Project ID	1098049
Project Name	The Point Development
Calculated by:	SCZH
Date	23/07/2025
Reviewed by:	RXSW
Date:	23/07/2025

Building 2

Geological Input

Soil Properties		
Geological unit	Residual ECBF	
Horizontal permeability, k_h	1.00E-07	m/s
Drawdown		
Ground level	27.7	m RL
Design Groundwater level	23.9	m RL
	3.8	m bgl
Bulk excavation level	18.95	m RL
Required drawdown, H	4.95	m
Empirical calibration factor, C	3000	
Radius of influence, R0	4.70	m

Drawdown of the water table at a point produces a cone of depression. (Figure 12)

The radius of influence (R_0) is a function of the drawdown (h) and the permeability (k).

$R_0 \simeq Ch\sqrt{k}$ (see Table 11) where R_0 and h are in metres
k is in m/s
C is a factor equal to 3000 for radial flow to pumped wells and between 1500 and 2000 for line flow to trenches or to a line of wellpoints.

The percentage drawdown of the water table at any distance from the centre of the cone can be obtained from Figure 13.

Geological Profile

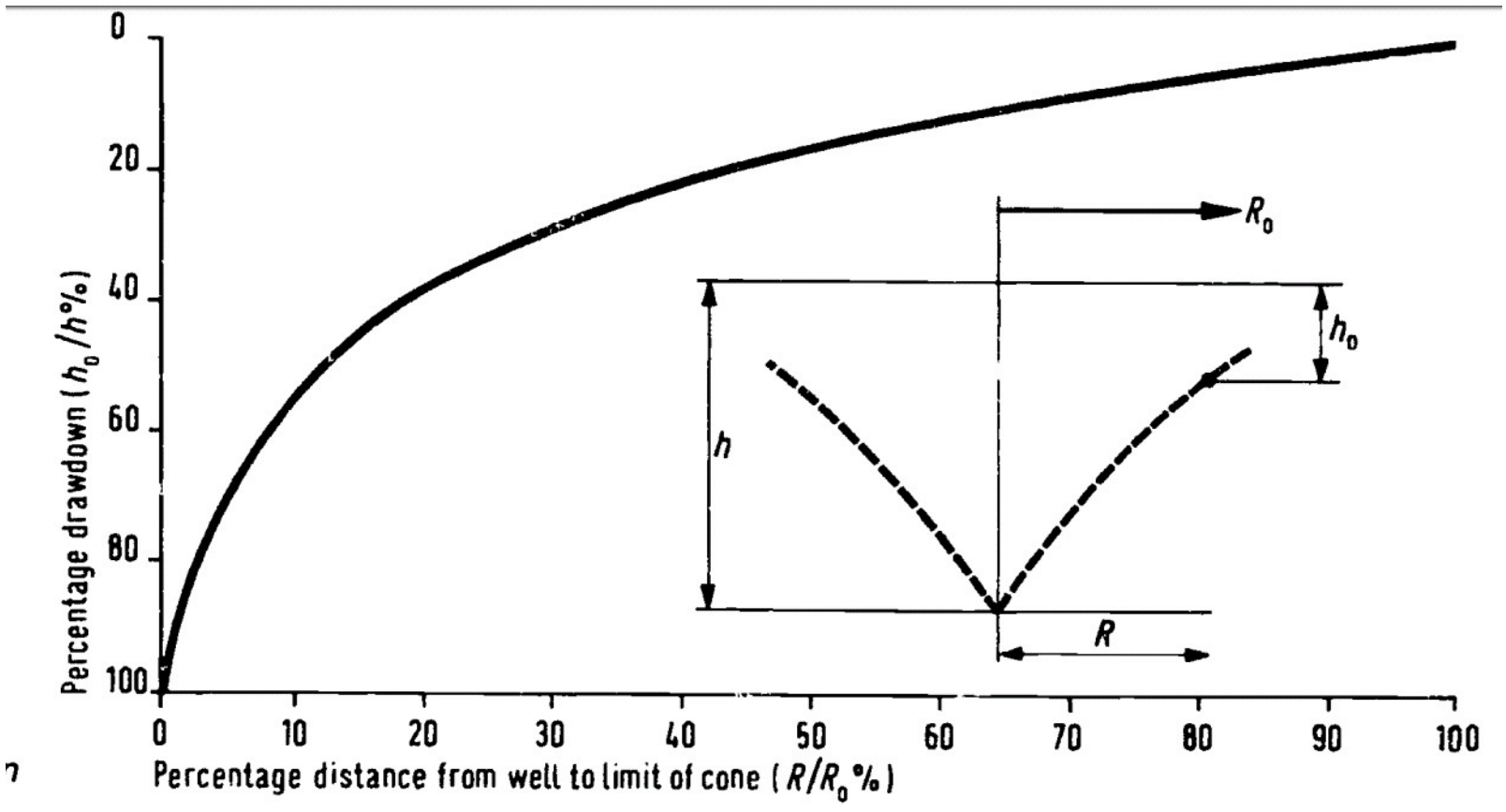
Geological unit	Ground Profile	Saturated Profile		Thickness	Mv
	m RL	m RL	depth below GWL	m	m2/MN
Existing Fill	27.7	N/A	Above GWL		
Residual ECBF	26	23.9	0	3.2	0.05
Weathered ECBF	20.7	20.7	3.2	3.1	0.02
ECBF Rock	17.6	17.6	6.3	>100	Incompressible
Design GWL	23.9	23.9	-	-	-
Bulk Excavation level	18.95	18.95	-	-	-

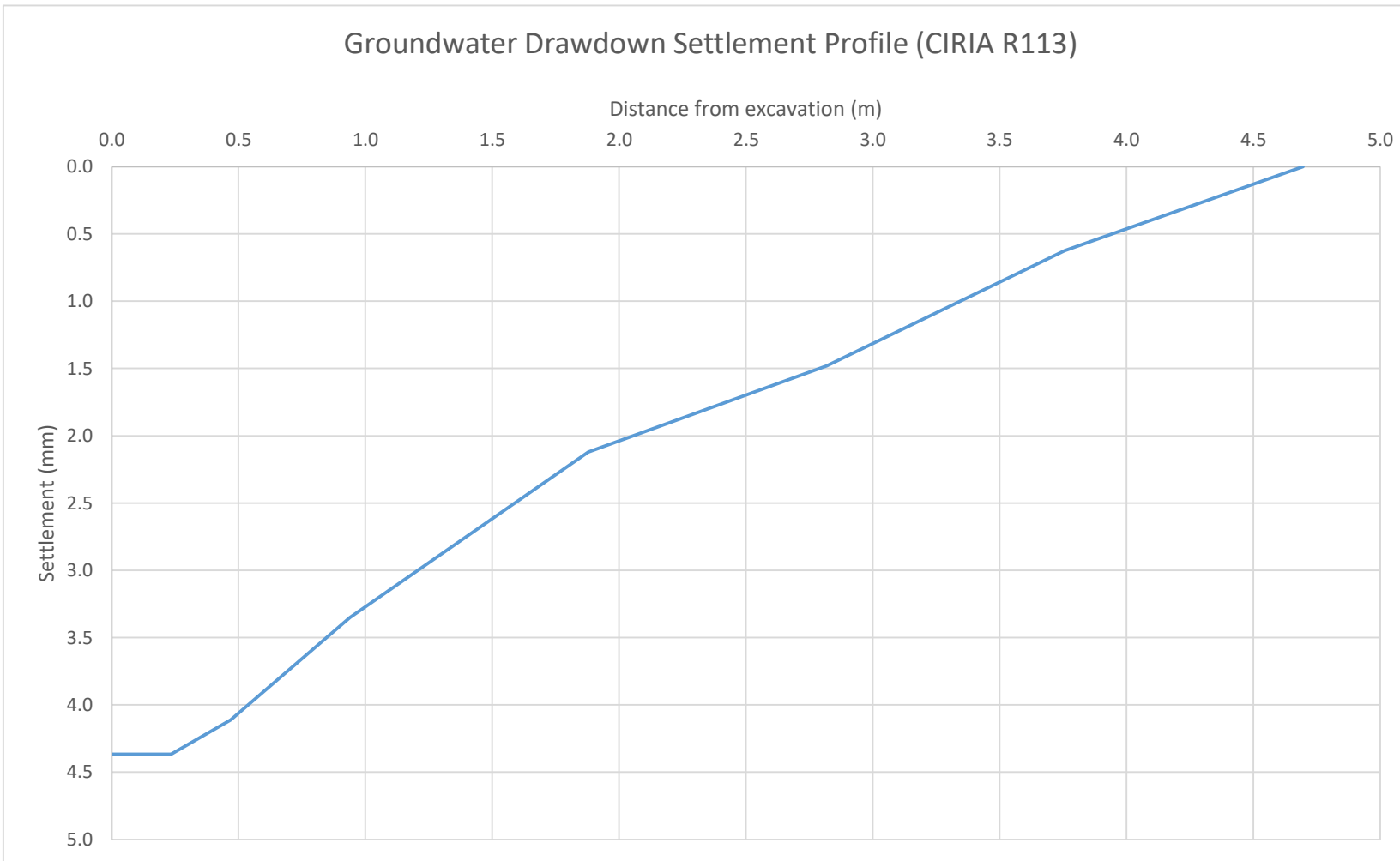
Assessed drawdown with offset from edge of excavation

R/R0	R	H0/H	H	GW Level	
%	m	%	m	m RL	m bgl
0%	0.0	100%	4.95	19.0	8.8
5%	0.2	70%	3.47	20.4	7.3
10%	0.5	55%	2.72	21.2	6.5
20%	0.9	40%	1.98	21.9	5.8
40%	1.9	23%	1.11	22.8	4.9
60%	2.8	15%	0.74	23.2	4.5
80%	3.8	6%	0.30	23.6	4.1
100%	4.7	0%	0.00	23.9	3.8

Calculated drawdown settlement

R	Δσv	Settlement - Residual ECBF (above drawdown GWL, 0.5*Δσv)	Settlement - Residual ECBF (below drawdown GWL, 1.0 x Δσv)	Settlement - Weathered ECBF	Total Settlement
m	kPa	mm	mm	mm	mm
0.0	30.0	2.3	0.2	1.9	4.4
0.2	30.0	2.3	0.2	1.9	4.4
0.5	26.7	1.8	0.6	1.7	4.1
0.9	19.4	1.0	1.2	1.2	3.4
1.9	10.9	0.3	1.1	0.7	2.1
2.8	7.3	0.1	0.9	0.5	1.5
3.8	2.9	0.0	0.4	0.2	0.6
4.7	0.0	0.0	0.0	0.0	0.0


0
20
40
60
80
100
Percentage drawdown (h_0/h%)
0
10
20
30
40
50
60
70
80
90
100
Percentage distance from well to limit of cone (R/R_0%)
R_0
h_0
h
R


Groundwater Drawdown Settlement Profile (CIRIA R113)
Distance from excavation (m)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
Settlement (mm)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0

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Building 2 - Senstivity Case

Geological Input

Soil Properties		
Geological unit	Residual ECBF	
Horizontal permeability, k_h	6.00E-07	m/s
Drawdown		
Ground level	27.7	m RL
Design Groundwater level	23.9	m RL
	3.8	m bgl
Bulk excavation level	18.95	m RL
Required drawdown, H	4.95	m
Empirical calibration factor, C	3000	
Radius of influence, R0	11.50	m

Drawdown of the water table at a point produces a cone of depression. (Figure 12)

The radius of influence (R_0) is a function of the drawdown (h) and the permeability (k).

$R_0 \simeq Ch\sqrt{k}$ (see Table 11) where R_0 and h are in metres
k is in m/s
C is a factor equal to 3000 for radial flow to pumped wells and between 1500 and 2000 for line flow to trenches or to a line of wellpoints.

The percentage drawdown of the water table at any distance from the centre of the cone can be obtained from Figure 13.

Geological Profile

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Design GWL	23.9	23.9	-	-	-
Bulk Excavation level	18.95	18.95	-	-	-

Assessed drawndown with offset from edge of excavation

R/R0	R	H0/H	H	GW Level	
%	m	%	m	m RL	m bgl
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20%	2.3	40%	1.98	21.9	5.8
40%	4.6	23%	1.11	22.8	4.9
60%	6.9	15%	0.74	23.2	4.5
80%	9.2	6%	0.30	23.6	4.1
100%	11.5	0%	0.00	23.9	3.8

Calculated drawdown settlement

R	Δσv	Settlement - Residual ECBF (above drawdown GWL, 0.5*Δσv)	Settlement - Residual ECBF (below drawdown GWL, 1.0 x Δσv)	Settlement - Weathered ECBF	Total Settlement
m	kPa	mm	mm	mm	mm
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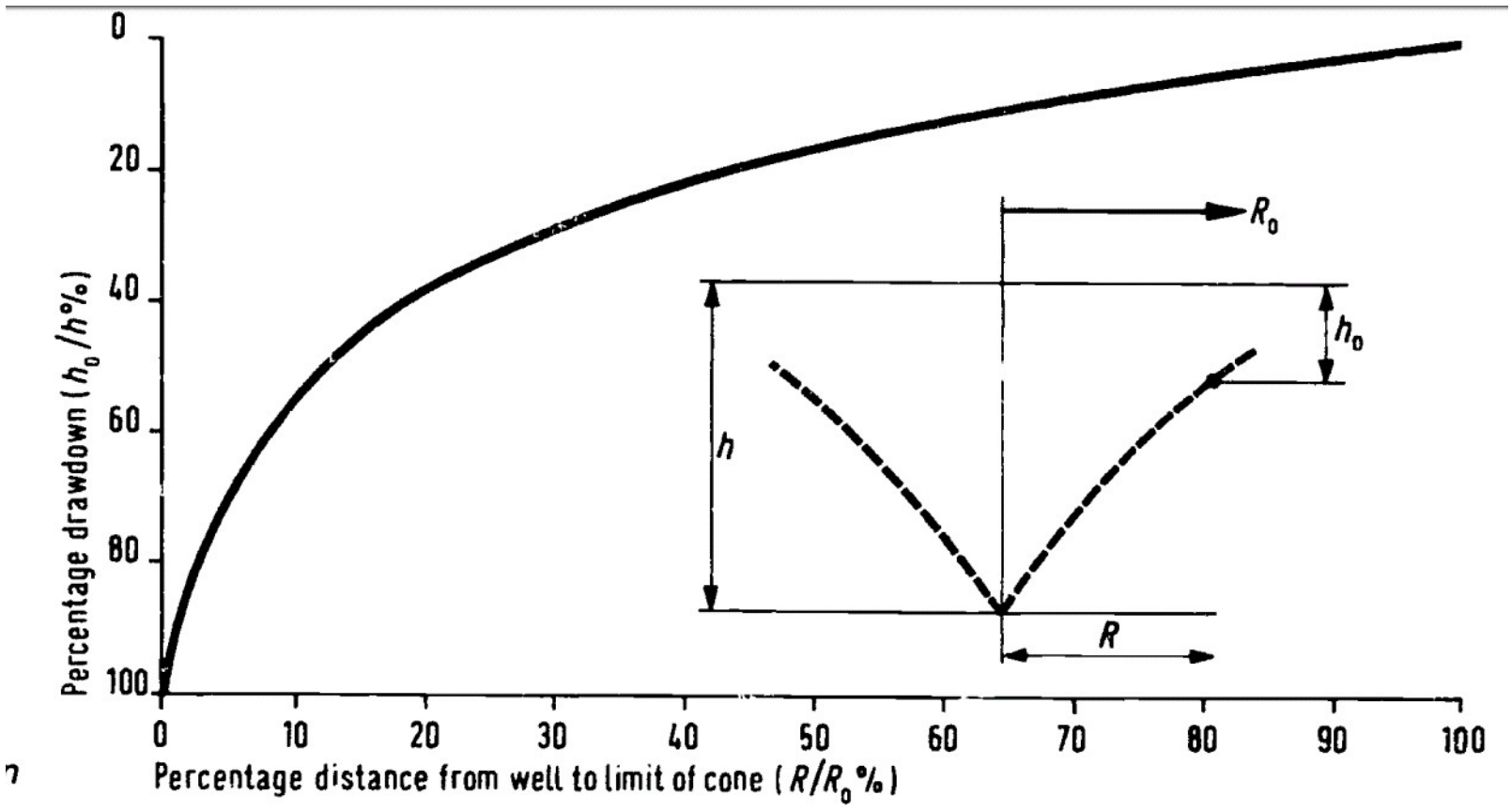
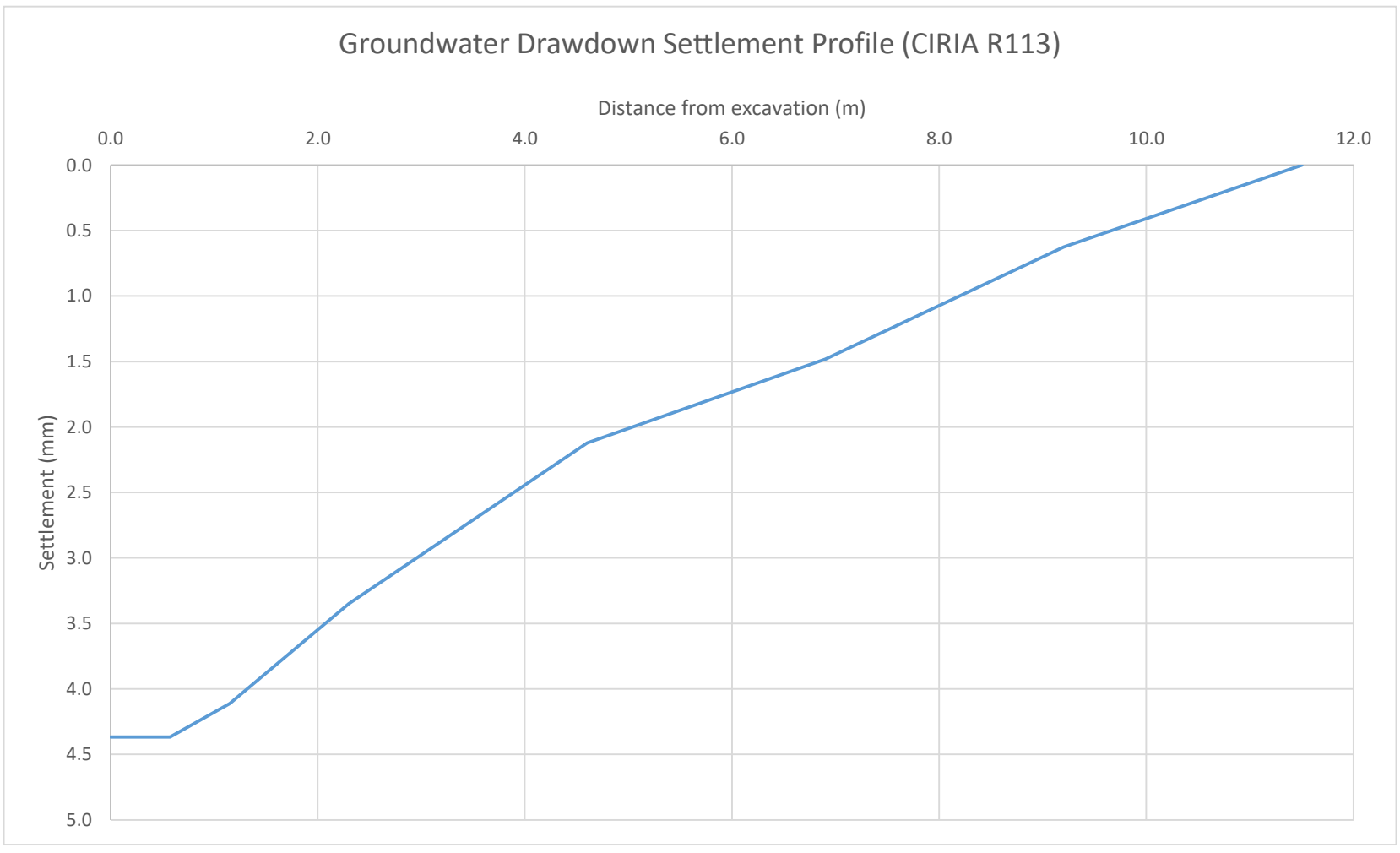
0.6	30.0	2.3	0.2	1.9	4.4
1.2	26.7	1.8	0.6	1.7	4.1
2.3	19.4	1.0	1.2	1.2	3.4
4.6	10.9	0.3	1.1	0.7	2.1
6.9	7.3	0.1	0.9	0.5	1.5
9.2	2.9	0.0	0.4	0.2	0.6
11.5	0.0	0.0	0.0	0.0	0.0


0
20
40
60
80
100
Percentage drawdown (h_0/h%)
0
10
20
30
40
50
60
70
80
90
100
Percentage distance from well to limit of cone (R/R_0%)
R_0
h_0
h
R


Groundwater Drawdown Settlement Profile (CIRIA R113)
Distance from excavation (m)
0.0
2.0
4.0
6.0
8.0
10.0
12.0
Settlement (mm)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0