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Central Development (Pty) Ltd  
PO Box 754  
Auckland Park  
2006

Our ref. : CC0439-G43  
Your Ref. :  
Date : 29/05/2008

**RE: ERAND GARDENS EXTENSION 33:  
PORTION 784 OF THE FARM RANDJIESFONTEIN 405-JR (holding 222) AND HOLDING  
223 – SCOPING REPORT (REVISED)**

Please find included the following:

- Locality Plan: Position of Holding 222 & 223 (Figure 1)
- Water Layout. (Figure 2)
- Sewer Layout. (Figure 3)
- Roads & Stormwater Layout. (Figure 4)
- Attenuation Layout (Figure 5)
- Flow tests on the proposed sewer line
- Pressure tests on the available water line

The proposed rights for the above two holdings are as follows:

- Coverage = 40%.
- FSR = 0,4.
- Height = 5 Storeys.
- Special for offices, hotels, training centres, conference centres, institutions as well as residential buildings at no density.

The above layout drawings indicate the available services as provided by Johannesburg Water (Sewer and Water). Johannesburg Roads and Stormwater do not make bulk services information available and the information shown were physically measured from site.

The requirements and availability of each of the services, within the proposed rights applied for, are as follows:

Directors:  
WH Louw (Pr. Eng) R Louw (Pr Eng)

CivilCraft Consulting Engineers (Pty) Ltd  
Reg No 2004/027992/07

### Roads:

Refer to Roads & Stormwater Layout (Figure 4).

Main access is provided via 14<sup>th</sup> road, which in turn link up with Lever road and Olifantsfontein road. Olifantsfontein road intersect with the M1. Fourteenth road has a road reserve of 20m with a road width of 7,4m.

This would classify the road as a distributor with bus route capability. Easy access can thus be found either through public transport or private transport without any proposed upgrading of Fourteenth road. Controlled intersections exist at Vodacom Boulevard and Canbrough road (Extension of 14<sup>th</sup>) with Lever road.

### Stormwater:

Kerb inlets exist in 14<sup>th</sup> road adjacent to holdings 222 and 223. The two holdings drain from east to west (from the N1 to 14<sup>th</sup>) at an approximate slope of 2%. On-site drainage can be provided with a proposed network joining up to the kerb inlets in 14<sup>th</sup> road. This will provide for the 1:5 year drainage pattern. Contour design for surface drainage will be done in such a way that surface run off drain directly towards 14<sup>th</sup> road to accommodate 1:25 year drainage patterns.

The pre and post development run-off for the two holdings are as follows:

<u>Pre-Development:</u>		<u>Post Development:</u>	
C	= 0,25	C	= 0,65
D	= 16mm	D	= 5mm
Tc	= 20,86mm	Tc	= 9,86mm
I5	= 100mm/hour	I5	= 135mm/hour
I25	= 158mm/hour	I25	= 198mm/hour
A	= 5.5660 ha		
Q	= C.I.A		
Q5	= 139m <sup>3</sup> /hour (38,6 l/s)	Q5	= 488,41m <sup>3</sup> /hour (135,5 l/s)
Q25	= 219m <sup>3</sup> /hour (60,8 l/s)	Q25	= 715,57m <sup>3</sup> /hour (198,8 l/s)
Pipe required @ 1% gradient:			
Q5	= 250mmØ	Q5	= 450mmØ

Based on the requirement by JRA that all proposed developments larger than 8500m<sup>2</sup> be attenuated, the following preliminary study was done. Please see figure 5. The following applies:

- The sizing and levels are based on the contour information received from the town planners, Web Consulting.
- The position and cross section as shown on Layout 5 for the Attenuation pond are based on the contour layout and does not refer to a site development plan. A Final position of the attenuation pond, based on the access and design layout of roads and structures will ultimately be done.
- The size of the attenuation at this stage is based on the guidelines provided in the JRA policy statement. A Full mechanistic design will be done once a site development plan has been compiled.

**Stormwater Attenuation:**

- The MAP value is 750mm.
- A volume of 350m<sup>3</sup>/ha is used.
- A rectangular layout is shown.
- Total Storage Capacity:  
350m<sup>3</sup> x 5,471ha = 1915m<sup>3</sup>
- Dimensions:  
L x B x H = 31m x 31m x 2m

**Water:**

Refer to Water Layout (Figure 2)

Water demand for the two holdings based on the applied rights are as follows:

**Holding 222:**

- Size = 2,8ha
- FSR = 0,4
- Floor Coverage = 11200m<sup>2</sup>
- Business Developments:
  - 0,8 kℓ/100m<sup>2</sup>
  - AADD = 89,6kℓ/day
  - Peak Factor = 1.70
  - Peak Daily Demand = 152,32 kℓ/day
- Pipe size = 1,76 ℓ/s
- Fire flow @ peak demand conditions = 33mmØ → 40mmØ
- Pipe size @ 2,0m/s flow rate = 25ℓ/s
- Pipe size @ 2,0m/s flow rate = 125mmØ

**Holding 223:**

- Size = 2,766ha
- All of the above will apply to holding 223.

From the water layout drawing it can be seen that a 100Ø line is available in Fourteenth road and a 350Ø in George road. Should the fire flow demand be enforced a connection will have to be done from the 350mmØ in George road to provide for both fire and business demand.

In response to the request from Johannesburg Water, pressure tests were done on the available line. Please refer to results included.

The water pressure test on the available 110Ø pipe in Fourth Road ranges from 8,8 to 9,5 bar. This shows very little difference between static and dynamic pressure. The design code prescribes a range between 6,0 bar and 9,0 bar.

**Sewer:**

Refer to Sewer Layout (Figure 3).

A Sewer outfall connection can be made at the intersection of George road and Fourteenth road as well as an available line at Erand Gardens Extension 32. The sewer outflow demand for both holdings 222 and 223 combined will be as follows:

• Area	=	5,5660ha
• Sewer outflow	=	0,8 kℓ/day/100 <sup>2</sup>
	=	179,2 kℓ/day
• Peak factor	=	2,5
• Sewer outflow	=	448 kℓ/day
• Infiltration	=	0,86 ℓ/s (400m of pipe)
• Total Sewer outflow	=	6,045 ℓ/s
• Pipe size required	=	100mmØ → 160Ø @ 1% fall

Flow tests were done at the connection to Ext 32. Please find included the results.

The available sewer line's (160Ø) maximum flow is currently 17%, which leaves ample available capacity. A 160Ø pipe at 1% slope has an available capacity of 20 ℓ/s. The estimated sewer outfall for the proposed development on Erand Gardens Ext 33 is 6,045 ℓ/s. This will bring the total sewer outfall to 9,445 ℓ/s, which gives a total use of 47%.

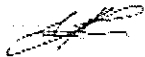
**Waste Management:**

An internal waste collection service will be implemented. This is to ensure that an environmentally acceptable standard is achieved. This falls within the guidelines of the legislation regarding waste management. With special reference to "Guidelines for Human Settlement Planning and Design, Chapter 11, Table 11:1: Current South African legislation."

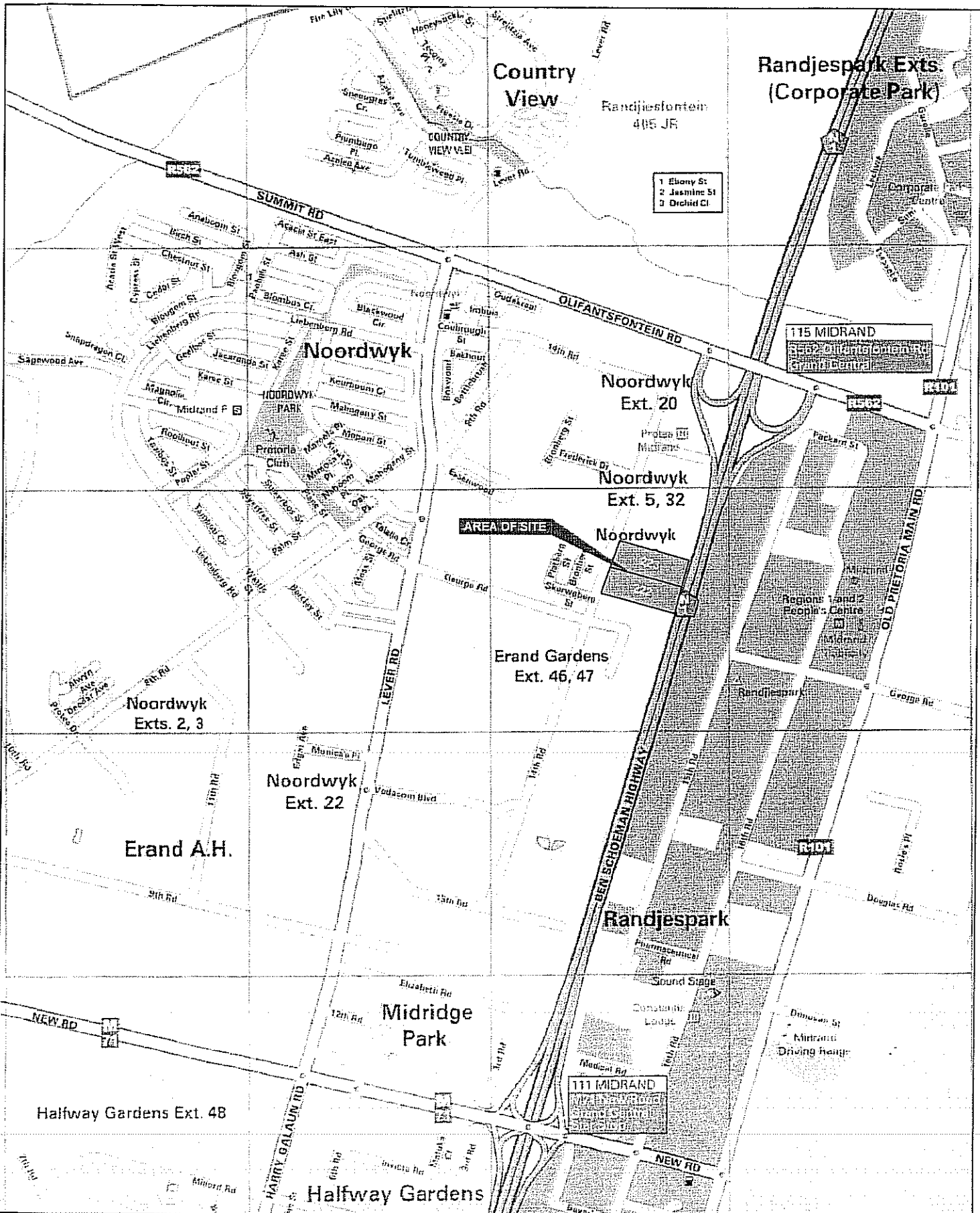
The waste category will be Business and Commercial Waste. On site storage will be done in 120 ℓ mobile refuse bins in a designated refuse area. The local authority will be responsible for waste collection. In all probability a "Rear End Loader" will be used in the process of waste collection. The level of service will be "Level 5", which is considered the optimum means of collection in the majority of developed communities. The waste is collected from the refuse area and transported to a point of final disposal.

I trust that you find the above information to your approval.

Yours sincerely,



Wilkie Louw Pr Eng

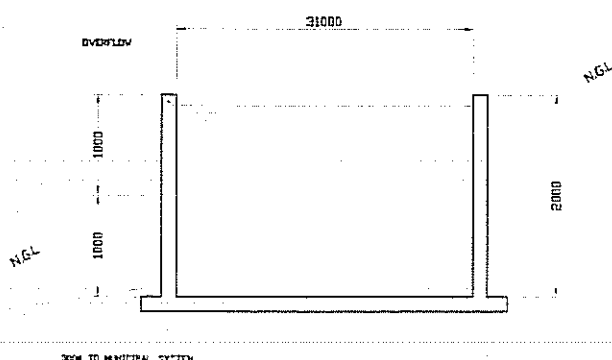
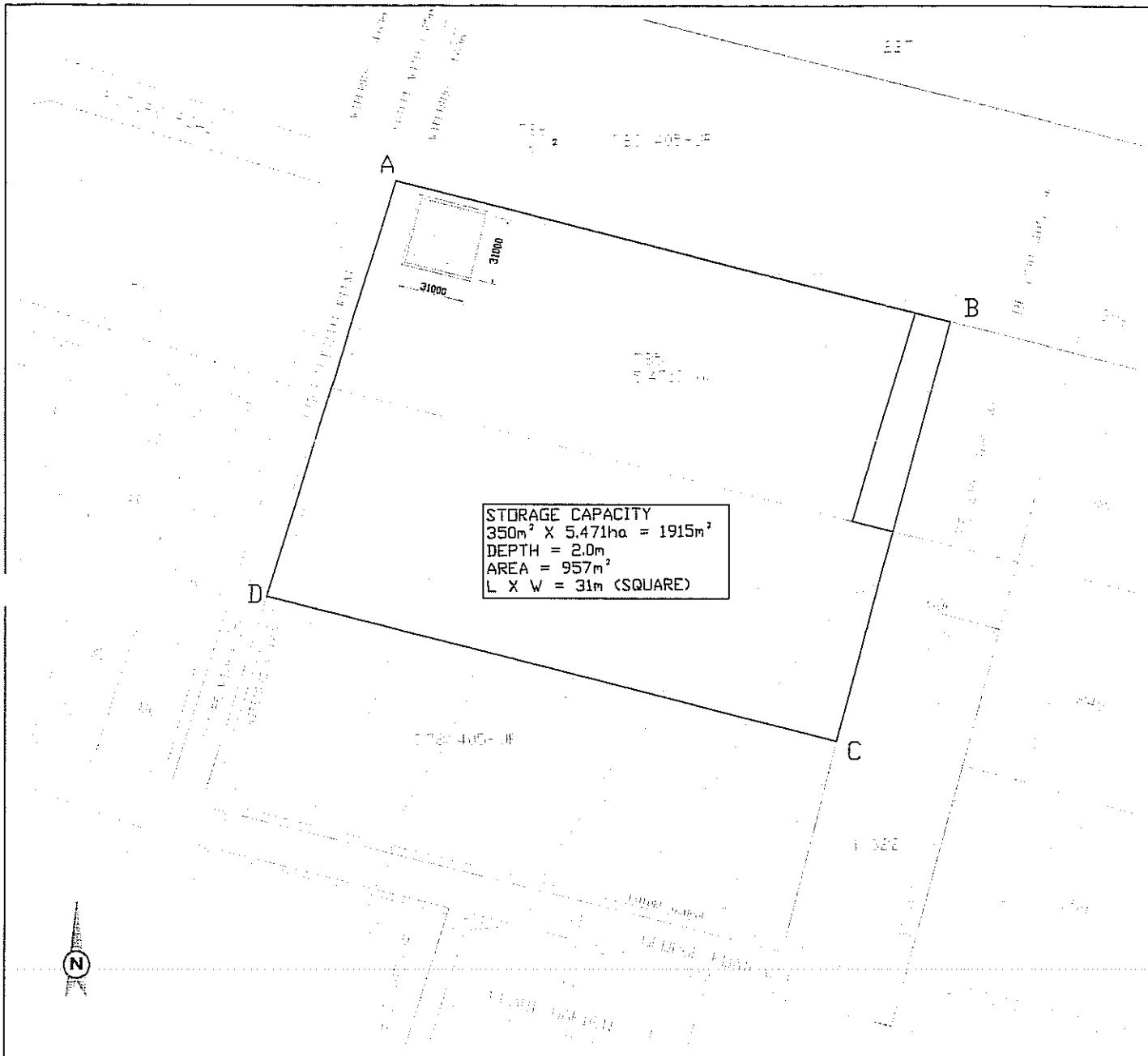












SECTION  
 NOT TO SCALE

# E & S CIVILS CC

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## Water Pressure Results

Date Of Test 5 and 6 / 04 / 2008

Site: Erand Gardens X 33

Tested By Simon / John

Engineers: Civilcraft

Time	Pressure [kg/cm <sup>2</sup> ]	Time	Pressure [kg/cm <sup>2</sup> ]
15:20	9	23:20	9.4
15:40	9.2	23:40	9.4
16:00	9	00:00	9.4
16:20	9.5	00:20	9.4
16:40	9.5	00:40	9.4
17:00	9.2	01:00	9.4
17:20	9.2	01:20	9.4
17:40	9.2	01:40	9.4
18:00	9.2	02:00	9.4
18:20	9.2	02:20	9.4
18:40	9	02:40	9.4
19:00	9	03:00	9.4
19:20	9	03:20	9.4
19:40	9	03:40	9.4
20:00	9	04:00	9.4
20:20	9	04:20	9.4
20:40	9	04:40	9.4
21:00	9	05:00	9.4
21:20	9.2	05:20	9.4
21:40	9.2	05:40	9.2
22:00	9.2	06:00	9.2
22:20	9.4	06:20	9.2
22:40	9.4	06:40	9.2
23:00	9.4	07:00	9.2

START

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07:20	9		
07:40	9		
08:00	9		
08:20	9		
08:40	9		
09:00	9		
09:20	9		
09:40	9		
10:00	9		
10:20	9.2		
10:40	9.2		
11:00	9		
11:20	8.8		
11:40	8.8		
12:00	9		
12:20	9.2		
12:40	9.2		
13:00	9.2		
13:20	9.2		
13:40	9.2		
14:00	9.2		
14:20	9.4		
14:40	9.2		
15:00	9.2		

Finish

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## Sewer Flow Results

**Date Of Test** 5 and 6 / 04 / 2008

**Site:** Erand Gardens X 33

**Tested By** Simon / John

**Engineers:** Civilcraft

Time	Depth [mm]	Time	Depth [mm]
15:30	50	23:30	25
15:50	50	23:50	25
16:10	50	00:10	10
16:30	60	00:30	10
16:50	60	00:50	10
17:10	60	01:10	10
17:30	60	01:30	5
17:50	60	01:50	5
18:10	50	02:10	5
18:30	50	02:30	5
18:50	50	02:50	5
19:10	45	03:10	5
19:30	45	03:30	5
19:50	45	03:50	5
20:10	30	04:10	5
20:30	30	04:30	5
20:50	30	04:50	5
21:10	30	05:10	5
21:30	30	05:30	5
21:50	30	05:50	10
22:10	20	06:10	10
22:30	20	06:30	10
22:50	20	06:50	10
23:10	25	07:10	10

START

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**Site:** Erand Gardens X 33

**Tested By** Simon / John

**Engineers:** Civilcraft

Time	Depth [mm]	Time	Depth [mm]
07:30	10		
07:50	10		
08:10	20		
08:30	20		
08:50	20		
09:10	20		
09:30	20		
09:50	20		
10:10	20		
10:30	20		
10:50	30		
11:10	30		
11:30	30		
11:50	40		
12:10	40		
12:30	40		
12:50	40		
13:10	50		
13:30	50		
13:50	50		
14:10	40		
14:30	30		
14:50	40		
15:10	40		

Friday