



TIM O'HARE ASSOCIATES
SOIL & LANDSCAPE CONSULTANCY

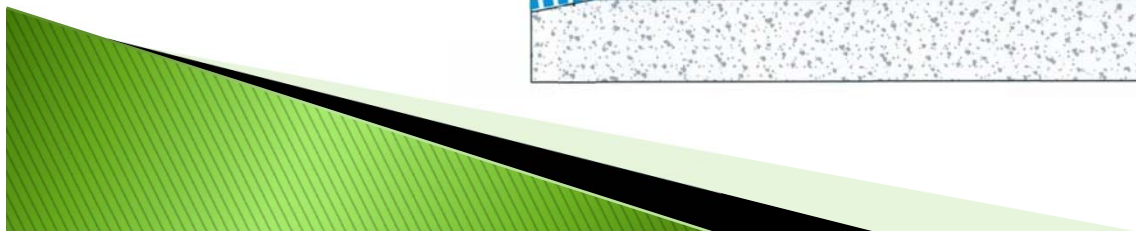
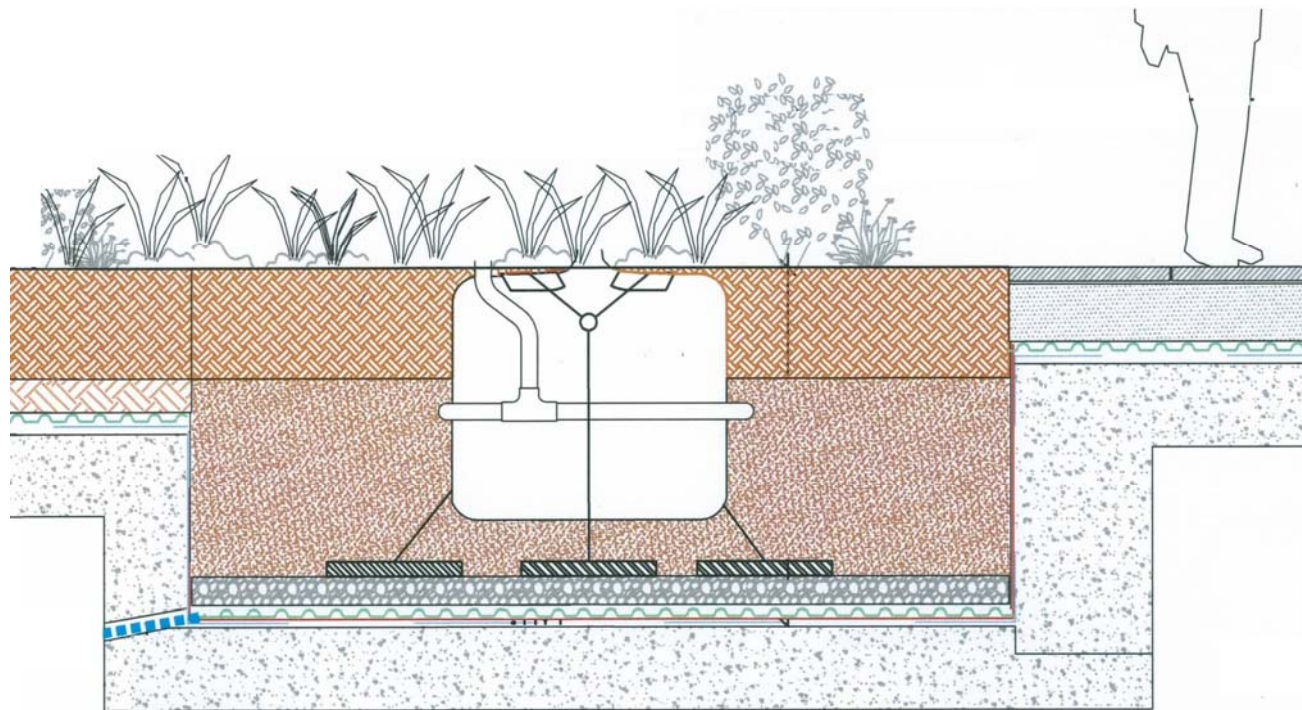
Podium Landscape Soils

Tim O'Hare
Palmstead Soft Landscape Workshop
24th January 2018



Podium Landscapes

Any landscape that is built on a structure









Main Soil Considerations

- Soil types
- Soil profiles
- Drainage provision
- Membranes
- Testing requirements



Challenges & Constraints

- Brand new soil profile
- No natural soakage into the ground
- Access restrictions
- High risk of soil compaction
- Limited cultivation potential
- Shallow soil depths (sometimes)
- Weight restrictions (sometimes)

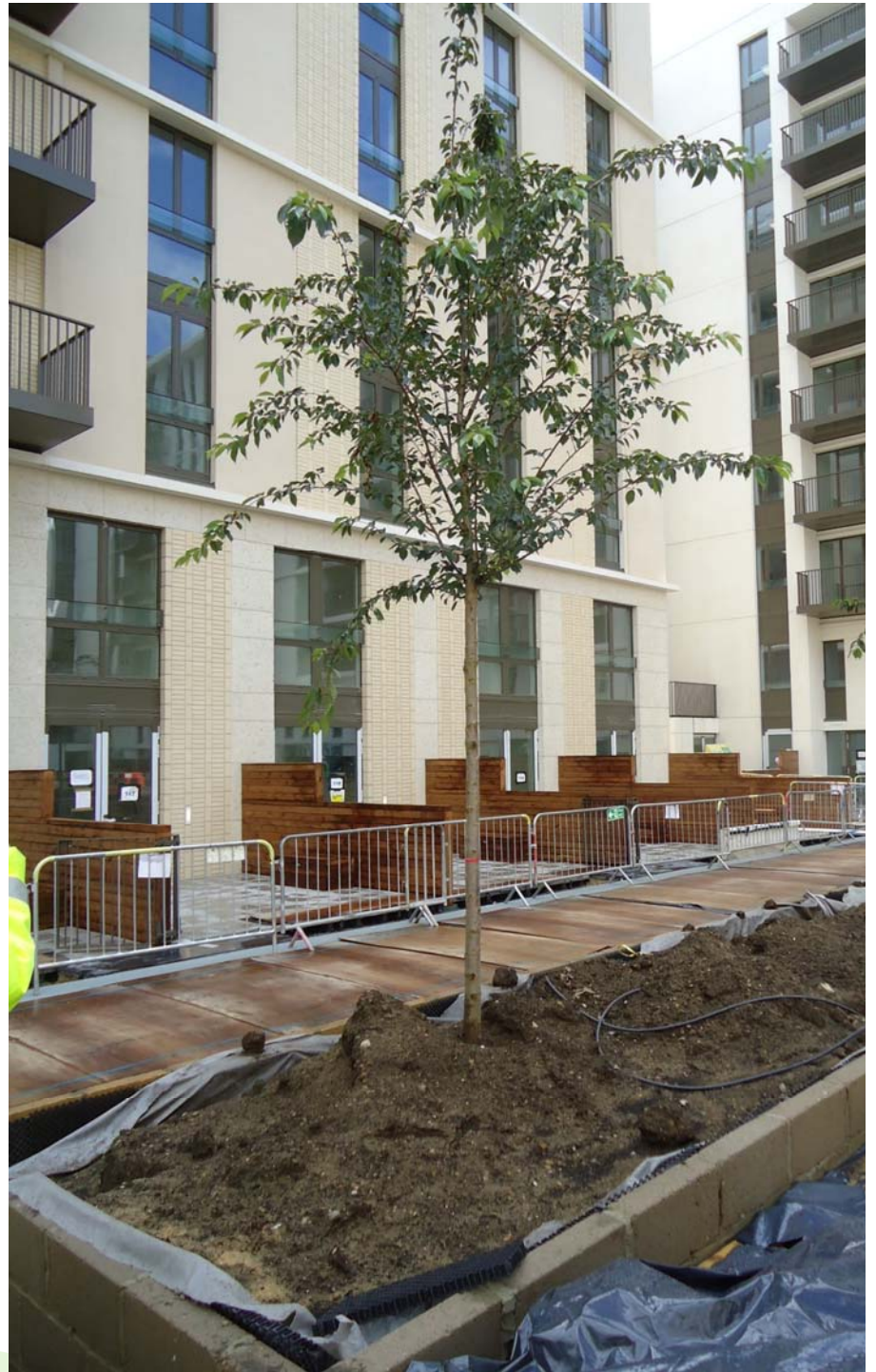
- **Very expensive to put right if it goes wrong!**





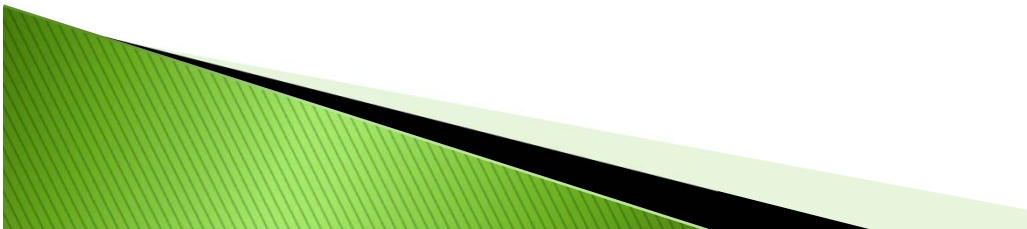








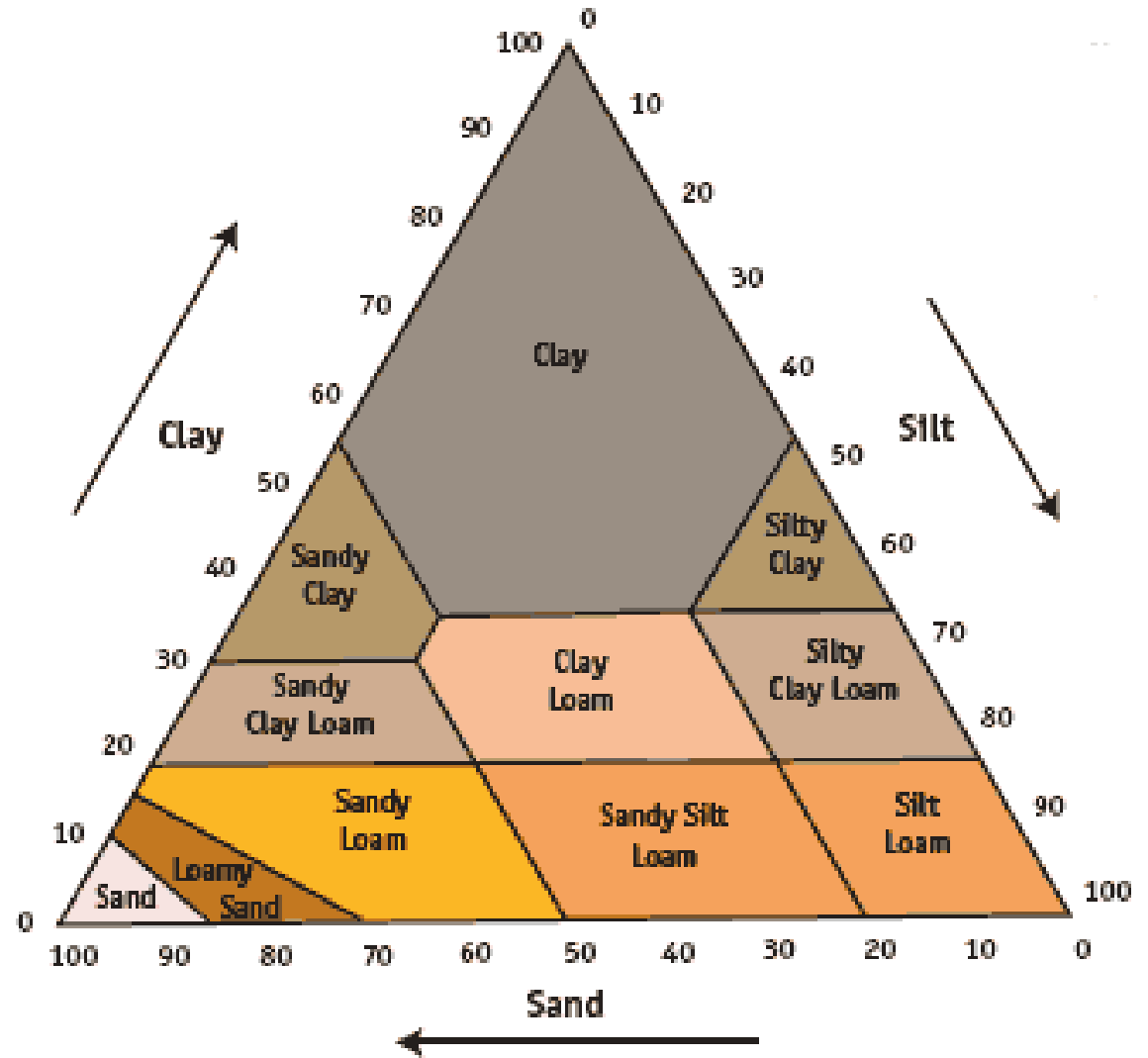




Soil Texture

Responsible For:

- ▶ *Water retention*
- ▶ *Drainage*
- ▶ *Aeration*
- ▶ *Compaction resistance*

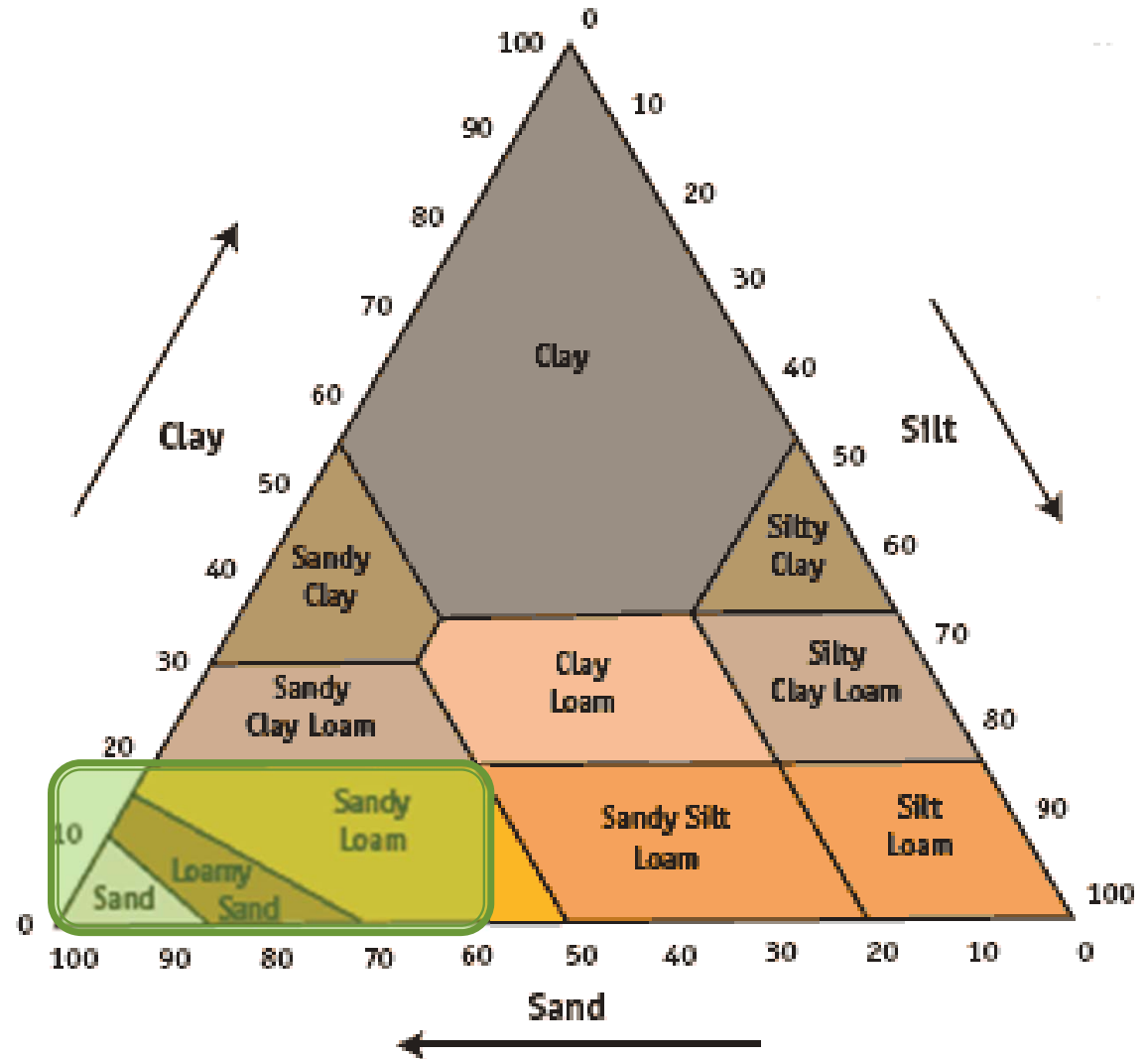


Soil Texture

High Sand Content

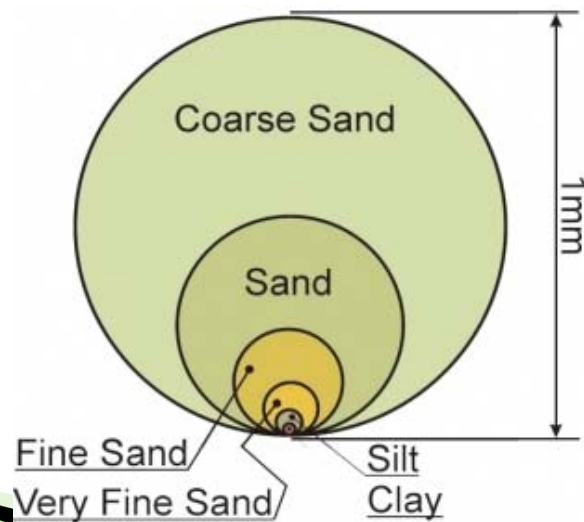
- ▶ *Compaction resistant*
- ▶ *Not reliant on soil structure*
- ▶ *Good porosity & drainage*
- ▶ *Easy to handle & spread*
- ▶ *Workable all year round*
- ▶ *Easy to cultivate*
- ▶ *Easy to ameliorate*

- ▶ *Lower water retention*
- ▶ *Nutrient leaching risk*



'Sand' is not just 'Sand'

Particle Grade	Particle Size (mm)
Very Coarse Sand	1.0 – 2.0
Coarse Sand	0.5 – 1.0
Medium Sand	0.25 – 0.5
Fine Sand	0.15 – 0.25
Very Fine Sand	0.05 – 0.15
Silt	0.002 – 0.05
Clay	<0.002



Soil Properties

Organic Matter & Fertility

Green Compost

- ▶ *Bulky organic matter*
- ▶ *Major plant nutrients*
- ▶ *Secondary nutrients*
- ▶ *Trace elements*
- ▶ *Soil microbes*
- ▶ *Water retention*
- ▶ *Weed seed free*



Soil Properties

Soil Conditioners

- ▶ *Nutrient retention*
- ▶ *Water retention*



'TerraCottem Universal' Soil Conditioner

Soil Properties

Bulk Density

Lightweight Aggregates

- ▶ *Expanded clay*
- ▶ *Crushed brick*
- ▶ *Pumice Lava*
- ▶ *Vermiculite*



Soil Depths

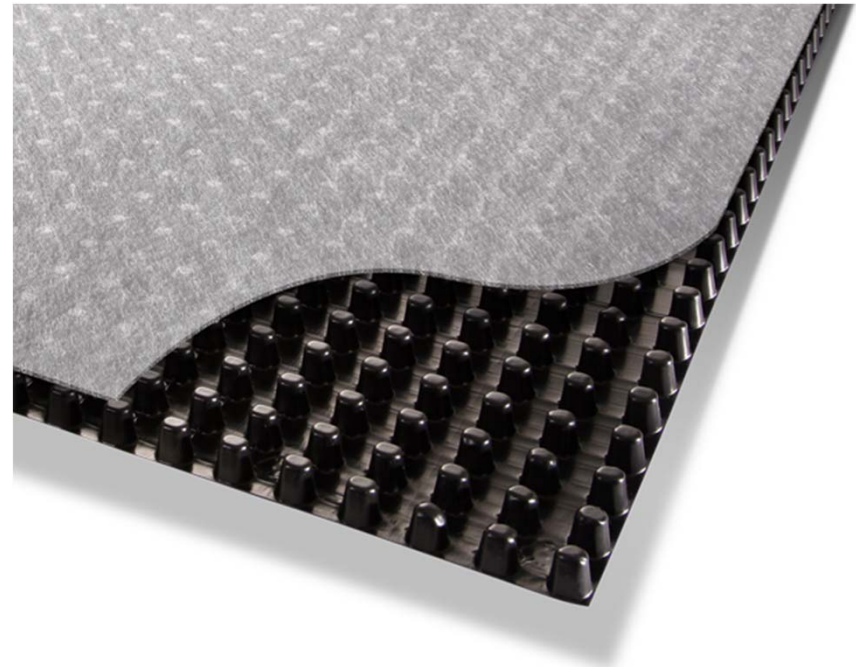
Considering Factors:

- ▶ Plant Types – trees, hedging, shrubs, herbaceous, grass lawn
- ▶ Tree species
- ▶ Rootball size
- ▶ Loading restrictions
- ▶ Irrigation provision

Drainage



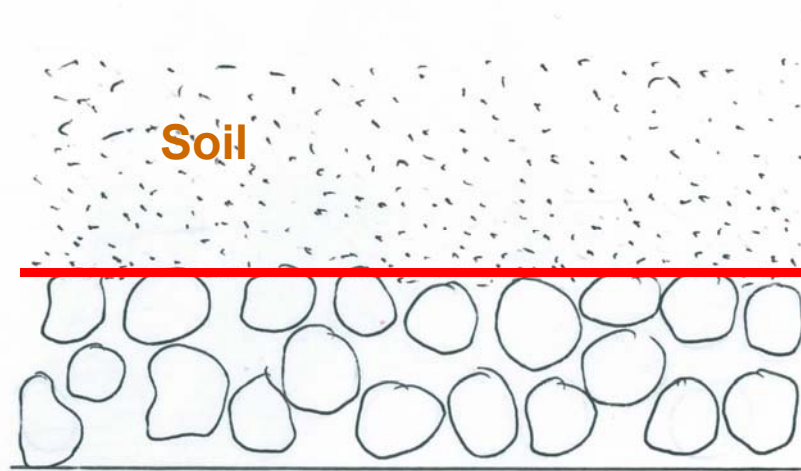
Granular drainage layer



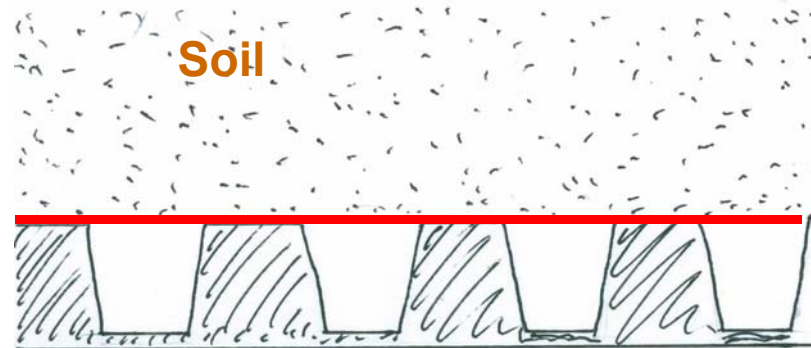
Plastic drainage mat

Drainage – 2 main issues

- 1) Maintain the integrity of the drainage layer by keeping the soil out of it.
- 2) Maintain a hydraulic connection between the soil and the drainage layer.



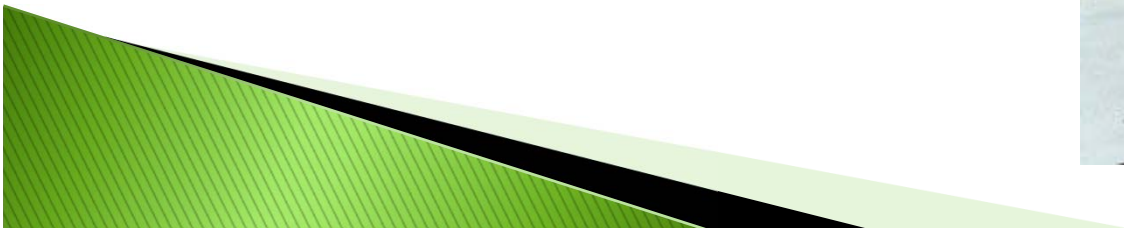
Granular drainage layer



Plastic drainage mat

Geotextile membrane

- ▶ The construction industry has a love for geotextiles and these are often the first choice.
- ▶ However, geotextiles are not widely used by the sports turf / golf industry.
- ▶ **Why?**



Geotextile membrane

.... Because they can block up and become impermeable!





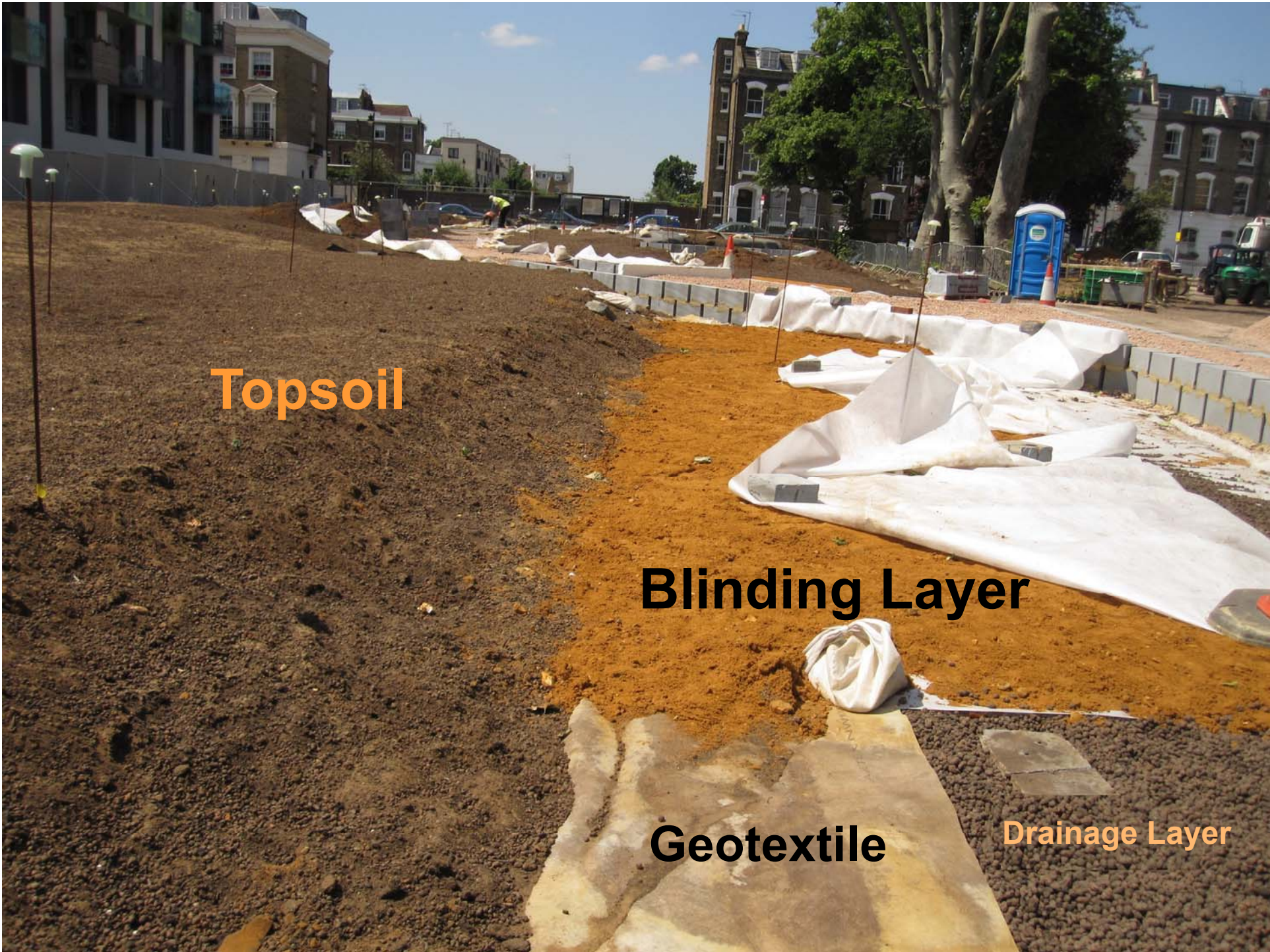












Topsoil

Blinding Layer

Geotextile

Drainage Layer

Testing Requirements

- pH value & salinity
- Organic matter
- Major plant nutrients (N P K Mg)
- Potential contaminants (eg. heavy metals, hydrocarbons, asbestos)

- **Particle Size Analysis – including 5 sand fractions**
- **Permeability**
- **Porosity**
- **Water-holding capacity**
- **Bulk density (if there are loading restrictions)**

Thank you



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