

**BUILD.  
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PLAY.**

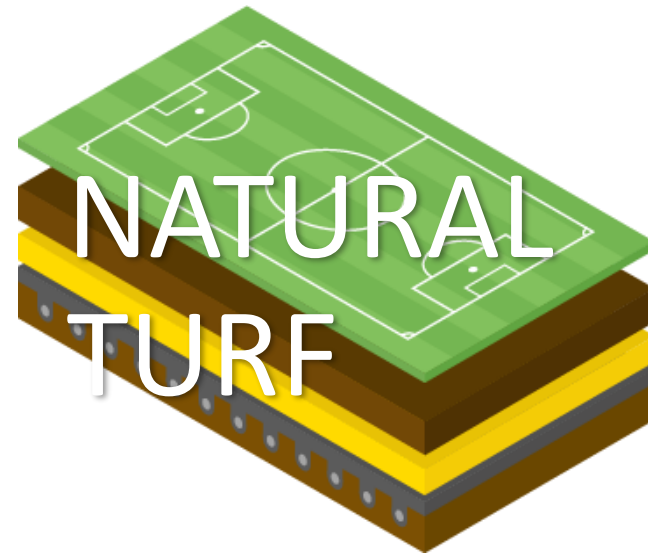


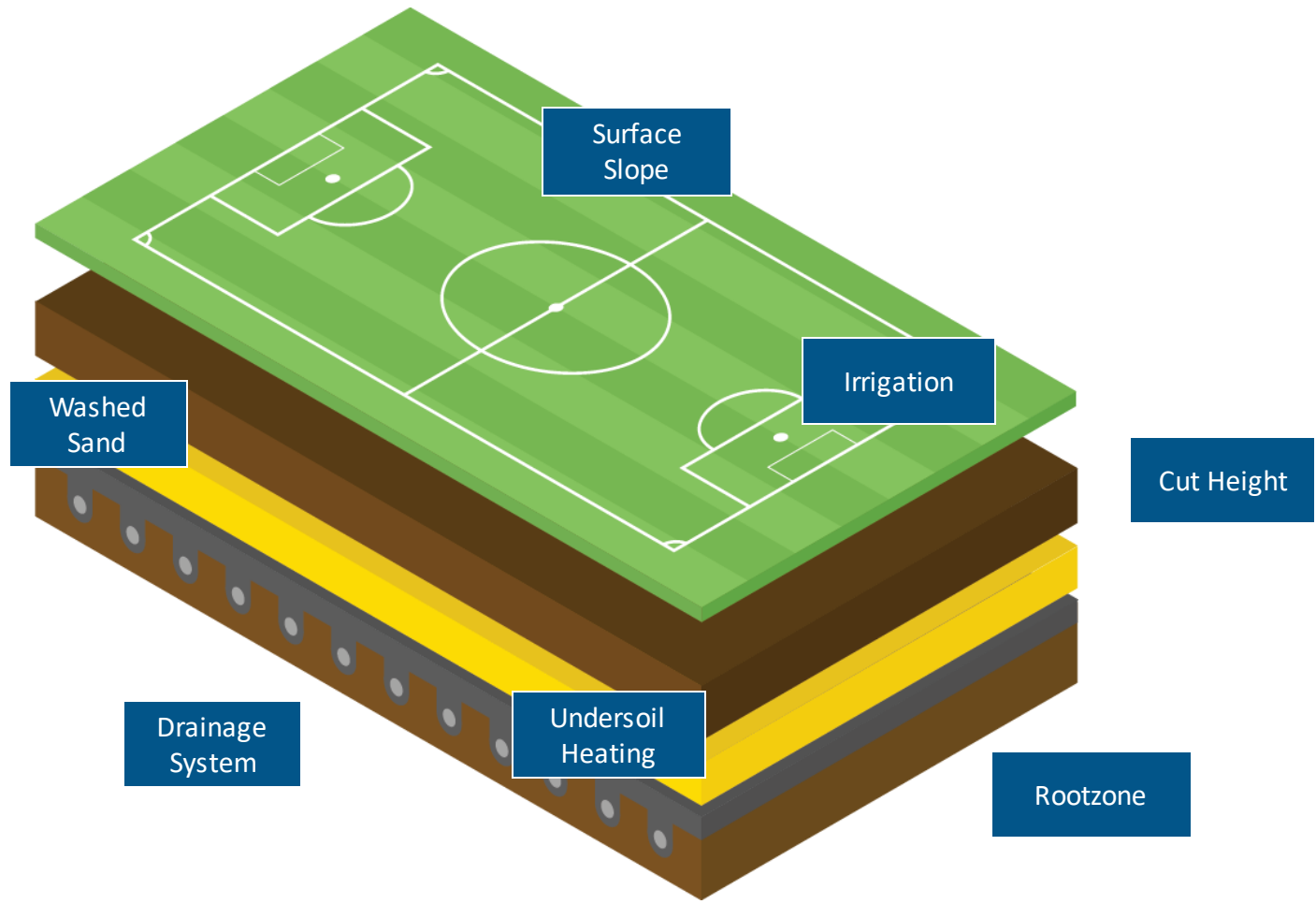
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## Surface Slop

Surface irrigation is improved by constructing slope with high spot in centre of pitch (running from goal mouth to goal mouth) which will shed surplus surface water away from the playing surface towards touch lines. Typical slope of around 1.5% measured from the centre of the pitch (crown) to the touch line.

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# Irrigation

In or off field irrigation to ensure correct moisture level for healthy turf.

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## Cut Height

Typical height of cut is around 25mm with maximum cut height of 30mm.

## Rootzone

Ideally laid to a typical depth of 10-15cm throughout, using clean, washed sand with majority of particles between 0.125 and 0.500 mm, blended with an organic amendment. Rootzone blend should be free draining, offer good surface stability and have balanced capillary and non-capillary porosity levels.

Category	Size (mm)	Range (%)
Coarse Sand	0.500 - 1.000	< 15
Medium Sand	0.250 - 0.500	50 - 70
Fine Sand	0.125 - 0.250	20 - 35
Very Fine Sand	0.063 - 0.125	< 8

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## Undersoil Heating

If undersoil heating is installed then it should be placed between the gravel and sand layers, well away from any organic layer.



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## Drainage System

Permeable pipes with lateral drains typically 60-80mm diameter and main drains typically 100-150mm diameter laid in trenches surrounded with gravel typically 2-8mm in particle size. Main drains spaced at between 3m and 5m centres is typical. Entire surface laid with gravel carpet to a depth of 100mm.

## Washed Sand

Laid to a typical depth of 15 – 20cm throughout. Ideally same sand as used in rootzone mix but at least with compatible particle size distribution with rootzone mix and must be free draining.

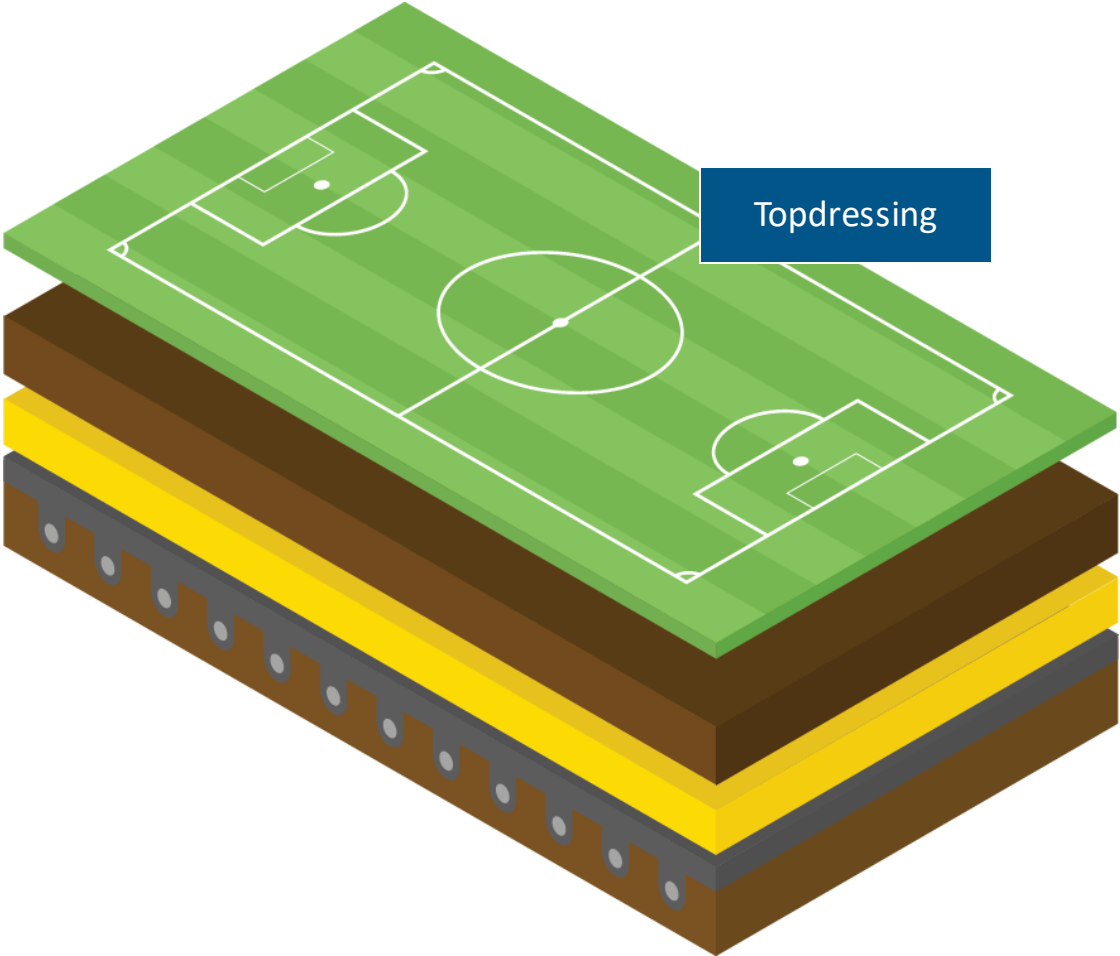
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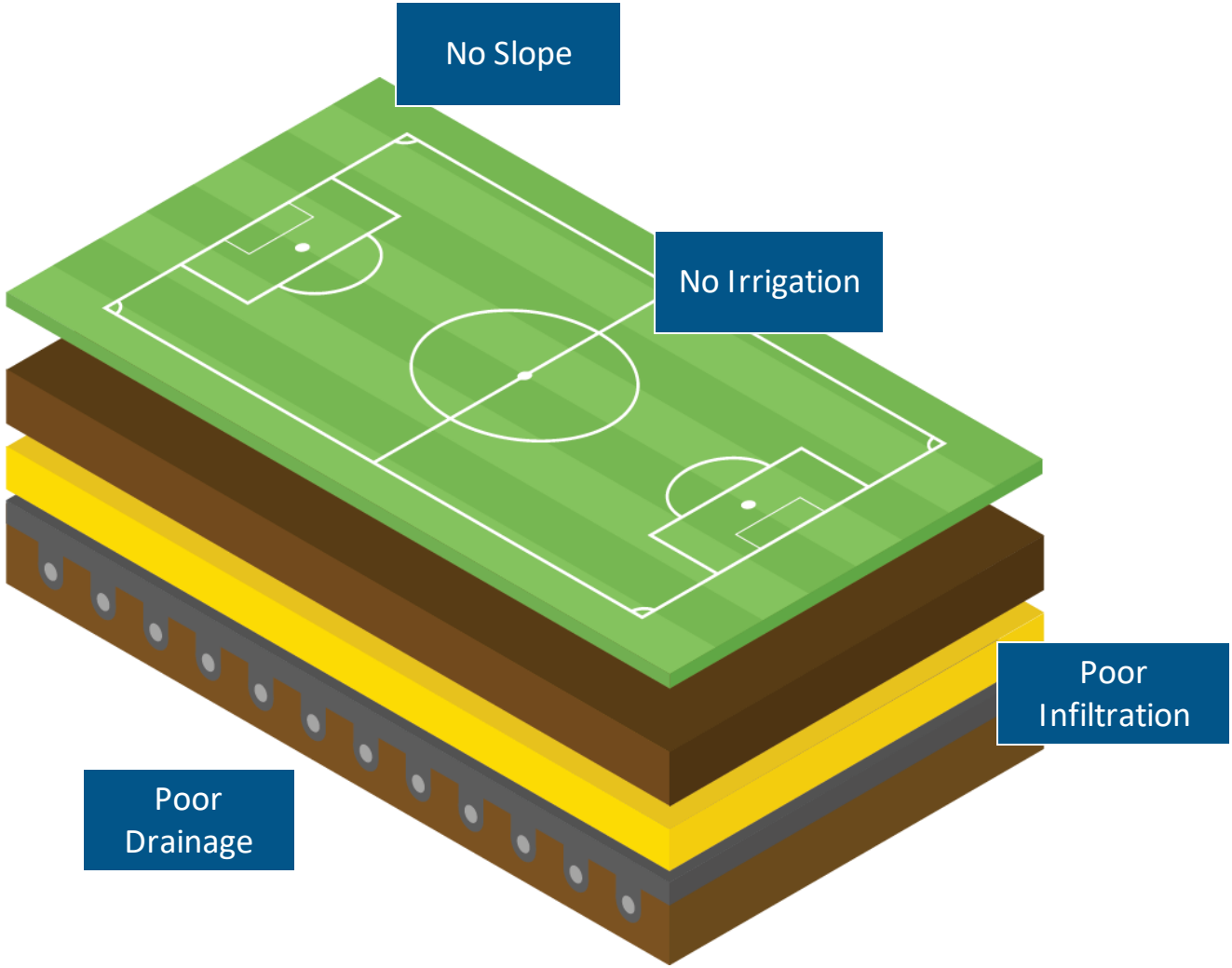


# Topdressing

Compatibility is a critical factor when selecting a suitable top dressing, the top dressing used must have a compatible particle size distribution with the existing rootzone, therefore any decision regarding the selection of a suitable top dressing must first consider the existing rootzone.

Any informed management decision regarding the surface playability which includes the correct selection of a suitable top dressing cannot be made until the physical properties of the existing surface are known. The only accurate way of determining this is through laboratory testing. The results should identify not only the percentage of sand, silt and clay particles but more importantly show the percentage range of sand categories e.g. Coarse, Medium, Fine, etc.

Ideally sands should have the majority of particles between 0.500mm and 0.125mm, with very little silt/clay.



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## No Slope

If no surface slope is present then consider creating one by constructing slope with high spot in centre of pitch (running from goal mouth to goal mouth) which will shed surplus surface water from playing surface to touch lines. If there are any low spots on the playing surface then consider raising these too.

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## No Irrigation

If no irrigation is present then consider installation of a form of irrigation to suit budget, from travelling sprinklers to full pop-up in-field irrigation system.

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## Poor Infiltration

If surface water cannot penetrate through to the rootzone or soil below then various techniques can be applied such as top dressing, spiking or sand banding. If Particle Size Distribution of rootzone or soil profile shows high silt/clay content or high fine sand content then consider reducing this using suitable sand.



## Poor Drainage

If no drainage system is installed (or current system is inefficient) then consider permeable pipes with lateral drains typically 60-80mm diameter and main drains typically 100-150mm diameter laid in trenches surrounded with gravel typically 2-8mm in particle size. Main drains spaced at between 3m and 5m centres is typical.

Manchester United FC – (Old Trafford)  
main pitch 2013 (DESSO) and training facility (1998-2018 DESSO+Natural)

Manchester City FC – (Etihad Stadium)  
main pitch 2010 (DESSO) and new +£250M training facility (2013-2015 DESSO+Natural)

Arsenal FC – (Emirates Stadium) 2007 (DESSO)+2016 (DESSO)  
main pitch and training facility (2016 DESSO)

Wembley Stadium - main pitch 2010 (DESSO)

Twickenham RFU – main pitch 2012 (DESSO)

Milton Keynes FC – (MK Dons) - main pitch 2007 (Natural)

Burnley FC – (Turf Moor) - main pitch 2010 (DESSO) and training facility (2016-2018)

Aston Villa FC – (Villa Park)  
main pitch 1997 (DESSO) and training facility 2006 (DESSO + Natural)

Huddersfield Town FC – (John Smiths’s Stadium) main pitch 1996 (DESSO)

West Bromwich Albion FC – (The Hawthorns)  
main pitch 2011 (DESSO) and training facility 2011-2018)

Tottenham Hotspur FC - Training facility 2012 (DESSO + Natural)

Chelsea FC (Stamford Bridge)  
Main pitch 2014 (DESSO) and Cobham training facility 2014 -2018 (DESSO+SISPITCH+Natural)

Everton FC – (Goodison Park)  
main pitch 2013 (DESSO) and training pitches 2013 –2018 (DESSO + Natural)

Stoke City FC – (Bet365 Stadium)  
main pitch 2016 (DESSO) and training facility 2016-2017 (DESSO)

Liverpool FC – (Anfield)  
Main pitch 2017 and training pitches 2012-2018 (DESSO + Natural)

Queens Park Rangers FC – (Loftus Road) – main pitch 2013 (DESSO)

Crystal Palace FC – (Selhurst Road) main pitch 2015 (DESSO)

West Ham FC – (Queen Elizabeth Olympic Park)  
main pitch 2016 (DESSO) and training facility 2016

Watford – (Vicarage Road)  
main pitch 2012 (DESSO) and training facility 2010-2016 (Natural)

English National Football Stadium St Georges Park – Burton upon Trent 2012 (DESSO)

Bisham Abbey – England National Sports Centre – 2012 (Natural)