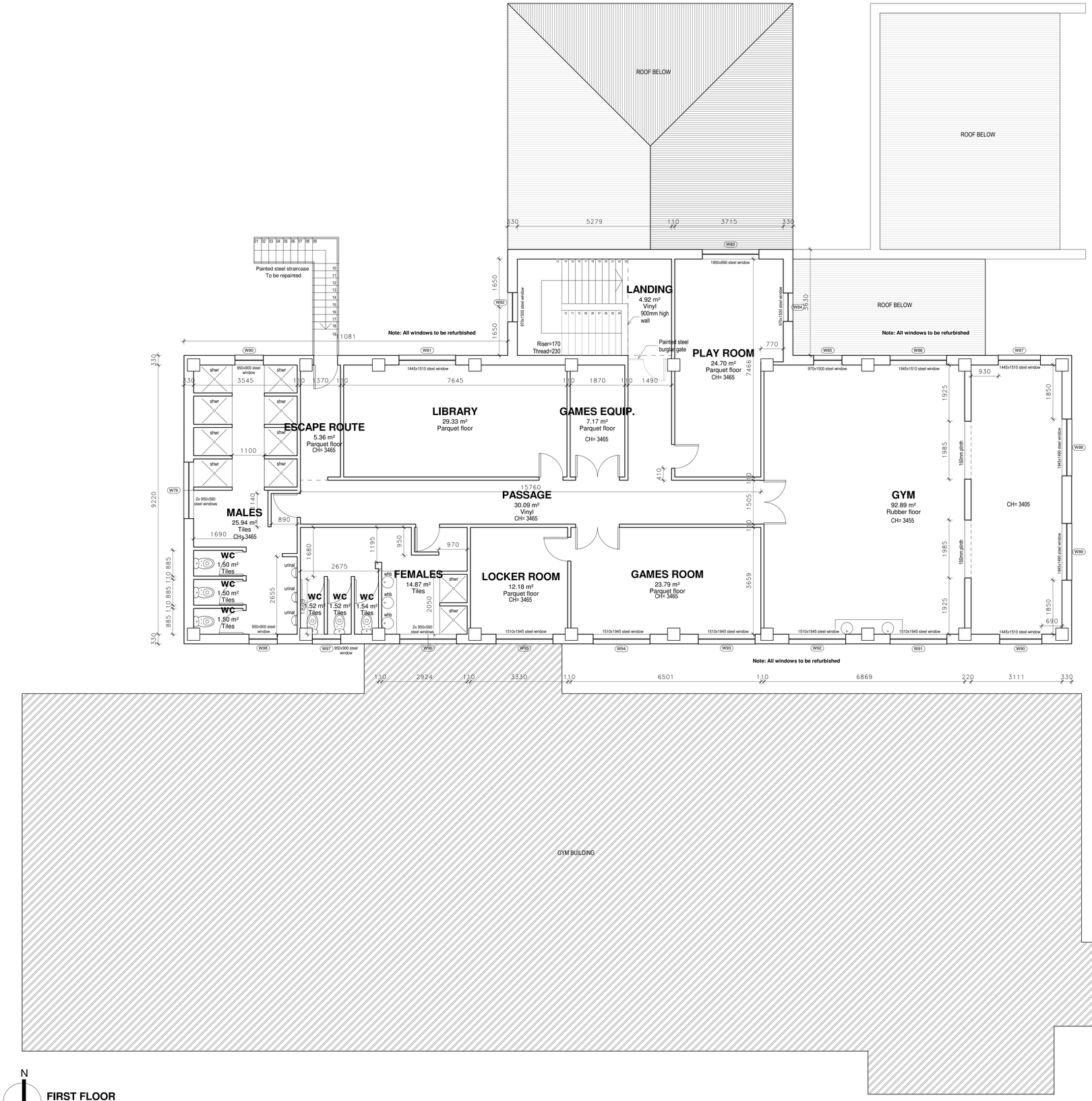
project description
COMMUNITY HALL
JDA
BERTHA SOLOMON RECREATION CENTRE, JEPPESTOWN

drawing name
COMMUNITY HALL & GYM BUILDING

phase
STAGE 4

scale	1 : 50	drawn	TN
date	03/11/2020	checked	ADP

drawing number
17.14/202



FIRST FLOOR
SCALE 1 : 50

NOTE

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No.	DATE	REVISION

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SINK 50m Ø WP
WHB 40mm Ø WP, 2x WHB 50mm Ø WP's
SHOWER 50mm Ø WP
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DRAINAGE TO COMPLY WITH SANS 10400-P

GAS NOTE:

GAS INSTALLATION TO COMPLY WITH SANS 10087 PART 1

GLAZING NOTE:

NOMINAL GLASS THICKNESS:		MAKSIMUM PANE SIZE:
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GEYSER NOTE:

GEYSER INSTALLATION TO COMPLY WITH SANS 10254
SOLAR HOT WATER HEATING SYSTEM TO COMPLY WITH SANS 10106 AND SANS 1307. THE INSTALLATION THEREOF TO COMPLY WITH SANS 10254

AREAS:

NOTE: CH refers to ceiling height measured from finished floor level

project name: 17.14
page type: A1
Designer
Engineer signature
Client signature

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discipline
ARCHITECTURE

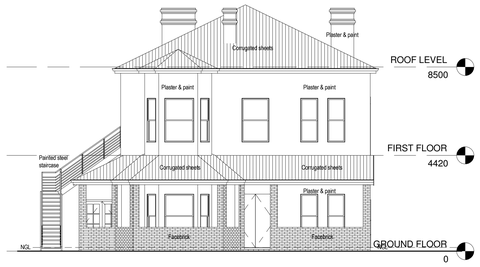
project description
COMMUNITY HALL
JDA
BERTHA SOLOMON RECREATION CENTRE, JEPPESTOWN

drawing name
GYM BUILDING

phase
STAGE 4

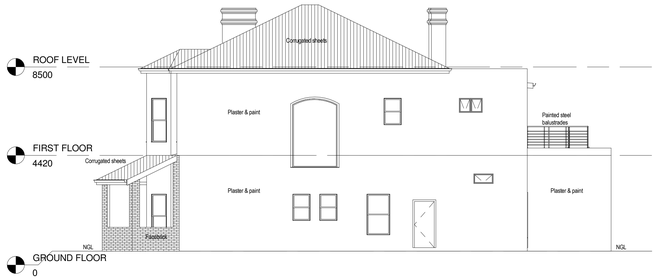
scale 1 : 50
drawn TN
date 03/11/2020
checked ADP

drawing number
17.14/203

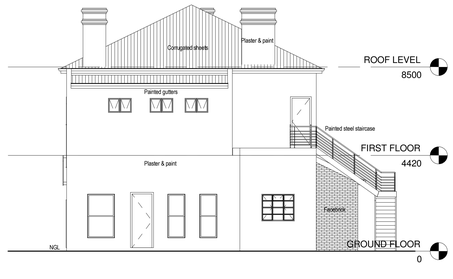


EAST ELEVATION
SCALE 1:100

NOTE: PROVIDE PROVISION TO REFURBISH EXISTING BURGLAR BARS ON ALL WINDOWS



NORTH ELEVATION
SCALE 1:100

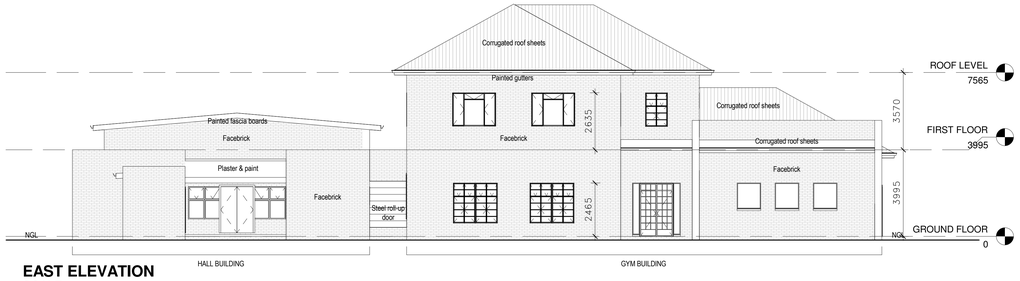


WEST ELEVATION
SCALE 1:100

SOUTH ELEVATION
SCALE 1:100

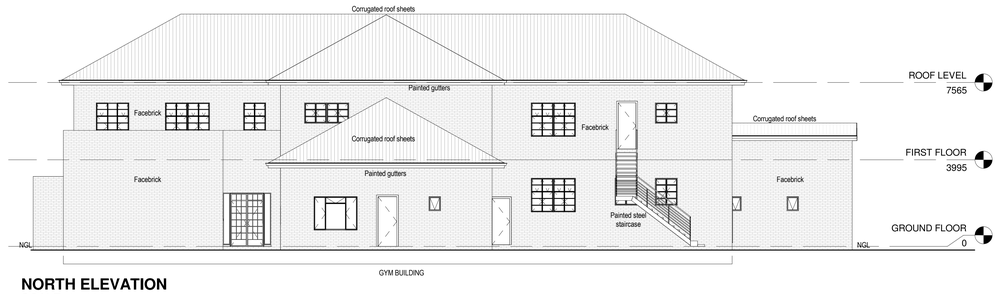
SENIOR CENTRE
SCALE 1 : 100

GYM AND HALL BUILDING



EAST ELEVATION
SCALE 1 : 100

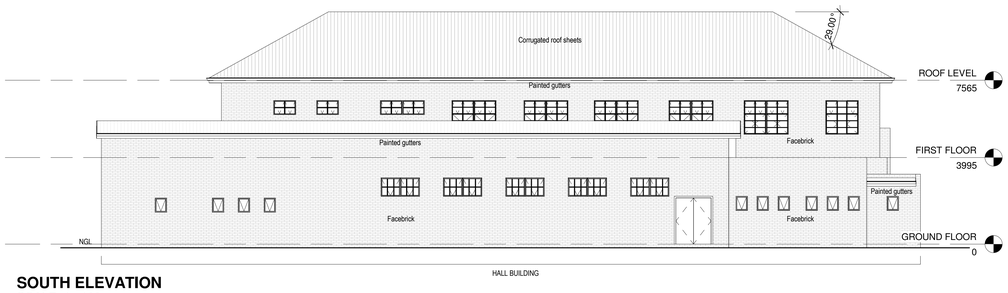
NOTE: PROVIDE PROVISION TO REFURBISH EXISTING BURGLAR BARS ON ALL GROUND FLOOR WINDOWS



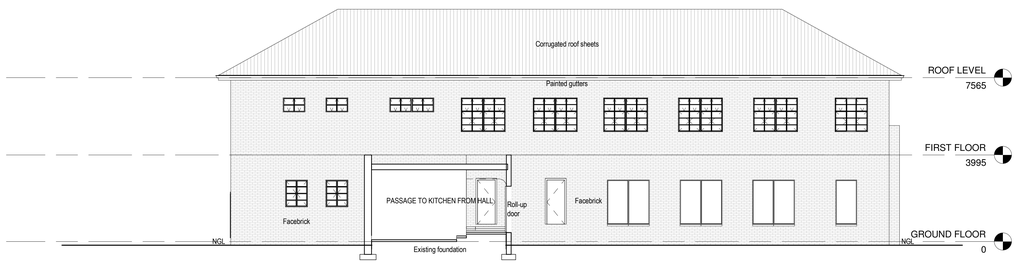
NORTH ELEVATION
SCALE 1 : 100

WEST ELEVATION
SCALE 1 : 100

NOTE: PROVIDE PROVISION TO REFURBISH EXISTING BURGLAR BARS ON ALL GROUND FLOOR WINDOWS

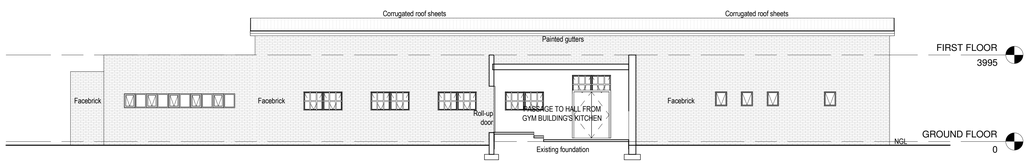


SOUTH ELEVATION
SCALE 1 : 100



GYM SOUTH ELEVATION
SCALE 1 : 100

NOTE: PROVIDE PROVISION TO REFURBISH EXISTING BURGLAR BARS ON ALL GROUND FLOOR WINDOWS



HALL NORTH ELEVATION
SCALE 1 : 100

NOTE

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No.	DATE	REVISION

DRAINAGE NOTE:

BATH 50mm Ø WP
SINK 50m Ø WP
WHB 40mm Ø WP, 2x WHB 50mm Ø WP's
SHOWER 50mm Ø WP
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SEWER PIPES 110mm Ø AND 150mm Ø PVC
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ANTI-VAC TRAPS TO ALL FIRST FLOOR WHB
ALL WORK TO COMPLY TO SABS 0400
MINIMUM INVERT LEVEL = 450mm (MIN) BELOW NGL
IE's TO ALL SEWER PIPE TURNS AND BENDS
DRAINAGE TO COMPLY WITH SANS 10400-P

GAS NOTE:

GAS INSTALLATION TO COMPLY WITH SANS 10087 PART 1

GLAZING NOTE:

NOMINAL GLASS THICKNESS:		MAKSIMUM PANE SIZE:
3mm	-	0,75 m²
4mm	-	1,5 m²
5mm	-	2,1 m²
6mm	-	3,2 m²

GLAZING TO COMPLY WITH SANS 10400-N
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GEYSER NOTE:

GEYSER INSTALLATION TO COMPLY WITH SANS 10254
SOLAR HOT WATER HEATING SYSTEM TO COMPLY WITH SANS 10106 AND SANS 1307. THE INSTALLATION THEREOF TO COMPLY WITH SANS 10254

AREAS:

project name	page type
17.14	A0

Designer

Engineer signature	Client signature

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www.kwpcreate.com
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discipline
ARCHITECTURE

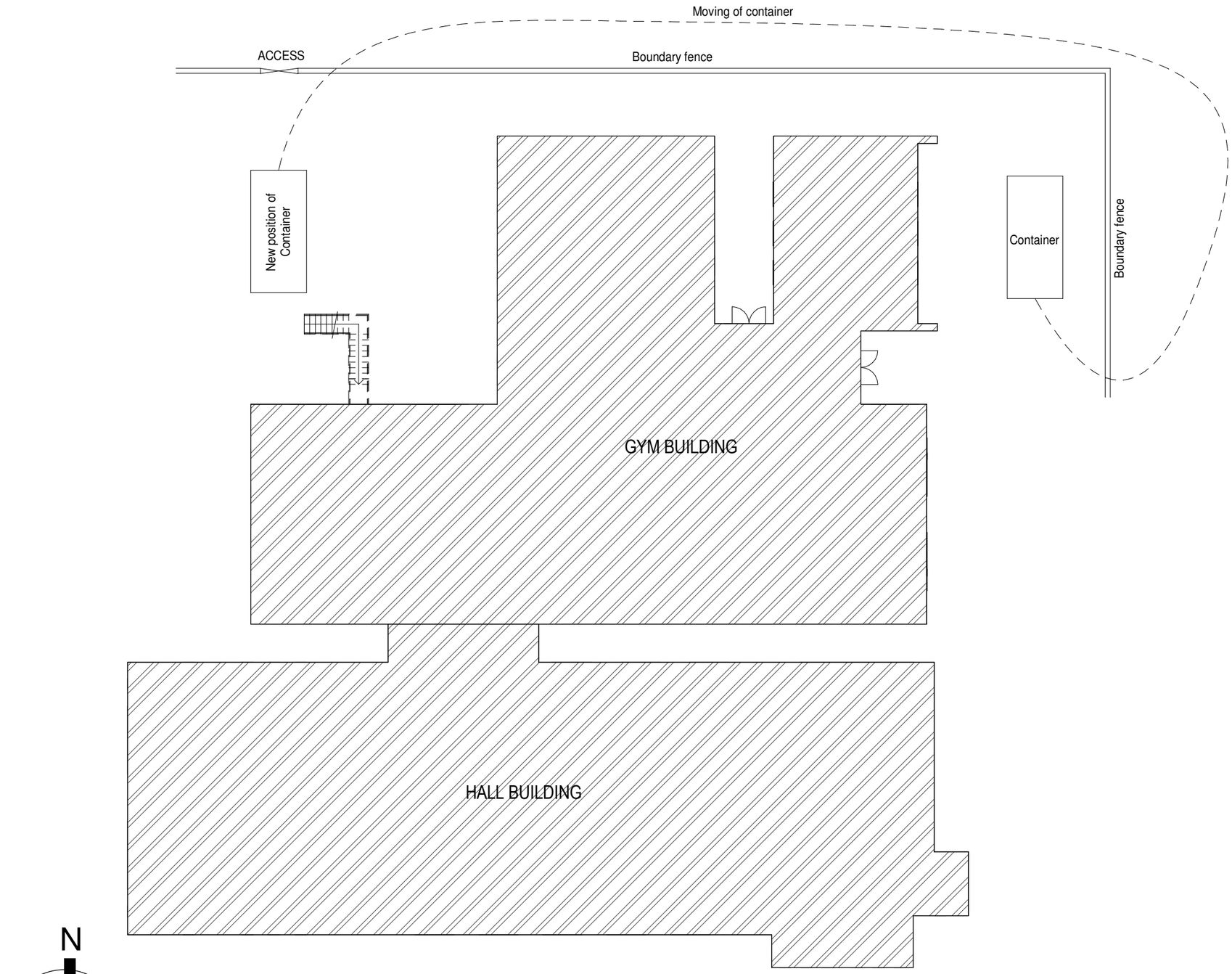
project description
SENIOR CTR, GYM & COMMUNITY HALL
JDA
BERTHA SOLOMON RECREATION CENTRE, JEPPESTOWN

drawing name
SNR CTR, HALL & GYM BUILDING ELEVATIONS

phase
STAGE 4

scale	1 : 100	drawn	TN
date	05/11/2020	checked	ADP/NS

drawing number
17.14/205



SITE LAYOUT
SCALE 1 : 200

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No.	DATE	REVISION

project description
COMMUNITY HALL
JDA
BERTHA SOLOMON RECREATION CENTRE, JEPPESTOWN

drawing title
CONTAINER POSITION

drawing number
17.14/204

date
03/11/2020

drawn
TN

BERTHA SOLOMON RECREATIONAL CENTRE

JEPPESTOWN

ELECTRICAL INSTALLATION

SCOPE OF WORK

AND

DETAILED TECHNICAL SPECIFICATION

INDEX

SCOPE OF WORK

1.0 GENERAL

This sub-contract covers the supply, installation, testing, commissioning and free maintenance during the guarantee period of 12 months the electrical installation as detailed in this specification and on the works covered under this scope.

The Electrical Sub-contractor shall provide all materials, equipment, labour and services necessary for the complete and efficient operation of the Electrical Installation in accordance with the intent of the specification.

The work shall be carried out in accordance with the Occupational Health and Safety Act 85 (1993) as amended, SANS Code 10142, Municipal By-Laws and Regulations and/or requirements of the Supply Authorities.

2.0 INCLUDED IN THIS SUB-CONTRACT ARE THE FOLLOWING:

2.1 The provision of the complete electrical installation, for the entire building that comprises this contract.

2.4 Testing and commissioning of existing distribution boards for compliance.

2.5 Testing and commissioning of the existing electrical installation for compliance.

2.7 Attendance to Specialist Sub-contractors.

2.11 Supply and install new Lighting or replace existing defective fittings.

2.12 Supply and install small Power points of replace existing defective Power points.

3.0 NOT INCLUDED IN THIS SUB-CONTRACT ARE THE FOLLOWING:

3.1 Standby Generator Cabling and Power supply

3.2 Supply cabling and Power to Uninterruptable Power Supply Units

3.3 Provision of electric drive motors which form part of the supply of mechanical equipment.

3.4 Provision of instrumentation and control equipment pertinent to the air conditioning.

3.5 Provision of sensors and measuring equipment pertinent to the air conditioning and fire alarm systems.

3.6 Access doors to electrical rooms and in ceilings and other concealed areas to electrical equipment.

3.7 Grouting and patching of beams, walls, floors and masonry work as required including repairs to plaster.

3.8 All required openings through floors, walls, ceilings and partitions for conduits, trunkings, cables etc.

3.9 Electrical rooms and compartments.

3.10 Ventilation of substations and equipment rooms.

DETAILED TECHNICAL SPECIFICATION:

1.0 GENERAL

1.1 All details, dimensions and instructions shown on any drawings, diagrams and specifications quoted herein shall form part of this specification.

1.2 Dimensions and design data shown on the drawings are for tendering purposes only. The drawings are not suitable for manufacturing purposes. The responsibility for dimensional accuracy remains with the sub-contractor.

1.3 Any work done by the sub-contractor without approved drawings or site instructions shall be at the sub-contractor's own risk and any changes required to conform with the contract documents shall be for the account of the sub-contractor.

2.0 STANDARDS

The plant must in all respects conform to the following regulations:

a) Occupational Health and Safety Act, Act 85 of 1993.
b) National Building regulations, SANS Code 0400.
c) Local municipal by-laws and regulations & regulations of the local electrical supply authority.
d) All applicable SANS specifications or BS specifications where no SANS specification exists.
e) Mine and Industrial Regulations, Government notices.
f) Local Municipal Regulations and Ordinances.
g) Fire Department Regulations.
h) All special conditions, specifications or codes of practice specified hereinafter.

The materials and equipment covered in this Specification shall be manufactured and tested in accordance with the latest revisions of the Code of Practice for the Wiring of Premises and the relevant South African, German and International Standards and shall include some of the following standards of which reference has been made in the test:

SANS - 55	BS – 159	BS - 2941	VDE - 0660
SANS - 625	BS - 162	BS - 3940	IEC - 51
SANS - 780	BS - 171	BS - 4608	IEC - 85
SANS - 784	BS - 1433	BS - 4752	IEC - 158
SANS - 1092	BS - 1977	BS - 5311	IEC - 185
SANS - 1180	BS - 2692	BS - 5419	IEC - 186
BS - 88	BS - 2897	BS - 5424	IEC - 358
BS - 89	BS - 2898	BS - 5462	IEC - 157
BS - 142	BS - 3871	DIN - 43700	
BS - 158	BS - 3938	VDE - 0410	

Where trade names and references to catalogues are found in the specification, the intention is to set a particular standard of equipment. Where other approved equipment is specified, the sub-contractor shall obtain written approval from the Consultant or Project Manager before he / she may deviate from the specified equipment. The sub-contractor must work strictly according to this specification and shall ensure that only the best quality material is used and that the installation is handed over as a complete working system.

<u>COMPLIANCE WITH SPECIFICATION</u>

The Tenderer shall provide the manufacturer with all such relevant information to enable the manufacturer to ensure that the equipment quoted is, in all respects, in accordance with the specifications and drawings.

The Engineer may, upon receipt of a direct request by a specialist manufacturer, provide the

manufacturer with copies of the relevant portions of the Specification and/or drawings but this service is only in the interest of more accurate tendering, clarification of requirements and general savings in time and materials and does not relieve the Tenderer, in any way, of the responsibility for the sufficiency of the Tender.

As it is impractical to avoid all direct communication between the Engineer and specialist manufacturers it is essential that any clarification of requirements given by the Engineer that may be construed as a concession and thereby effect a reduction in cost of the equipment should be obtained from the Engineer in writing. Failure to do so could lead the Tenderer to unexpected but irrecoverable additional costs due to the strict enforcement of the Specification.

3.0 OPERATION MANUALS, WIRING DIAGRAMS, TEST CERTIFICATES, CATALOGUES OF SPARE PARTS AND MAINTENANCE INSTRUCTIONS.

Three copies of operation manuals, wiring diagrams, test certificates, catalogues of spare parts and maintenance instructions and a list of agents and/or suppliers must be supplied and forwarded to the Consultant or Project Manager.

The operation and maintenance manuals must adhere to the requirements as detailed in this specification.

The operation manuals must be sturdily bound in a strong hard cover. Material in the manual must be clear, legible and well arranged and provided with an index.

A draft copy of the above manuals must be available two weeks before first handover (practical completion) of the installation and no handover shall be considered without this copy of the manuals. The final set of complete updated manuals shall be delivered to the offices of the engineer no later than 4 weeks (1 month) after first handover.
A complete set of ‘as-built’ (record drawings) shall be compiled by the sub-contractor and shall form part of the operation and maintenance manuals. The drawings shall be submitted in hard copy and electronic copy format.

4.0 GENERAL DESCRIPTION OF THE SITE AND LOCATION

The site is a multipurpose recreational community facility located in Jeppestown, Johannesburg. The facility comprises of three building, two storey Gym, single storey Hall and two storey Nursery buildings.

5.0 DESIGN CONDITIONS

SITE CONDITIONS AND OPERATING ENVIRONMENT

Altitude above sea level	1700m
Peak temperature in 24 hours	50°C
Average maximum temperature in 24 hours	40°C
Minimum temperature	-5°C
Humidity at average maximum temperature	40%
Lightning conditions	Severe - Isoceraunic
Vermin	All equipment to be Vermin proof

6.0 SPECIFICATION OF EQUIPMENT

6.1 CONSUMER'S SAFETY EQUIPMENT

6.1.1 NOTICES:

6.1.1.1 As per statutory requirements.

6.2 ELECTRICITY SERVICE CONNECTION

6.2.1 WORK BY SUPPLY AUTHORITY

6.2.1.1 There is existing adequate power to the facility.

6.3 EARTHING OF BUILDING

The installation shall be earthed in full accordance with the South African National Safety Standards, Code of Practice for the Wiring of Premises, SANS 0142-1, and the requirements of the local supply authority.

All hot and cold water and waste pipes are to be effectively bonded by means of copper tapes (not wire).

All light circuits shall include a 2,5mm² earth conductor run from the earth bar of the relative distribution board.

Metal lampholders installed above wash hand basins or concrete and earth floors are to be effectively earthed.

Earthed connections from the sub-boards to the building main board shall be as specified under "Sub Mains Runs".

Armouring of all cables shall be earthed by means of the relative cable glands and gland plates.

6.4 LUMINAIRES

SUPPLY OF LUMINAIRES

6.4.1 GENERAL

All the luminaires have been indicated in the bills of quantities and their price should cover the supply and delivery to site of all luminaires which are described as accurately as possible in the schedule of luminaires and lamps. Tenderers shall also allow in the main price for taking delivery, checking, off loading, storing, assembling, installing, testing and connecting of all luminaires.

6.4.1.1 Provide luminaires lighting equipment, components and lamps for all lighting outlets as required.

6.4.1.2 Type of luminaires shall be as indicated alphanumerically on drawings herein specified.

6.4.1.3 Locations of luminaires on Electrical Drawings are diagrammatic. Verify location and spacing with Architectural Reflected Ceiling Plans and other reference data before installation. Co-ordinate space conditions with other trades before installation of fittings. Pendant mount, as approved, surface type fittings where required to meet space conditions for variance from drawings and specifications.

6.4.1.4 Refer to Architectural Finish Schedules and Details for ceiling construction and furnish accessories to suit. Luminaire catalogue numbers do not necessarily denote specific mounting accessories for type of ceilings in which fittings may be installed.

6.4.1.5 Where plaster ceilings occur, supply plaster frames for setting under work of other Contract. Direct settings and be responsible for correct location, make sure the bottom of frame is flush with finished ceiling, forming screed edge for finished plaster. Luminaires and supports shall have channel cross-section of approved gauge, and shall support fixture by means of not less than two bolts each. Submit sample if directed.

6.4.1.6 Lighting in Machine Room, Duct Voids, Roof Voids, Mechanical Equipment Room and Fan Rooms is diagrammatic, indicating type quantity and general circuiting of luminaires. Modify locations, mounting and where necessary, type to suit conditions as approved or directed.

6.4.1.7 Install all rows of luminaires accurately on straight lines unless otherwise indicated on drawings.

6.4.1.8 For weatherproof and vapour-tight installation, painted finishes of fittings and accessories shall be weatherproof enamel or galvanised and bonderized epoxy. Hangers shall be galvanised conduit with chemically resistant, weatherproof baked enamel finish.

6.4.1.9 Luminaires shall be designed to provide sufficient ventilation of the lamps and ballasts. Outdoor luminaires with vent holes shall have wire mesh screens in the vent holes and preferably filter breathers to prevent ingress of dust and dirt.

6.4.1.10 Provide approved support for each luminaire outlet.

6.4.1.11 Pendant-mounted luminaires shall be supported by framework of ceiling or form inserts in slab.

6.4.1.12 For each wall bracket type luminaire provide flanged metal stem attached to outlet box, with threaded end suitable for holding luminaire. Flanged part of luminaire stud shall be of broad base type and secured to outlet box at not less than three points.

Lampholders shall hold lamps securely against normal vibration and maintenance handling. Provide silver plated contracts in lampholders for the following type of lamps:

Lamps in all outdoor luminaires.

Quartz iodine lamps.

Reflector cones, baffles, aperture plates, diffusers and decorative elements of luminaires shall not be installed until completion of plastering, ceiling tile work, painting and the area has been cleaned.

6.4.1.13 Blemished, damaged or unsatisfactory luminaires shall be replaced in a manner satisfactory to the Architect.

6.4.1.14 Provide labour and materials if necessary for final aiming of all adjustable luminaires under the Architect's supervision. Aiming shall take place immediately before building is handed over to the Client, after regular working hours where required.

6.4.1.15 In adjustable luminaires, indicate aiming and locking devices.

6.4.1.16 In luminaires using lamps with asymmetrical beams, indicate lamp adjustment devices to assure permanent orientation of light beam unaffected by re-lamping.

6.4.1.17 All luminaires and lamps supplied under this sub-contract will be new and unused when delivered to site.

6.4.1.18 All light fittings will be reviewed by the Engineer for quality purposes. Light fittings will be rejected should they not meet the safety and quality as specified in this document.

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6.5 ELECTRICAL DISTRIBUTION BOARDS

6.5.1 Doors

All distribution boards shall be supplied with lockable doors.

6.5.2 Fault Level

All sub-distribution boards to be braced to withstand symmetrical short circuit currents as indicated on the single-line diagrams. No board shall have a rating less than 5kA.

6.5.3 Labelling

All circuit breakers are to be labelled in accordance with the single line diagrams, i.e. L1, L2, P1 etc. Spare ways are to be numbered.

Labelling shall be on the board cover plate directly below the circuit breakers using engraved trafolite type labels.

All distribution boards shall be provided with a typed, clearly descriptive legend card placed in protective transparent holders inside the doors. The legend card shall provide the circuit numbers in accordance with the single line diagram, and the area that the circuit feeds, eg – L1 – Office.

Provide a trafolite label on each and every Distribution Board indicating where it is supplied.

6.5.4 Switchgear

The switchgear design, co-ordination, discrimination and cascading is based on the products supplied by CBI or equal and approved.

Tenderers are to base the tender main offer on this product as described in the distribution board schematics.

6.5.5 Spare Capacity

All distribution boards shall be loaded to not more than 70% of capacity and shall be capable of accommodating 15% additional switchgear.

6.6 EQUIPMENT NOT INCLUDED WITHIN THE ELECTRICAL CONTRACT

Specialist firms will be appointed as sub-contractors to the principal contractor for the supply, installation and testing of the following equipment:

- Earthing and Lightning Protection

6.7 SLEEVES

No sleeve are specified.

6.8 ISOLATORS

Unless otherwise specified isolators shall be of the flush and surface mounting type rating as shown on the relevant drawings.

6.9 GEYSERS

No geysers are specified.

6.10 16 AMP, 3-PIN, 250 VOLT SWITCH-SOCKET CIRCUITS

Wiring shall consist of 2 x 4mm² PVC conductors and 1 x 2,5mm² earth wire in 20mm diameter conduit.

Outlet boxes for switch-socket outlets shall be installed at the following height above finished floor level, measured to underside, unless otherwise specified:

6.11 CONDUITS

Unless otherwise specified all conduiting shall be PVC.

6.12 LIGHTING CIRCUITS

Lighting circuits shall be wired using 2.5mm² insulated wires. Cabling shall be installed neatly in the ceiling void and installed in 20mm diameter PVC conduit where light fittings are to be installed in walls or brickwork. All light fittings shall be hardwired.

6.13 OUTLETS FOR ELECTRONIC SERVICES INSTALLATIONS

The Electrical contractor is required to install wireways (trunking and/or conduit as specified on layout drawings) to facilitate the installation of these services. The Electrical Sub-contractor is required to provide conduit boxes with blank cover plates where outlets for these services are indicated on the electrical layout drawings. Where outlets are in powerskirting, the electrical sub-contractor shall provide blank cover plates in the powerskirting. The electrical contractor will also supply the necessary power outlets for electronic services.

6.14 CONDUITS FOR ELECTRONIC SERVICES

Supply and install 25mm diameter PVC conduits complete with galvanised draw-wire positions as shown on the relevant layout drawings. Assist and point out where necessary the various conduits and draw boxes when wiring is taking place by others.

6.16 PROVISIONAL SUMS

A number of provisional sums have been allowed in the tender summary for expenditure at a later date at the discretion of the Engineer. The electrical sub-contractor will be required to price for items in the Provisional Sums based on rates submitted in the Schedule of Rates.

6.17 **AS-BUILT DRAWINGS**

As-built drawings shall be marked up by the electrical sub-contractor on a set of prints provided by the Electrical Consultant. The electrical sub-contractor shall also provide three maintenance manuals for the following:

(i) The entire electrical installation including full details of all luminaires, outlets, light switches and distribution boards.

(ii) A brief description of how the electrical system operates.

6.18 **WORKS GUARANTEE**

The entire electrical installation shall be guaranteed by the electrical sub-contractor for a period of 12 months from the date of practical completion.

6.19 **BALANCING**

The entire installation shall be balanced to the satisfaction of the Supply Authority and the Consulting Engineer

7.0 SCHEDULE OF OMISSIONS AND VARIATIONS

7.1 When the Tenderer desires to make omissions or variations from the Specification, he shall record it below, together with reference to the relevant sections of the Specification.

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_____ _____
TENDERERS SIGNATURE DATE

8.0 SUB-LETTING

8.1 If the sub-letting is intended Tenderers shall state the trade and firm below.

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_____ _____

TENDERERS SIGNATURE DATE

EASTERN GATEWAY
OVAL PARK
Soft landscape & Irrigation Specifications

Version 1

November 2020

KWPCREATE (Pty) Ltd Reg.No. 83/006223/07 **Directors** IZAAK LÖTZ MBA (managing) PrArchPrCPMPrCMentor **info@kwpcreate.com**
ELISE BESTER PrArch PrCPM ALMER DU PISANIE MSC AAS (urban design) PrArch **www.kwpcreate.com**
Pretoria 181 Blackwood Street Arcadia 0083 PO Box 332 Groenkloof 0027 **Tel** +27(0)123439141 **Fax** +27(0)123439524
Kempton Park Central Professional Suite 20 Central Avenue PO Box 3789 Kempton Park 1620 **Tel** +27(0)119703343 **Fax** +27(0)119703342
Nelspruit 3 Zebrina Crescent West Acres PO Box 1879 Nelspruit 1200 **Tel** +27(0)137412188 **Fax** +27(0)7412188

PART 1 - MISCELLANEOUS ITEMS

1.2. General

(SANS 1921- General (Small works))

These specifications must be read in conjunction with the landscape drawings as referred to in this document.

1.2.1. Scope of Specifications

All work, where applicable, must be carried out according to these specifications.

The contractor must take note of the contents of these specifications as well as the type and extent of the work, as no claims will be considered as a result of misinterpretation. Vagueness and discrepancies should be discussed with the principal agent without delay.

Where items of materials or the exact procedures may not be specified, the contractor will request that the principal agent gives such detailed information as may be required so as to delivering a product of the highest quality.

1.2.2. Contractor's equipment and tools

The contractor's equipment shall be of a modern design and where applicable, roadworthy and suitable for the service for which it is required. Where the principal agent is of the opinion that the contractor has ineffective or inadequate equipment on site which will hamper the work to be carried out, he shall have the right to instruct the contractor to obtain and provide onsite such additional or approved equipment which in his opinion is required for the carrying out of the work, without the progress of the work being affected in any way.

The contractor must remove all equipment, which is not in working order or needed on site.

1.2.3. Plotting of works

The contractor shall be responsible for the correct pegging out of the works as measured from reference pegs and site levels as indicated by the principal agent. The contractor must supply the necessary measuring equipment for use by the principal agent, as well as sufficient assistants for the plotting, surveying and checking of heights, which may be required as the work progresses.

1.2.4. Storage of material on site

The contractor must ensure that no material is delivered on site prematurely before its placing

1.2.5. Maintenance and safeguarding of new work

During the various phases of the work, the contractor shall safeguard the work from any damage and maintain it until handing over to the employer. Any defects or damage, which may occur during this period, must be rectified by the contractor at his own expense, whether caused by construction machinery, normal traffic, rain, wind damage, faulty materials, or whatever reason.

1.2.6. Program

The execution of the work is set out in the contract and shall be completed in phases as described in order to accommodate other construction works.

1.2.7. Re-instatement of damage to the site resulting from works

All roads, kerb-stones, wire fencing, poles, structures, paving, etc. which have been affected in the course of the work carried out, shall be set right before the site is vacated.

1.2.8. Supervision

The contractor must ensure the continuous presence of a capable overseer who can receive and execute directives from the principal agent

1.2.9. Skilled Labour

Only *bona fide* skilled artisans shall be used where skilled workmanship is required.

1.2.10. Co-operation with other contractors

No claim for additional compensation, which arises from any cause resulting from the presence of other contractors on site shall be considered.

1.2.11. Damage by flooding

The contractor must apply all necessary measures to prevent work from being damaged by floodwater and erosion. The contractor must channel all stormwater which leaves the site so that it causes no damage to existing work or work in progress at a lower level and does not flood or retard the progress of work being carried out by other contractors. The principal agent must approve any measures taken to cope with stormwater.

1.2.12. General neatness on site

The contractor shall at all times during the duration of the work keep the site neat and clean. It shall be expected of the contractor as a normal part of his duties, to clear and tidy the site totally over weekends, to such an extent that no disruption or discomfort is experienced and that the area may be considered safe.

1.2.13. Removal of material from site

Any material of whatever nature, which must be removed from the site as directed by the principal agent and as stipulated must first be placed in measurable heaps to be measured in-situ by the principal agent before it is removed. No payment shall be approved for material, which is removed without the proper controls.

1.3. Site Clearance

(SANS 1200 C - Site clearance)

The contractor shall only commence with the earthworks with the approval of the principal agent. The contractor is to make a proper survey of the existing layout of the site before any earthworks are commenced. This is necessary to clarify any possible vagueness between the conditions on the site and the drawings indicating site works.

1.3.1. Clearing of area to be landscaped

This item is to include excavation and removal of all rubbish, soiled earth and waste from the whole area to be planted or where construction work will take place, as well as roughly levelling cleared areas.

All loose rubble, concrete, dead trees, dead shrubs, etc. Must be stockpiled and then removed from the site after the quantities have been measured and approved by the principal agent. Only trees and shrubs indicated by the principal agent may be removed.

Loading and removal to the Contractors own dumping site all unusable material, debris and stone, unused plant materials or paving, placed in measurable storage heaps, resulting from the initial soil preparation to the final finishing process (other than specified).

Collect unwanted materials and place in measurable heaps, and certified by Landscape Architect on site prior to removal.

The contractor should at all times ensure to keep the site in a neat and tidy condition.

Existing planting on site has been identified and will need to be temporarily protected or transplanted as indicated on the plan.

Provision for removal of materials unusable for fill, area to be cleared (allowance for 150mm layer over area for veld grass and paving) - RATE MUST INCLUDE REMOVAL OFF-SITE TO REGISTERED DUMP SITE.

1.4. Decompaction

Contractor to provide the necessary machinery and labour to de-compact the areas as specified.

Material removed to be spoiled on site. Provision for decompaction behind all kerbs to open ground areas (300mm wide x 200mm deep)

Provision for decompaction for all 100L, 200L trees and 400L trees (1200 x 1200 x 1200mm deep) (0.5 m^3/tree). Decompaction on all plant beds 200 mm deep.

1.5. General Soil Shaping - Cut and fill

The contractor to provide all necessary equipment, labour and machinery for the general clearing and shaping of selected areas on site.

All levels must be graded to the contours indicated by the principal agent. Excess excavated material must be removed to a suitable dump site or stored in heaps of not more than 1 (one) meter high for later re-use.

Disturbed compacted levels must be re-compacted to the density specified by the principal agent.

All cutting and filling must be done with mechanical plant to the levels and methods prescribed by the principal agent. Final finishing levels must be done by hand.

All bulk earthworks levels to be approved by the landscape architect.

All shaping is to assist in the general storm water runoff across the entire site.

All materials resulting from the general shaping should be used on site for this purpose only.

All foreign materials or rubbish resulting during this process should be collected and removed as provided for elsewhere.

1.6. Excavation of landscape areas

1.6.1. Excavations deeper than indicated levels

The Contractor will at all times be responsible for safety on site and safeguard excavations.

Unless otherwise specified all excavations will be to net depths as indicated on the earthworks plan as issued by the Responsible Professional person.

The tolerance for excavated areas should not vary by more than 50mm from the levels shown on the earthworks plan. All spoil, temporary or permanent may only be spoiled in areas as indicated by the Landscape Architect and maintained to the satisfaction of the Landscape Architect.

When the contractor does not comply with this, no claims in connection with the deeper excavations shall be entertained and he will be remunerated according to the excavation depths indicated on the drawings.

1.6.2. Excessive excavations

If the Contractor excavated any excavations too deep, he must fill and compact it to the correct depth and density at his own cost, in such a way that future subsidence will not occur. When it is necessary for the contractor to excavate deeper than indicated on the drawings, he must notify the principal agent in writing.

1.6.3. Safety of excavations

The contractor shall at all times be responsible for the safety of the excavations. Any loss or damage as a result of negligence to comply with the demands of safety will be carried and corrected by the contractor at his own expense to the satisfaction of the principal agent.

Provision for general shaping including cut & fill to average soil depth of +/- 200mm. The final level of all excavations may not be more than 100mm higher or 100mm lower than the levels indicated on the drawings or as stated elsewhere.

Provision for precision shaping over entire surface of the shaped areas including 20% for sloping surfaces

1.7. Filling of landscape areas

The existing area must be renovated or scarified to a depth of 200mm.

Filling, where necessary, must be done in 150mm layers. Where the nature of the compilation of the layers differs, the layers must be inter-mixed.

All filling material placed by the contractor must be spread and compacted as required by the principal agent so as to avoid sagging during wet conditions. Where filling is done, all existing plants, if any, must be removed as described in "Clearing of the area to be landscaped".

The difference in the level of the finishing layer should not be more than 100mm of the basic topographic lines, unless otherwise prescribed by the principal agent.

1.7.1. Excessive filling

If the contractor places excessive filling, he will have to remove it at his own cost to the satisfaction of the principal agent.

1.7.2. Source of filling material

If the filling material is not supplied by the employer and the source is not specified by the principal agent, the contractor must get approval from the principal agent by submitting samples.

It will be expected of the contractor to get soil tests from an approved institution.

If hard rock is found during excavations, the contractor must inform the principal agent of the same so that the extent of the hard rock can be established. If measuring of hard rock is done in the absence of the principal agent, no claim will be granted and it will be taken as normal pickable material.

PART: 2 - EARTH WORKS AND SOIL PREPARATION

2. SANS 2001-BE1: Earthworks (General)

2.1. Planting Medium

2.1.1. Topsoil import and spread

The contractor to provide all necessary equipment, labour and machinery for spread of topsoil from stockpile on site, or to import the topsoil as required.

The topsoil to be free of any building rubble, rocks or plant materials.

The contractor is to import topsoil for all topsoil requirements, unless otherwise specified by the principal agent.

Topsoil shall be placed and spread over prepared areas and then trimmed to the uniform thickness, as required by the principal agent. After spreading and co mpacting the topsoil, the topsoil thickness shall nowhere be less than specified, except for planer beds where the thickness shall not be less than 250mm.

Spread topsoil 500 mm layer for all built planters. All levels up to 500mm below final level to be filled with sub-soil lightly compacted to still allow for drainage.

Spread topsoil for tree holes where required to a minimum of 0.34m³ per tree hole.

Compact soils where required, and prevent erosion at all times.

IMPORTANT NOTE FOR THE IMPORT OF TOPSOIL: PAYMENT FOR TOPSOIL WILL ONLY TAKE PLACE ON RECEIPT OF SIGNED DELIVERY NOTES BY THE LANDSCAPE ARCHITECT PRIOR TO EACH PAYMENT CERTIFICATE. TOPSOIL WILL NOT BE CERTIFIED WITHOUT THE DELIVERY NOTES.

2.1.2. Scarifying

Supply all the necessary equipment, tools and labour for scarifying of all areas.

All soil, which is going to be cultivated, must, unless otherwise specified by the Landscape architect, be ripped to a depth of 200mm by crisscrossing the area at 200mm intervals using an approved implement.

Soil on inclines steeper than 1:5 must only be broken loose at 1000mm intervals, on the contour and to a depth of 200mm.

Use hand labour to scarify under trees to ensure that tree roots do not get damaged.

Damaged roots to be pruned and wounds to be treated with an approved sealant.

Contractor to ensure that no services, existing paving or concrete haunching behind curbs, are damaged.

Remove all unwanted debris and medium (±40mm Ø) and large (±100mm Ø) sized rocks from the scarified soils and use suitable materials for soil berm filling.

Where applicable, de-compact by hand picking soil to a depth of 100 mm where planting is to be done after removal of the road construction material.

2.1.3. Ripping

Ripping loose of imported material in shallow soil will be done by means of a soil ripper, spring-tine harrow or other approved ripper type implement to a depth of 300mm. Included in the loosening of the soil is the application and working in of fertilisers which do not dissolve easily, i.e. agricultural lime or flowers-of-sulphur as prescribed.

Supply all necessary labour, machinery and equipment for the ripping in all planting and paving areas.

2.1.4. Fine grading

Contractor to supply all necessary labour, machinery and equipment for the fine trimming of the planting soils of all areas.

The contractor must ensure that all areas to be planted are compacted sufficiently to avoid any subsidence later on. Soil surface to be planted should not exceed a tolerance of 30mm in height when measured from the basic topographical line.

Cultivate fertilizers and compost as supplied elsewhere.

Provision must be made for proper and effective stormwater drainage.

Soil erosion should be avoided at all times.

Stones larger than 40mmØ and all foreign material must be removed and used for fill.

Final surface must be shaped to desired profiles as to flow into levels of roadways and structures.

No irrigation or storm water should be allowed to puddle anywhere behind the retaining walls or in any of the allocated plant bed areas.

2.1.5. Compost import and spreading in plant beds

All plant beds and trees in the intensive landscaped areas are to be composted and the compost worked into the topsoil layer on an annual basis as will be directed. The supply and digging in of compost will only be upon instruction and will be in addition to the maintenance rate.

The Landscape architect will only accept compost if the samples submitted comply with the following requirements:

All compost shall consist of well-decomposed organic material, free of detrimental salts, glass, debris, weeds and other toxic impurities.

Compost shall be applied in quantities as specified.

The contractor should provide all necessary equipment, labour and machinery for import and spread of compost.

Sample of compost must comply with specification and be approved by the Landscape Architect prior to delivery on site.

All compost shall consist of well-decomposed organic material, free of detrimental salts, glass, debris, weeds and other toxic impurities. The pH shall not exceed 7.0. Compost shall be protected against excessive rain, wind and dissipation.

Application rate as per Bill of Quantities:

30 mm deep over planting areas

15 mm deep over lawn areas

0.35m³ per tree hole

IMPORTANT NOTE: PAYMENT FOR COMPOST WILL ONLY TAKE PLACE ON RECEIPT OF SIGNED DELIVERY NOTES BY THE LANDSCAPE ARCHITECT PRIOR TO EACH PAYMENT CERTIFICATE. COMPOST WILL NOT BE CERTIFIED WITHOUT THE DELIVERY NOTES.

2.1.6. Fertilizers

All fertilizer shall be stored in plastic bags. Fertilizer mixtures used shall comply with the specification in Act 36 of 1947. Application of fertilizer for soil improvement will be specified b the principal agent on review of soil analysis and amendment recommendations submitted or added strictly according to the manufacturer's specification.

During the process of rotavating, substances, which need to be added in large quantities, will be thoroughly mixed throughout the growing horizon to a depth of 200mm and not just placed on the surface. These substances include lime, phosphates, manure, compost, slow release fertilizers, colloids, etc. No fertilizer should be added more than two weeks prior to planting.

All fertilizers and soil improvement remedies must be applied during dry weather conditions.

Fertilizers must be worked in within 24 hours after application to prevent loss through wind and weather.

Soluble fertilizers must be applied after irrigation and be washed into the soil with a further light wetting.

Soluble fertilizers may only be applied to growing plants when leaf surfaces are dry.

Fertilizers must be rinsed off the leaves immediately after application.

Fertilisers which are not easily soluble must be applied in the available granular or powder form. Only custom built, calibrated fertiliser applicator machines may be used. The Contractor must ensure that quantities are spread evenly over the terrain according to specification.

Where filler material is brought in, the quantities, as described in the quantity list, must be scattered during the filling process in order to ensure thorough mixing.

The previously measured quantities per volume of soil used as filler must be applied by hand.

All fertilisers and soil improvement remedies must be applied during dry weather conditions.

Phosphate fertilisers must be applied after the soil has been loosened, ploughed or scraped, and be mixed thoroughly with the top 200mm of soil

Soluble fertilisers such as nitrogen fertilisers and potash, as well as fertiliser compounds, must be applied at least eight days before planting. Fertilisers must be spread evenly and worked into the topsoil to a maximum depth of 100mm

Soluble fertilisers may only be applied to growing plants if leaf surfaces are dry.

Fertiliser must be rinsed off the leaves immediately after application.

No traffic may be allowed over established cultivted areas after application of fertiliser and before irrigation.

Soluble fertilisers must be applied after irrigation and be washed into the soil with a further light wetting

2.1.7. Mulch

After trees and shrubs and groundcovers have been planted, tramped down securely, irrigated and supported, a 50mm thick layer of approved seed-free mulch must be placed around the stem, thoroughly watered with a thin layer of ground sprinkled thereover.The contractor to provide all necessary equipment, labour and machinery for the import and spreading of mulch over lawn and planting areas. Thee mulch shall consist of bark chips.

Bark chips should vary in size between 70 and 100mm Ø and should be free of seed or damaging salts or other impurities.

The contractor must provide sample of mulching to the Landscape Architect for approval.

PART: 3 - PLANTING

3.1 Plant material

All plant material will be obtained from sources as approved by the Landscape Architect and must be purchased from registered nurseries. This material must be healthy, with vigorous growth potential, unblemished and parasite or insect free. No pot-bound plants will be acceptable. If the minimum requirements cannot be met and such plants are accepted, payment will be adjusted according to the size of the plant. Plant containers must be weed free. Soil in plant containers will continually be topped up where required in order to prevent the exposure of plant roots. Use only an approved soil/compost mixture for this purpose.

No broken, snapped, or grossly deformed plants will be stored or planted on site.

Dead plants will immediately be removed from the site.

All damaged plastic plant bags or other containers will be replaced by the Contractor and maintained until plants can be planted on the site.

Where plants are kept on site for an extraordinarily long period, and plant roots grow out of the containers, these particular plants must be transplanted into bigger containers.

Plants in containers must be well rooted with balanced root development. Roots must be spread evenly throughout the growth medium. Plants must have been in the container for a minimum period of twelve weeks prior to delivery to site.

3.2. Storage of plants

Plants which cannot be planted immediately (i.e. plants in containers) must be stored under nursery conditions in a place as indicated by the Landscape Architect and must be maintained until and during transplantation to the satisfaction of the Landscape Architect.

3.3. Trees

Contractor to supply all equipment and labour for planting of trees, shrubs and groundcovers and seeding.

Backfill with soil, compost and fertilizer to specification and tramp down firmly.

Remove all surplus soil.

Provide all necessary stakes for trees and secure each tree firmly. Stakes to be driven into firmly compacted soil to minimum depth of 500mm.

Stakes must be 300mm longer than the planted tree with a maximum length of 3000mm above ground surface. Use 3 tree stakes placed opposite sides of the tree. Tree stakes to be a minimum of 50mm Ø.

Approved tree ties to be used to attach the tree to a 50mm diameter cross brace fixed between the stakes. One tree tie/m height of the stem to be used.

Form 1000mm Ø pond around trees and shrubs and water well after planting.

Keep all plants moist.

Plant sizes and plant densities will be strictly enforced.

3.4. Lawn

Lawn sods must be obtained from an approved source, be cut short and be weed free. The dimensions should be approximately 1000mm long x 500mm wide. Runners must be well matted, with a soil layer of at least 5mm. Sods must be transported to the site in a rolled-up form (alternatively on pallets) and must be laid down on the same day. Lawn must be pure as regards the species. The lawn grass shall have a good, healthy green colour, without any dead spots. Sprigs for planting are to be taken from the sods.

3.5. Herbicides and pesticides

Herbicides and pesticides may only be used with the prior written approval of the Landscape architect. The Contractor shall have available at all times Material Safety Data Sheets for all pesticides, herbicides and applications used and shall remove and dispose of empty containers, bags, etc. in an environmentally responsible way. Herbicides, pesticides, chemical products and applications used in this contract shall meet all requirements set by law and the Department of Water Affairs and is to comply with relevant SABS specifications.

All herbicides and pesticides shall be applied by specialists in the applicable field or adequately trained supervisors. The onus shall be on the Contractor to ensure that no desirable vegetation is damaged or dies as result of the application of herbicides or pesticides or any other product used by the Contractor, the incorrect use of equipment, incorrect equipment or negligence on the part of the Contractor or his staff. The Contractor shall take all reasonable steps to ensure that weed and pest control is done in optimal weather conditions to ensure maximum effectiveness.

If in the opinion of the Employer any vegetation is damaged or dies as result of any actions whatsoever by

the Contractor such vegetation shall be replaced to the satisfaction of the Employer. Such vegetation, lawns etc. will be replaced with the same species or in consultation with the Employer with any other species that may be decided upon. The cost of such replacement shall be for the account of the Contractor. Prior to replacing vegetation, lawn etc. and on instruction from the Employer the Contractor shall ensure that all residue of the herbicide etc. is removed from the soil, paving or any other surface or area applicable.

The Contractor shall make his own deductions and conclusions as to the nature of the weeds or pests where work is to be executed and shall accept full responsibility therefore. He shall ensure that all complimentary information necessary for the execution of the service is

obtained and checked in due time and will not invoke a lack of information as justification for delayed and/or defective work.

3.6. Specimen Trees

3.6.1. Specimen Trees out of 400L containers.

Trees: 3000mm stem height and 2000mm wide crown after planting with 80-100mm Ø stem measured 300mm above soil level.

Contractor to meet the landscape architect to select trees to be used. Colour photos of the proposed trees must also be supplied to the landscape architect.

Each tree will be secured using a double strand of no. 8 gauge galvanised wire by tying it down from the tree stake to a position on the tree at an angle of between 45 deg and 60 deg suitably looped around the stem of the tree, the tree bark to be protected from scarring by threading the wire through a 300mm length of plastic hosing. The double strand must then be suitably entwined so that the tree is stable. Alternative securing methods can be proposed but will be at the sole discretion of the Landscape Architect.

Contractor to guarantee each tree for a 12-month period.

3.7. Shrubs and Groundcovers

The Contractor will set out the positions of the groundcovers according to the triangle system in such a way that plants, after being planted, will form neat rows in four directions to facilitate weed and plant control. Plant positions will be marked out on the surface of the ground.

3.7.1. Ground Covers out of 2 L Containers.

NOTE: NO PLANT SIZE SUBSTITUTIONS ARE ALLOWED

Plants should have 200 mm stem lengths and be well established and full within the containers.

Contractor to guarantee planting for a 12-month period.Supply, plant and maintain.

3.7.2. Ground Covers out of 4 L Containers.

NOTE: NO PLANT SIZE SUBSTITUTIONS ARE ALLOWED.

Plants should have 250 mm stem lengths and be well established and full within the containers.

Contractor to guarantee planting for a 6-month period

3.8. Pruning of existing trees

Contractor to prune existing large trees, by removing dead & damaged branches and crown lifting to minimum 3 meters. Treat all wounds with a selected sealant according to manufacturer's specifications. Leaves of trees are to be treated as per landscape architect's instruction to avoid transpiration. All pruned branches etc., must be removed from the works site by the contractor as part of his normal duties. Branches, may, as an alternative be chipped and the mulch spread on the site at the discretion of the Landscape Architect.

PART: 4 - IRRIGATION

4. (SANS 8779 - Plastics piping systems - Polyethylene (PE) pipes for irrigation)

4.1. Irrigation for new landscape development

4.1.1. Water connection point

A water connection point to be made available close to the irrigation mainline or as shown on plan.

4.1.2. Water pressure

Minimum water pressure and flow required are 110L/P/M @ 5 Bar which must be confirmed on site by irrigation contractor before any work commences.

4.1.3. Sleeve requirements

All sleeves to be 110mm in diameter. The pipe is to be slotted with a corrugated outer wall and a smooth inner wall. The pipe must have a pipe stiffness of at least 450 kPa. The sleeving pipe must conform to SABS and ISO standards.

All sleeves to be installed approximately 500mm below ground level and clearly marked. In the case of the sleeves being buried deeper than 500mm the project manager needs to be notified of the depth details.

All sleeves should extend a minimum of 500mm behind the kerb into the landscape area.

All sleeves connecting tree rings (including electrical, etc.) must be placed to the side of the tree ring and not in the middle, as per the drawing below. All other service sleeves must be placed to the side as well.

4.2. Turf Valves

Assembly of the 25mm Turf Valves with fittings to be as shown in the respective detail drawing.
Turf Valve Keys to manually operate the turf valves, which in turn to run the impact sprinklers or hose pipes. All Turf Valves to be connected to a 25mm Swing joint riser.

250mm round valve boxes to be installed at each turf valve; this will not only deter vandalism or theft but will also prevent any serious injuries as they are installed in play areas. An isolation valve to also be installed at each turf valve to allow for partial isolation in the case of breakages or maintenance purposes.
Please note: In addition to this, a galvanized lockable valve box must also be installed.

4.3. Pipes

4.3.1. Low-density polyethylene (LDPE)

The irrigation Sprayline to be a class 3 LDPE pipe or other where specified, and to be installed in trenchers that are no shallower than 350mm below the surface of the landscaped areas. All LDPE pipes that need to cross roads/paths to be installed in sleeves as specified.

The LDPE pipe to make use of Micromark Full Flow, which are to be colour coded for easy identification and are easily installed, there is no need to use soap or pipe dope to install the Full Flow fittings.

4.3.2. High-density polyethylene (HDPE)

High-density polyethylene (HDPE) to conform to Type IV in SABS 533.

The irrigation Mainline to be a Class 6 HDPE to a Class 16 HDPE pipe, as per specification, and to be installed in trenches that are to be no shallower than 500mm below the surface of the landscaped areas. All HDPE pipes that need to cross road/paths to be installed in 110mm sleeves.

The HDPE pipes to make use of SAB approved compression fittings, which are made from a high quality Copolymer Polypropylene and are manufactured in accordance with UNI 9561 AS/NZS4129 BRL – K17105/01 DIN 8076 ISO 14236.

4.4. Trenching

Excavation, backfilling and compaction of trenches 650 mm deep and 250 mm wide for all pipes over 63mm Ø and 450 mm deep and 250 mm wide for all pipes below and including 63mm Ø.

Compaction of trenches through hard surfaced areas to be to Responsible professional person's specification for other civil works. That through planted areas to be to the same degree of compaction of the surrounding planting area, such that no subsidence occurs after backfilling.

If rock or other adverse conditions preclude the installation at the prescribed depth, the Landscape architect's permission must be obtained for burial at a shallower depth.

The backfill material surrounding the pipe by 50mm shall be free of rock or other hard materials.

Trenches will be set out and dug true to plan, winding and skew trenches will not be acceptable.

4.5. Warranty

To protect the client's interest regarding a quality irrigation system and ongoing onsite supervision and consultation during the project, only the specified materials are to be used on the project -: i.e. SAB approved fittings, SABS PN80 HDPE pipe with the pipe class specified on the irrigation layout plan, and Rain Bird Irrigation equipment that is supplied by Controlled Irrigation, ***or similar approved***.

The terms and conditions of the warranty shall be clearly stated and will follow the warranty period of the manufactures. The warranty will be handed to the client on the handover of the irrigation system.

4.6. As-built Drawings

As-built drawing must be handed over, after the completion of the irrigation contract to either the irrigation consultant or landscape architect in digital format and in hard copy, which will be handed to the client on handover.

4.7. Water Supply

Municipal water to be used for the irrigation system or from another source where specifically specified. The water supply to have a minimum flow of 110 litres/minute at a pressure of 4 Bar pressure is required. If this pressure cannot be supplied, a booster pump system may be required in order for the irrigation system to operate as it has been designed to by the irrigation consultant.

PLEASE NOTE:

The irrigation BoQ can change considerably if the irrigation sleeves, water requirements and controller are not able to be installed as specified. Any variations from initial design must be pointed out to the irrigation consultant in order to amend the design and/or BoQl accordingly.

All work is to be installed to L.I.A specifications and this may be checked in the form of random on-site visits.

Eastern Gateway
Oval Park

Landscape Maintenance
Specifications and Bills of Quantities
Version 1
June 2020

Introduction

This document is intended to explain what the landscape maintenance (sub)contractor's (hereafter the Contractor) responsibilities are with regard to the different tasks that have to be performed and the method likely to be adopted in doing so. The particular method that is adopted however and the result that is achieved must conform to generally accepted professional garden/horticultural practices and to the standards required by the Client.

The document is divided into three parts, i.e.
Part 1: Specifications
Part 2: Bills of Quantities
Part 3: Schedule of rates.

The landscape (sub)contractor must complete Part 2: Bills of Quantities and Part 3: Schedule of rates and return the completed document with his/her landscape installation tender since the landscape maintenance contract will come into effect once the landscape installation works completion has been certified by the landscape architect.

The contractor is to provide all necessary machinery, fuel, labour, material to undertake all the maintenance items and the establishment of all elements within this bill of quantities.

The Specifications and Bills of Quantities follow the same numbering system for ease of cross referencing and coordination.

KWPCREATE (Pty) Ltd Reg.No. 83/006223/07 **Directors** IZAAK LÖTZ MBA (managing) PrArchPrCPMPrCMentor info@kwpcreate.com
ELISE BESTER PrArch PrCPM ALMER DU PISANIE MSC AAS (urban design) PrArch www.kwpcreate.com
Pretoria 181 Blackwood Street Arcadia 0083 PO Box 332 Groenkloof 0027 **Tel** +27(0)123439141 **Fax** +27(0)123439524
Kempton Park Central Professional Suite 20 Central Avenue PO Box 3789 Kempton Park 1620 **Tel** +27(0)119703343 **Fax** +27(0)119703342
Nelspruit 3 Zebrina Crescent West Acres PO Box 1879 Nelspruit 1200 **Tel** +27(0)137412188 **Fax** +27(0)7412188

PART 1 Landscape maintenance: Specifications

1. PRELIMINARIES AND GENERAL

1.2. Site establishment

The contractor should note that no permanent on-site facilities are available to house his/her maintenance equipment and that all equipment must be brought to and removed from site on a daily basis

1.3. Rain meter

1.3.1. The contractor must supply and maintain a rain meter on site and record the rainfall on a daily basis in the Site Book

1.4. Site Book

1.4.1. The Contractor shall keep and update a Site Book in which the application of herbicides and pesticides is noted, and health and safety issues recorded.

1.4.2. The Site Book shall be made available on demand to the Landscape Architect or the Employer.

1.5. Health and Occupational Safety issues

1.5.1. The Contractor must be aware of and comply with all applicable clauses of the Health and Safety Act, specifically to take note of requirements regarding safety clothing and the safe use of hazardous material and equipment.

1.5.2. The Contractor shall keep a daily record in the Site Book of any health or safety incident on site and communicate such incident to the Employer and Landscape Architect in writing.

1.5.3. Replacement of dead plants:

1.5.4. All plants which have died during the maintenance period have to be systematically replaced by the Contractor at his expense during the maintenance period as and when directed to do so by the Landscape Architect.

1.5.5. Plants have to be replaced with the same species in accordance with the specifications or in consultation with the Employer with any other species which may be decided upon.

1.6. Public Liability insurance

The Contractor must ensure that the Public Liability Insurance required in terms of the maintenance contract or sub-contract requirements are kept in place for the duration of the contract.

1.7. Contractor's all risks insurance

The Contractor must ensure that the Contractor's all risks insurance required in terms of the maintenance contract or sub-contract requirements are kept in place for the duration of the contract.

1.8. SASRIA Political Riot insurance

The Contractor must ensure that the SASRIA Political Riot insurance required in terms of the maintenance contract or sub-contract requirements are kept in place for the duration of the contract.

1.9. Compliance with Client's administrative requirements

The Contractor must comply with all the Client's administrative requirements applicable to the contract such as, but not limited to. obtaining authorised access control for his/her personnel and equipment.

1.10. Access to planted areas

The Contractor must notify the Landscape Architect immediately upon him/her experiencing any difficulty in gaining access to planters, courtyards etc. for maintenance purposes and record such incidences in the Site Book.

2. MAINTENANCE OF LAWN AREAS

2.1 Mowing (September to April - weekly)

All lawn areas must be mowed WEEKLY in the period 1 September to 30 April. Lawn clippings must be raked, collected and removed to be composted where possible, and not be left on the lawn. After each mowing the edges must be trimmed following the indicated bed lines on the appropriate drawings or as instructed by the Landscape Architect.

2.2 Mowing (May to August – bi-weekly

All lawn areas must be mowed once every TWO WEEKS in the period 1 May to 30 August. Lawn clippings must be raked, collected and removed to be composted where possible, and not be left on the lawn. After each mowing the edges must be trimmed following the indicated bed lines on the appropriate drawings or as instructed by the Landscape Architect.

2.3 Lawn scarifying and top dressing

All lawn areas must be scarified during August to remove thatch build-up. Top dress all lawn areas once a year during September with a 20mm thick layer of specified soil mix to eliminate any unevenness in the lawn to improve drainage or to rejuvenate lawn areas. Use a mixture of 50% approved topsoil, 25% river sand and 25% approved lawn dressing.

2.4 Removal and clearing of weeds in lawn areas

All lawn areas must be kept weed free by mechanical, manual of other approved methods on a weekly basis. All cleared weeds must be removed from lawn areas and discarded an approved domestic refuse dump site.

2.5 Fertilizing during mid-August

Directly after scarifying the lawns in August and before topdressing the lawns in September, apply 2:3:2(22)+Zn at 100g/m²

2.6 Fertilizing at end-November

At the end of November, apply 2:3:4(24)+Zn at 75g/m²

2.7 Fertilizing in mid-January

In mid-January, apply LAN at 75 g/m²

2.8 Removal of grass clippings

Grass clippings are not to be used as a mulch on planter beds. All clippings and roots are to be collected and removed from the site on a weekly basis

3. MAINTENANCE OF VELD GRASS AREAS

3.1 Slashing of Veld Grass

3.1.1 Veld grass must be slashed to a height of 150mm during July every year.

3.1.2 The Contractor must take care not to slash indigenous shrubs or ground covers and take specific care not to ring bark any tree by mechanical slashing.

3.2 Removal and clearing of weeds

3.2.1 The Contractor must remove weeds on a weekly basis by pulling out (including the roots) or by mechanical slashing keeping in mind Clause 3.1 above and Clause 3.3 hereafter when applying an appropriate herbicide.

3.2.2 Remove all weeded plants from site on a weekly basis to limit the spreading of weed seeds

3.3 Application of herbicide for broad-leaf weeds (Sept, Dec & Feb)

3.3.1 Apply an appropriate broad-leaf weed herbicide in accordance with the manufacturer's specification during September, December and February every year. Add an appropriate colourant to the herbicide so that the areas of application are clearly marked.

3.3.2 The Contractor must take care not to overspray or spill herbicide on any other plants in close proximity to the weeds.

3.4 Fertilization in mid-August

Apply 2:3:2(22)+Zn fertilizer at 50g/m² during mid-August.

3.5 Reseeding or re-sprigging open patches

Any open patches larger than 0.5m² have to be replanted by either sowing applicable seed or planting additional sprigs of specific species on a monthly basis. Such areas have to be loosened and fertilized thoroughly before planting or sowing, in accordance with the specifications

4. MAINTENANCE OF PLANTER BEDS

There are many types of planter beds differing in character and in the amount of plant material they carry. Different bed cleaning methods are used to achieve an end result common to all beds, namely that the beds conform to an accepted horticultural standard of neatness, cleanliness and have a pleasing appearance.
All plants must comply with the plant species schedule and no alternatives will be accepted without the written approval of the Landscape Architect.

4.1 Corrective pruning

The contractor will identify which plants require pruning and determine when this is to be done to the best advantage of the plant, not only to achieve current aesthetic appeal, but also to realise the long-term growth potential, development and ultimate shape of the plant. Allow this to be done on a monthly basis.

All shrubs and groundcovers are to be regularly pruned by knowledgeable persons as part of the routine maintenance and branches and leaves removed from site.
As and when necessary, plants are to be pruned so as not to impair visibility of motorists or create security risk areas.
The Contractor will be permitted, as part of his routine maintenance, to chip all pruned tree and shrub branches which may then be used for mulch in the plant beds
Once a year the Contractor is to carry out selective thinning and pruning throughout the site. This operation should be undertaken in July to September.
All prune wounds are to be suitably sealed off.
All damaged branches and stems are to be treated and tied up as is common horticultural practice.

4.2 Weeding and cultivating

Cultivation and weeding should be a continuous process – at least once a week per area.
Care should be taken to avoid damage to plants and plant roots during the cultivation process.
Any material, e.g. rock, builder's rubble and dead roots that are brought to the surface during the cultivation process exceeding 50 mm in any direction is to be removed by the Contractor.
Encourage the use of natural mulch layers as part of sound horticultural practices, especially on exposed areas.

4.3 Composting of planting areas

4.3.1 "Compost" means properly decomposed organic material, free from deleterious salts, waste products and impurities and with a pH-value between 4 and 7.

4.3.2 Compost used as an additive to the soil shall be from an approved source and the Contractor shall notify the Landscape Architect of the type, origin, supplier and a sample for final approval, in writing, PRIOR TO carting it to the site.

4.3.3 Compost shall be moderately moist but not waterlogged, and of moderate to fine texture. Spent mushroom compost may be used as mulch or as a topsoil additive at the discretion of the Landscape Architect.

4.3.4 Compost or similar organic Group 2 fertilizer shall be applied at a rate of $0.03m^3/m^2$ during the month of April and must be worked into the top 50mm of soil.

4.3.5 The rate per m^3 for compost shall include supply, placing and working into the soil as instructed.

4.4 Mulching of planted areas

4.4.1 Bark chips or wood mulch shall be applied during May directly after the compost (refer to "mulching" above) has been placed.

4.4.2 Mulch to be shredded selected wood or bark chips varying in size from 25mm to 50mm in length, from coniferous trees or other approved source.

4.4.3 The Contractor to ensure soil improvement and settlement have been corrected prior to mulching.

4.4.4 The rate per m^3 for placing mulch shall include all the costs of supply, store, transporting and spreading of the material in a minimum of 50mm thick layers; note that this required thickness relates to $0.05\ m^3/m^2$ of mulch.

4.5 Fertilizing of planted areas mid-September

Apply 2:3:2(22)+Zn at $100g/m^2$

4.6 Fertilizing of planted areas mid-November

Apply 3:1:5(SR)+Zn at $75\ g/m^2$

4.7 Apply the fertilizers to all planter areas in mid-January

Apply LAN at $75g/m^2$

4.8 Wash foliage on indoor planters

The Contractor shall hose down the dust from foliage of indoor plants in built planters twice monthly. The Contractor must provide his own hoses with appropriate fittings for this purpose.

5. MAINTENANCE OF TREES

5.1 Corrective pruning of trees

5.1.1 Newly planted tree shall be pruned twice per annum to acceptable horticultural practise and to specific instructions from the Landscape Architect.

5.1.2 Contractor to keep the soil in the tree rings around the tree trunks clear of any lawn or weed infestation

5.1.3 All existing trees need to be pruned monthly to improve their growth, form and ensure clear stems of 2,1m or as directed by the Landscape Architect. Ensure that all dead and diseased branches are cut off and removed.

5.1.4 Trees are to be pruned on a monthly basis so that the branches or leaves do not obstruct the view of any security cameras, nor damage façades or canopies.

5.2 Tree stakes

The eucalyptus tree stakes shall be Tanalith treated, have a minimum diameter of 35mm and shall be 300mm longer than the planted tree with a maximum length of 3m above ground surface. Approved plastic tree ties will be used to attach the tree to the stake and one tree tie per meter will be used. Stakes will be buried at least 500mm into compacted soil.
Tree stakes of trees shall be checked monthly, straightened, firmed into the soil, and retied when and where necessary. Also ensure that the tree ties are not too tight by adjusting as required.

5.3 Soil basins around trees in planters and in veld grass

Maintain a watering basin which can accommodate 50l of water around trees in planters and in veld grass areas on a monthly basis.

5.4 Protection against ringbarking

Where the manicured lawn or veld grass grows up to the tree, use tree guards to prevent ring-barking during the cutting/weed-eating process.

5.5 Fertilizing of trees

Apply 2:3:2(22)+Zn fertilizer at 200g/tree well worked into the soil at each tree in August.

6. PESTS AND DISEASE CONTROL

(Refer also to Clauses 2.4, 3.3 and 4.2)

Plant diseases include but are not limited to fungi, oomycetes, bacteria, viruses, viroids, virus-like organisms, phyto-plasmas, protozoa, nematodes and parasitic plants.

Pests include but are not limited to locusts, Gall Mites (these microscopic mites suck sap and cause abnormal growths), Leaf Miner Damage (the larvae of various flies, moths, sawflies and beetles feed within the leaves, creating discoloured blotches or surface trails), Codling Moth, Winter Moth, scale insects, Whitefly, beetles, thrips and ants.

The Contractor should constantly monitor pests and diseases throughout the site and apply control measures immediately upon observation thereof.

6.1 Application of pest and disease control materials and methods

6.1.1 Keep records of observations, application rates and actions taken in the Site Book and make available to the Landscape Architect or Employer.

6.1.2 The Contractor is to use appropriate, environmentally friendly, bio-degradable pest and disease control methods and products. Apply an approved remedy against pests and diseases to each plant as and when required. Application rate and intervals according to manufacturer's specifications.

6.1.3 Adhere to the specific requirements of the EMPr regarding the safe application of herbicides and pesticides

7. LITTER CONTROL

7.1 Litter in planted areas

The Contractor shall, on a weekly basis, clean up and remove litter in all planted areas, lawns and veld grass areas to an approved domestic refuse dump site. Any dumping of waste (e.g. dust from vacuum cleaners, building rubble etc.) and litter (e.g. cigarette butts) by other contractors or the Employer's employees and that are damaging the landscape must be reported in writing to both the COMDEV Facilities Manager and the Landscape Architect and recorded in the Site Book.

8. MAINTENANCE OF PAVED AND GRAVEL AREAS

8.1 Cleaning of paved walkways in landscaped areas

The Contractor shall, on a weekly basis, sweep all external paved areas of litter, debris, dust and leaves and remove such litter etc. to an approved domestic refuse dump site.

8.2 Control of weeds in paved areas

The Contractor shall be responsible for keeping the paved walkways clear of weeds and shall only apply pesticides and fungicides at the request and on specific instruction from the Landscape Architect. Allowance has been made in Part 2: Bill of Quantities for a once per month application.

9. MAINTENANCE OF STREET FURNITURE

9.1 Cleaning of seating benches

Clean seating surfaces of benches with appropriate cleaning material on a weekly basis.

9.2 Litter bins

The contractor should note that the cleaning and removal of litter in litter bins are the responsibility of the COMDEV Maintenance Department.

9.3 Drinking fountains

Clean algae and other dirt from drinking fountains and ensure proper working of all drinking fountains on a weekly basis.

9.4 Reporting on damages

On a weekly basis, report in writing any damages to seating benches, litter bins, drinking fountains, lights to COMDEV Facility management with copies of all such correspondence to the Landscape Architect and record any such damages in the Site Book as well.

10. MAINTENANCE OF IRRIGATION SYSTEMS

(Where applicable on sites where an irrigation system has been installed)

The landscape irrigation mainly comprises an automatic drip and spray irrigation system. Some sections are hand watered by means of a turf valve and dragline. The Contractor is to take care that all landscaped areas are kept moist continuously to the equivalent of 25mm per week so that plants do not wither or drown. In addition to normal irrigation, all trees are to be individually watered twice a week by filling the pond around the tree.

All replacement plants must be planted in moist soil and be well irrigated not later than one hour after planting. After plants have been planted, the area must be irrigated and kept moist thereafter until the completion of the maintenance contract.

Following watering, the soil should be moist to a depth of at least 300 mm.

The Contractor's maintenance responsibility shall include the time setting of the irrigation stations and the maintenance of pipework nozzles/heads.

The Landscape Architect or Employer should be notified in writing as soon as possible of any fault concerning the irrigation supply water or the irrigation system outside of the Contractor's control.

10.1 Monitoring of the installed irrigation system

All irrigation systems (automatic, turf valve and drip systems) should be monitored daily. Irrigation areas should be monitored daily to check for dry spots or insufficient watering of plants. Note dysfunctional irrigation equipment in the Site Book and bring to the Landscape Architect's attention as early as possible.

10.2 Manual and hand-watering

(where applicable)

The Contractor has to make provision to do hand watering from water supply points or from a water cart where there is no irrigation system. Individually hand water trees with 20 liters per tree per week. Apply 25mm/week of irrigation to all other planted areas not served by an automatic irrigation system.

10.3 Automatic irrigation systems

(where applicable)

Ensure that controller settings deliver 25mm/week irrigation to all planted areas. Refer also to Clause 10.1 above regarding reporting of malfunctioning irrigation components.

11. GENERAL SITE WORK

11.1 Open storm water systems

The Contractor shall on a weekly basis clean out weeds and sedimentation from open storm water systems to remove all blockages.

11.2 Erosion protection

The Contractor shall on a weekly basis control and prevent small-scale erosion in any areas of sloping soil, especially the embankments. An active part of this process is to prevent topsoil from washing onto walkways, roads and parking areas as well as into channels, streams etc.

11.3 Top up pond levels

Where applicable the Contractor shall on a weekly basis top up pond levels to their overflow levels

11.4 Debris in ponds and overflow pipes

The Contractor shall on a weekly basis clean and remove accumulated debris and sediment from streams, ponds and overflow inlet pipes

PART 2 Landscape maintenance Checklist

Specification clause number	Description	Unit	Quantity	Completed	Comments
1	**PRELIMINARIES AND GENERAL**				
1.1	Site Establishment	per year	1	☐	
1.2	Comply with the requirements of the Operational Environmental Management Plan (EMPr)	No.	1	☐	
1.3	Monthly site inspections	No.	12	☐	
1.4	Supply rain meter and keep daily rainfall record	daily	365	☐	
1.5	Site Book	No.	1	☐	
1.6	Compliance with Health & Occupational Safety Act	No.	1	☐	
1.7	Replacement of dead plants	No.	All plants	☐	
1.8	Public Liability insurance	per year	1	☐	
1.9	Contractors all risks insurance	per year	1	☐	
1.10	SASRIA Political Riot insurance	per year	1	☐	
1.11	Compliance with Client's administrative requirements	No.	1	☐	
1.12	Access to planted areas	No.	1	☐	
2.	**MAINTENANCE OF LAWN AREAS**				
2.1	Mowing (September to April - weekly)	Weekly	34	☐	
2.2	Mowing (May to August – bi-weekly	Bi-weekly	9	☐	
2.3	Scarify (August) and Top dressing (September)	Annually	1	☐	
2.4	Removal and clearing of weeds in lawn areas	Weekly	52	☐	
2.5	Fertilizing: 100g/m² of 2:3:2 (22) + Zn – Mid August	Annually	1	☐	
2.6	Fertilizing: 75g/m² of 2:3:4 (24) + Zn - End November	Annually	1	☐	
2.7	Fertilizing: 75g/m² of LAN - Mid January	Annually	1	☐	
2.8	Grass clippings are not to be used as a mulch on planter beds. All clippings and roots are to be collected and removed from the site	weekly	52	☐	

KWPCREATE (Pty) Ltd Reg.No. 83/006223/07 **Directors** IZAAK LÖTZ MBA (managing) PrArchPrCPMPrCMentor info@kwpcreate.com
ELISE BESTER PrArch PrCPM ALMER DU PISANIE MSC AAS (urban design) PrArch www.kwpcreate.com
Pretoria 181 Blackwood Street Arcadia 0083 PO Box 332 Groenkloof 0027 **Tel** +27(0)123439141 **Fax** +27(0)123439524
Kempton Park Central Professional Suite 20 Central Avenue PO Box 3789 Kempton Park 1620 **Tel** +27(0)119703343 **Fax** +27(0)119703342
Nelspruit 3 Zebrina Crescent West Acres PO Box 1879 Nelspruit 1200 **Tel** +27(0)137412188 **Fax** +27(0)7412188

3.	**MAINTENANCE OF VELD GRASS AREAS**				
3.1.1	Slashing Veld Grass	Monthly	12	☐	
3.1.2	Take care not to slash indigenous plants or not to ring bark trees	No.	1	☐	0
3.2.1	Removal and clearing of weeds	Weekly	52	☐	
3.2.2	Remove weeded plant from site	Weekly	52	☐	
3.3.1	Application of herbicide for broad-leaf weeds (Sept, Dec & Feb)	Thrice-annually	3	☐	
3.3.2	Take care not to overspray or spill herbicides	No.	1	☐	0
3.4	Fertilization: 50g/m^2 of 2:3:2(22)+Zn in mid-August	Annually	1	☐	
3.5	Reseeding or re-sprigging of open patches, Any open patches larger than 0.5m^2 have to be replanted by either sowing applicable seed or planting additional sprigs of specific species. Such areas have to be loosened and fertilized thoroughly before planting or sowing, in accordance with the specifications	monthly	12	☐	
4.	**MAINTENANCE OF PLANTER BEDS**				
4.1	Corrective pruning of shrubs & climbers	monthly	12	☐	
4.2	Weeding and cultivation	weekly	52	☐	
4.3.1 to 4.3.3	Compost specification	No.	1	☐	
4.3.4 to 4.3.5	Supply and place compost in April	m^3	30	☐	
4.4	Supply and place specified mulch in May	m^3	51	☐	
4.5	Supply and place 2:3:2(22)+Zn at 100g/ m^2 in all planter beds in mid-September	kg	14.5	☐	
4.6	Supply and place 3:1:5(SR) + Zn at 75g/m^2 in all planter beds in mid-November	kg	11	☐	
4.7	Supply and place LAN at 75g/m^2 in all planter beds in mid-January	kg	11	☐	
5.	**MAINTENANCE OF TREES**				
5.1.1	Prune new trees	Twice per year	2	☐	
5.1.2	Keep tree rings/basins clear of weeds	weekly	52	☐	
5.1.3	Keep trees clear pruned up to 2,1m height	monthly	12	☐	
5.1.4	Prune trees to avoid visual/camera obstructions or damage to buildings	monthly	12	☐	
5.2	Maintain the specified tree stakes	monthly	12	☐	
5.3	Maintain soil basins around trees not in tree grids	monthly	12	☐	
5.4	Protection against ring-barking	monthly	12	☐	
5.5	Supply and work in 2:3:2(22)+Zn at 200gr/tree in August	kg	2.5	☐	

6.	**PESTS AND DISEASE CONTROL**				
6.1.1	Keep records of all applications of herbicides, fungicides and pesticides in the Site Book and report to the Landscape Architect on a monthly basis	Monthly	12	☐	
6.1.2	Spraying for pests and diseases with an appropriate insecticide or fungicide as approved by the Landscape Architect	Monthly	12	☐	
7.	**LITTER CONTROL**				
7.1	Clean up and remove litter from all planted areas of walkways in planted areas. Report littering by other parties to the COMDEV Facilities management and record such instances in the Site Book	Weekly	52	☐	
8.	**MAINTENANCE OF PAVED AND GRAVEL AREAS**				
8.1	Cleaning of paved areas in the landscape	weekly	52	☐	
8.2	Control of weeds in the paved areas	monthly	12	☐	
8.3	Maintenance of gravel areas	monthly	12	☐	
9.	**MAINTENANCE OF STREET FURNITURE**				
9.1	Clean seating surfaces of benches with appropriate cleaning material	Weekly	52	☐	
9.2	Note that the removal of full litter bin bags and the replacement thereof with new litter bags is the responsibility of the COMDEV Facilities management department	No.	1	☐	
9.3	Clean algae and other dirt from drinking fountains and ensure proper working of all drinking fountains	Weekly	52	☐	
9.4	Report in writing any damages to seating benches, litter bins, drinking fountains, and lights to COMDEV Facility management with copies of all such correspondence to the Landscape Architect. Note all such incidences in the Site Book	Weekly	52	☐	

10.	**MAINTENANCE OF THE IRRIGATION SYSTEM**				
10.1	Monitor the installed irrigation system on a daily basis to identify dry spots or insufficient watering of plants	daily	365	☐	
10.2	Manual irrigation (where applicable): Apply 25mm/week of irrigation to planted areas and trees. Individually hand water trees with 20 liters per tree per week	Weekly	52	☐	
11.	**GENERAL SITE WORK**				
11.1	Cleaning of open storm water systems to remove weeds and sedimentation	Weekly	52	☐	
11.2	Control and prevent small-scale erosion in any areas of sloping soil, especially the embankments to prevent topsoil from washing onto walkways, roads and parking areas as well as into channels, streams etc.	Weekly	52	☐	
11.3	Top up pond levels to their overflow levels	Weekly	52	☐	
11.4	Clean and remove accumulated debris, weeds, etc. from streams, ponds and overflow inlet pipes	Weekly	52	☐	

PART 3 Landscape maintenance: Schedule of rates

The schedule of landscape maintenance rates is to allow the client and landscape maintenance contractor to agree to the rates at which damaged or vandalised equipment, hard-scaping material and irrigation equipment or dead plant material will be replaced (labour and material) in instances where the damage was beyond the control or responsibility of the Contractor

3.1	**Replacements & repairs to vandalised irrigation equipment**		
		Unit	**Rate only**
3.1.1	NIPPLE BARREL GALV 50MM	each	
3.1.2	VALVE GATE BRASS 50MM	each	
3.1.3	50MM BSP P.R.VALVE	each	
3.1.4	430MM X 300MM RECT GALVANISED STEEL LOCKABLE VALVE BOX	each	
3.1.5	SAB 50X2in COMP MALE ADAPTOR	each	
3.1.6	SAB 50MM COMPRESSION TEE	each	
3.1.7	50MM PN08 HDPE PIPE SANS PE100	m	
3.1.8	SAB 50MM COMP COUPLING	each	
3.1.9	SAB 50MM COMP ELBOW	each	
3.1.10	SAB 50MM COMPRESSION TEE	each	
3.1.11	SAB 50X1 HIGH PRESSURE SADDLE	each	
3.1.12	EMJAY PP MALE/FEMALE ELBOW 1" (25MM) BSP	each	
3.1.13	FULL/PART CIRCLE IMPACT SPRINKLER	each	
3.1.14	600MM HIGH GALVANISED TRIPOD FOR SPRINKLERS	each	
3.1.15	PVC BALL VALVE COMPACT BSP THR 1	each	
3.1.16	250MM RECT GALVANAISED STEEL LOCKABLE VALVE BOX	each	
3.1.17	AQUA 25 PLASTIC TURF VALVE	each	
3.1.18	AQUA PLASTIC TURF VALVE KEY	each	
3.1.20	EMJAY COMB. FEMALE ELBOW 20MM X 3/4"	each	
3.1.21	CLAMP HOSE CLASS 6 20MM (2027)	each	
3.1.22	20MM X 25M DRAGLINE M-DUTY BLACK	each	
3.1.23	3/4in SNAP ON HOSE CONNECTOR	each	
3.1.24	SNAP ON SPRAY NOZZLE	each	
3.1.25	SAB 50X1 HIGH PRESSURE SADDLE	each	
3.1.26	EMJAY PP MALE/FEMALE ELBOW 1" (25MM) BSP	each	
3.2	**Replacement plants**		
		Unit	**Rate only**
3.2.1	Supply & plant trees - 200l, 2.5m high of locally available species	each	
3.2.2	Supply and plant groundcovers - 2l of locally available species	each	
3.2.3	Supply and plant instant lawn - Kikuyu	m^2	
3.2.4	Prune up mature trees against buildings	each	
3.2.5	Cutting of in-situ sods for replanting elsewhere on site	m^2	