

Project				Job Ref.
90 Hunstanton Drive, Bury				9135
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FOUNDATION DEPTH

Existing trees are sycamore and rowan (mountain ash) and the following calculations have been based on an estimated 8 m height.

Ground conditions at this stage are unknown so worst case is assumed.

Distances of 2.5 m, 4 m and 5.5 m from the foundation to the trees have been considered.

FOUNDATIONS NEAR TREES

In accordance with Clause 4.2.12 of NHBC Part 4: Foundations - Chapter 4.2

Tedds calculation version 2.0.03

Site Details

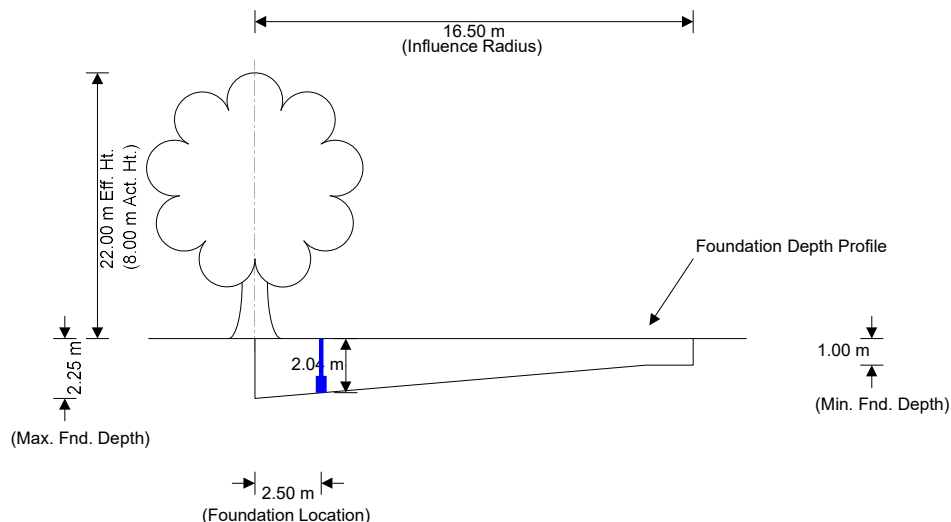
Site location; Manchester
Reduction depth due to climate variations - cl.4.2.4; $Z_c = 0.15$ m

Soil Details

Plasticity index from lab tests; $I_p = 40$ %
Percentage of particles < 425 μ m; $p_{425} = 100$ %
Modified plasticity index - cl. 4.2.4; $I'_p = I_p \times p_{425} / 100$ % = 40 %
Volume change potential - Table 1; High

Details for Tree - 1

Species of tree; Broad leaf - Sycamore
tree is to remain at the site, with no further planting allowed.
Water demand of tree - Table 3; Moderate
Mature height of tree - Table 3; $H_{m1} = 22.00$ m
Influence radius - Table 3b; $r_{inf1} = 0.75 \times H_{m1} = 16.50$ m
Measured height of tree; $H_{act1} = 8.00$ m
Distance from centre of tree to face of foundations; $D_1 = 2.50$ m
Effective height of tree - Table 3a; $H_{eff1} = 22.00$ m

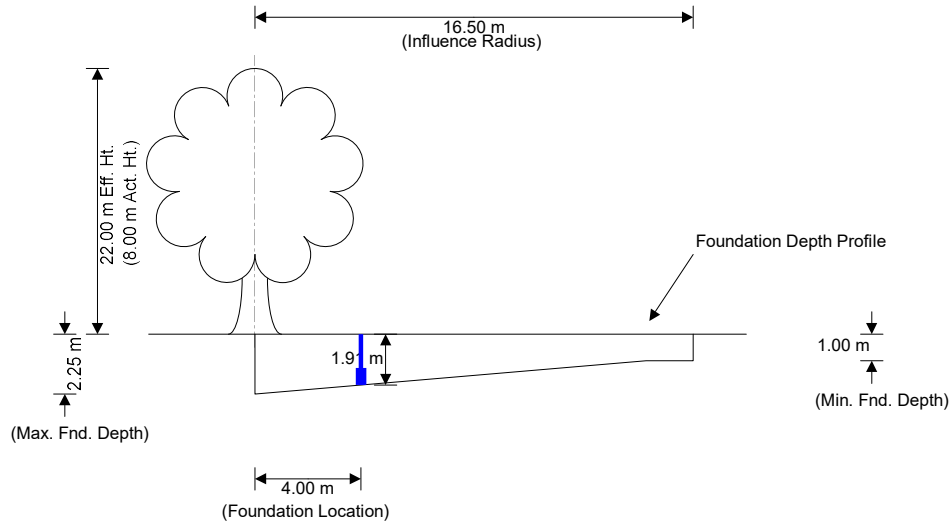


Minimum foundation depth - Table 4B; $Z_{min} = 1.00$ m
Look up value for foundation depth -; Chart 1 Soils with HIGH volume change potential;
 $Z_{LookUp1} = 2.19$ m
Required foundation depth; $Z_{req1} = Z_{LookUp1} - Z_c = 2.04$ m

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Details for Tree - 2

Species of tree; Broad leaf - Sycamore
tree is to remain at the site, with no further planting allowed.
Water demand of tree - Table 3; Moderate
Mature height of tree - Table 3; $H_{m2} = 22.00$ m
Influence radius - Table 3b; $r_{inf2} = 0.75 \times H_{m2} = 16.50$ m
Measured height of tree; $H_{act2} = 8.00$ m
Distance from centre of tree to face of foundations; $D_2 = 4.00$ m
Effective height of tree - Table 3a; $H_{eff2} = 22.00$ m

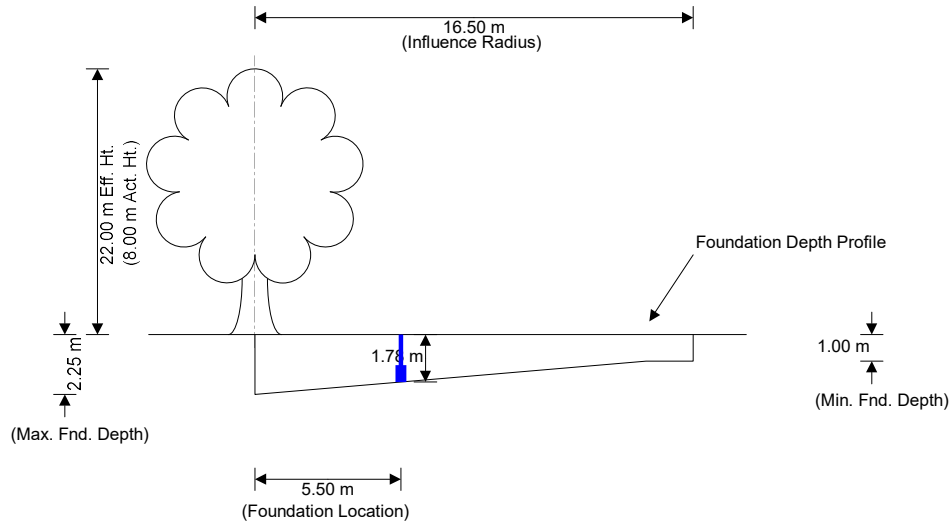


Minimum foundation depth - Table 4B; $Z_{min} = 1.00$ m
Look up value for foundation depth -; Chart 1 Soils with HIGH volume change potential;
 $Z_{LookUp2} = 2.06$ m
Required foundation depth; $Z_{req2} = Z_{LookUp2} - Z_c = 1.91$ m

Details for Tree - 3

Species of tree; Broad leaf - Sycamore
tree is to remain at the site, with no further planting allowed.
Water demand of tree - Table 3; Moderate
Mature height of tree - Table 3; $H_{m3} = 22.00$ m
Influence radius - Table 3b; $r_{inf3} = 0.75 \times H_{m3} = 16.50$ m
Measured height of tree; $H_{act3} = 8.00$ m
Distance from centre of tree to face of foundations; $D_3 = 5.50$ m
Effective height of tree - Table 3a; $H_{eff3} = 22.00$ m

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Minimum foundation depth - Table 4B;

$$Z_{\min} = 1.00 \text{ m}$$

Look up value for foundation depth -; Chart 1 Soils with HIGH volume change potential;

$$Z_{\text{LookUp3}} = 1.93 \text{ m}$$

Required foundation depth;

$$Z_{\text{req3}} = Z_{\text{LookUp3}} - Z_c = 1.78 \text{ m}$$

Details for Tree - 4

Species of tree;

Broad leaf - Mountain Ash

tree is to remain at the site, with no further planting allowed.

Water demand of tree - Table 3;

Moderate

Mature height of tree - Table 3;

$$H_{m4} = 11.00 \text{ m}$$

Influence radius - Table 3b;

$$r_{\text{inf4}} = 0.75 \times H_{m4} = 8.25 \text{ m}$$

Measured height of tree;

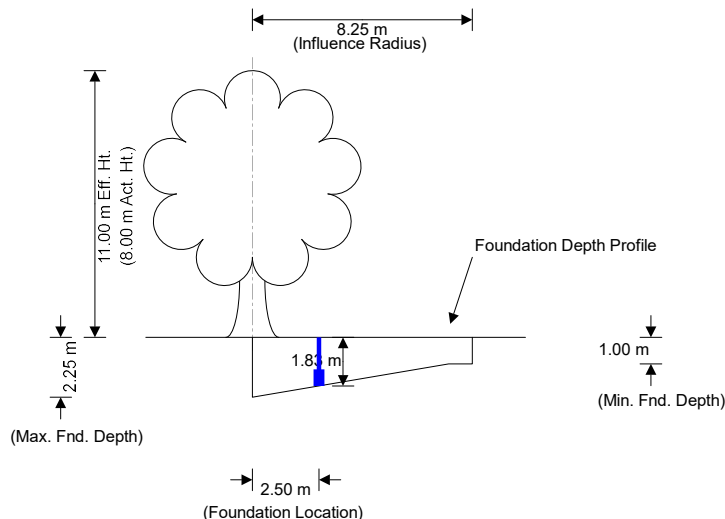
$$H_{\text{act4}} = 8.00 \text{ m}$$

Distance from centre of tree to face of foundations;

$$D_4 = 2.50 \text{ m}$$

Effective height of tree - Table 3a;

$$H_{\text{eff4}} = 11.00 \text{ m}$$



Minimum foundation depth - Table 4B;

$$Z_{\min} = 1.00 \text{ m}$$

Look up value for foundation depth -; Chart 1 Soils with HIGH volume change potential;

$$Z_{\text{LookUp4}} = 1.98 \text{ m}$$

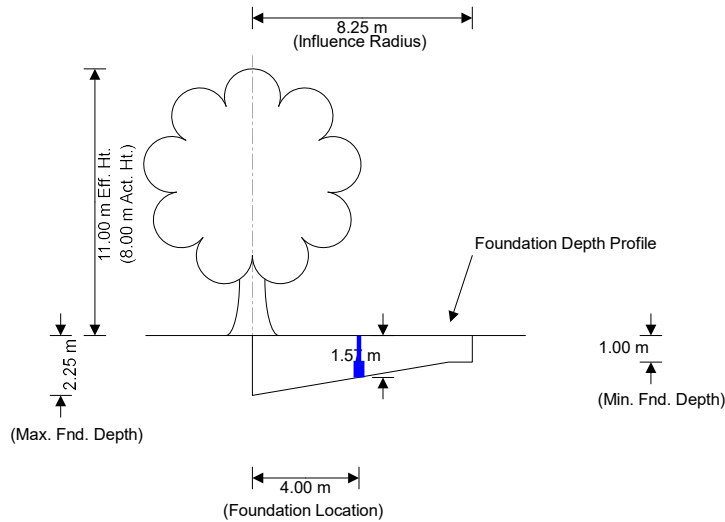
Required foundation depth;

$$Z_{\text{req4}} = Z_{\text{LookUp4}} - Z_c = 1.83 \text{ m}$$

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Details for Tree - 5

Species of tree; Broad leaf - Mountain Ash
tree is to remain at the site, with no further planting allowed.
Water demand of tree - Table 3; Moderate
Mature height of tree - Table 3; $H_{m5} = 11.00$ m
Influence radius - Table 3b; $r_{inf5} = 0.75 \times H_{m5} = 8.25$ m
Measured height of tree; $H_{act5} = 8.00$ m
Distance from centre of tree to face of foundations; $D_5 = 4.00$ m
Effective height of tree - Table 3a; $H_{eff5} = 11.00$ m

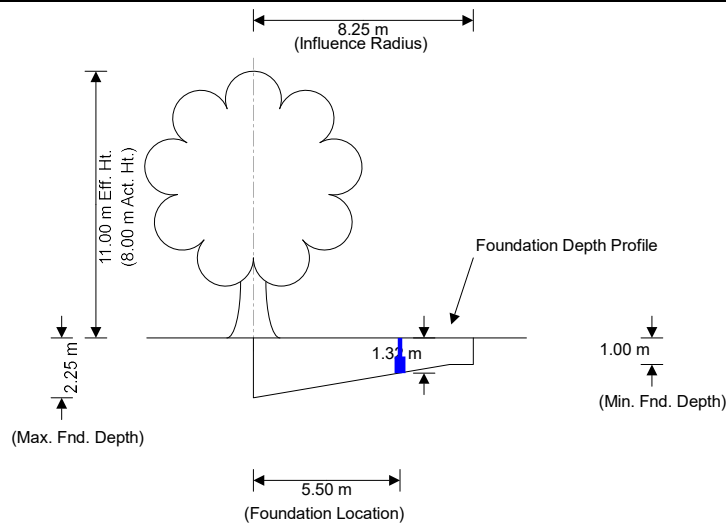


Minimum foundation depth - Table 4B; $Z_{min} = 1.00$ m
Look up value for foundation depth -; Chart 1 Soils with HIGH volume change potential;
 $Z_{LookUp5} = 1.72$ m
Required foundation depth; $Z_{req5} = Z_{LookUp5} - Z_c = 1.57$ m

Details for Tree - 6

Species of tree; Broad leaf - Mountain Ash
tree is to remain at the site, with no further planting allowed.
Water demand of tree - Table 3; Moderate
Mature height of tree - Table 3; $H_{m6} = 11.00$ m
Influence radius - Table 3b; $r_{inf6} = 0.75 \times H_{m6} = 8.25$ m
Measured height of tree; $H_{act6} = 8.00$ m
Distance from centre of tree to face of foundations; $D_6 = 5.50$ m
Effective height of tree - Table 3a; $H_{eff6} = 11.00$ m

PSD engineers POOLER STRUCTURAL DESIGN E: ap@psd-engineers.com T: 07799 418427	Project			Job Ref.
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Minimum foundation depth - Table 4B; $Z_{min} = 1.00\text{ m}$
 Look up value for foundation depth -; Chart 1 Soils with HIGH volume change potential;
 $Z_{LookUp6} = 1.47\text{ m}$
 Required foundation depth; $Z_{req6} = Z_{LookUp6} - Z_c = 1.32\text{ m}$

Summary Table

Tree	Name	Distance (m)	Measured Height (m)	Effective Height (m)	Tree to be removed	Required Foundation Depth (m)
1	Sycamore	2.5	8.0	22.0	No	2.04
2	Sycamore	4.0	8.0	22.0	No	1.91
3	Sycamore	5.5	8.0	22.0	No	1.78
4	Mountain Ash	2.5	8.0	11.0	No	1.83
5	Mountain Ash	4.0	8.0	11.0	No	1.57
6	Mountain Ash	5.5	8.0	11.0	No	1.32

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