

IPOS – Turf and Soil Assessment

The foundation of good turf performance is the soil in which turf grows. The principle soil characteristics that impact on turf health are;

- Soil Texture
- Soil Structure
- Soil Infiltration Rate
- Soil Compaction
- Biological Activity
- Soil Nutrient Status

The 'IPOS Turf and Soil Assessment Model' uses sound field assessment and measurements combined with laboratory analysis to determine and monitor turf health and soil condition. IPOS partners with highly skilled agronomists to do soil and water testing and interpretation. Ongoing testing and monitoring provides information from which sound turf maintenance and renovation practices can be developed aimed at improving soil conditions, turf health and density. The report will provide a fertiliser and turf maintenance program developed from assessment results which is specific to each sports ground.

Assessment tests and methods include;

| Assessment Test | Assessment Method | No of Test per Sports Ground |
|--------------------------------------|---------------------------------|---------------------------------------------------|
| Turf health & quality | IPOS assessment / TQVS standard | 1 assessment across the sports ground |
| Soil texture & structure | Hand bolus method – ribbon test | 5 |
| Root zone depth and density | Split tube sampler | 5 |
| Soil profile | Split tube sampler to 300mm | 5 |
| Soil infiltration rate / drainage | Ring infiltrometer | 5 |
| Soil moisture content | Theta-probe moisture sensor | 15 |
| Soil strength & compaction | Hydraulic penetrometer | 15 |
| Surface hardness | Clegg impact hammer | 15 |
| Soil chemistry and nutrient analysis | Laboratory analysis | 15 soil samples mixed to make 1 laboratory sample |



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Data collected in the field is entered into the IPOS Online system where it is analysed according to set parameters and industry benchmarks. Results are presented both as data tables and graphically on aerial mapping using GPS references. Comments and recommendations are made based on results. Sound turf maintenance programs can then be developed specifically for each sports ground. Results can be monitored over time to ensure the programs are effective. All data and reports can be accessed anytime, from anywhere.

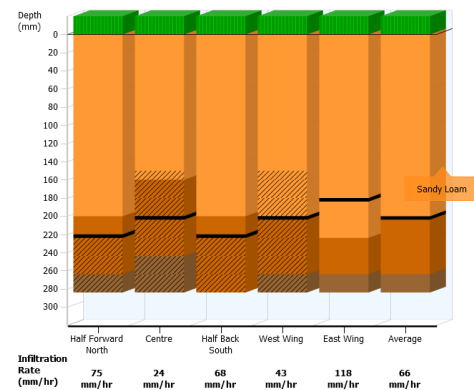
Soil profile / root density



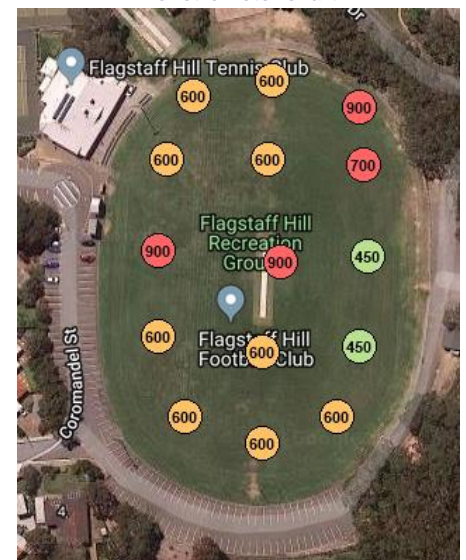
Turf and Soil Assessment Summary

| Location | Date | Turf Quality Rating | Surface Quality Rating | Surface Hardness Centre Corridor (CIV) | Surface Hardness West Corridor (CIV) | Surface Hardness East Corridor (CIV) | Penetrometer @ 225mm Centre Corridor | Penetrometer @ 225mm West Corridor (psi) | Penetrometer @ 225mm East Corridor | Soil Moisture Average (%) | Root Depth Average (mm) | Infiltration Rate Average (mm/hr) | Soil Type @ 150mm | Details |
|-------------------|-------------|---------------------|------------------------|----------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|------------------------------------------|------------------------------------|---------------------------|-------------------------|-----------------------------------|-------------------|---------|
| Aldridge Oval | 02-Aug-2012 | 75 % | 75 % | 9.1 | 6.7 | 6.0 | 470 | 420 | 410 | 23% | 204 | 123 | Sandy Loam | |
| Aldridge Oval | 17-Jul-2013 | 74 % | 74 % | 6.7 | 5.5 | 5.3 | 310 | 260 | 250 | 27% | 214 | 115 | Sandy Loam | |
| Bryce Oval | 02-Aug-2012 | 76 % | 76 % | 6.5 | 5.9 | 5.6 | 650 | 560 | 530 | 29% | 218 | 117 | Sandy Loam | |
| Bryce Oval | 15-Jul-2013 | 75 % | 74 % | 7.0 | 5.3 | 5.3 | 270 | 250 | 220 | 34% | 216 | 76 | Sandy Loam | |
| Mawson Oval | 31-Jul-2012 | 74 % | 74 % | 6.9 | 6.1 | 4.5 | 420 | 380 | 330 | 33% | 222 | 64 | Sandy Loam | |
| Mawson Oval | 17-Jul-2013 | 75 % | 73 % | 7.9 | 6.1 | 5.6 | 450 | 410 | 430 | 26% | 228 | 76 | Sandy Loam | |
| Moffat Oval | 30-Jul-2012 | 74 % | 73 % | 7.5 | 6.0 | 3.7 | 560 | 370 | 500 | 36% | 196 | 71 | Sandy Loam | |
| Moffat Oval | 29-Jul-2013 | 75 % | 74 % | 9.1 | 7.5 | 6.5 | 600 | 430 | 380 | 26% | 196 | 89 | Sandy Loam | |
| Notting Hill Oval | 30-Jul-2012 | 74 % | 74 % | 8.8 | 7.5 | 6.3 | 660 | 660 | 620 | 36% | 206 | 66 | Sandy Loam | |
| Notting Hill Oval | 11-Jul-2013 | 74 % | 74 % | 8.8 | 7.0 | 6.3 | 600 | 460 | 520 | 28% | 194 | 84 | Sandy Loam | |

Soil profile chart



Penetrometer chart



Hydraulic Penetrometer Test Notes

Soil Strength
Measured using a hydraulic penetrometer the soil strength was generally acceptable to 150mm increasing down the profile. De-compaction work with an earthquake slicer to 250mm will mix

| Test No | Waypoint | Locale | Location | Soil Moisture (%) | 75mm Depth (psi) | 150mm Depth (psi) | 225mm Depth (psi) | 300mm Depth (psi) | >300mm Depth (psi) | Max Depth (mm) |
|--------------------|----------|--------------------|-------------------------|-----------------------|------------------|-------------------|-------------------|-------------------|--------------------|----------------|
| 1 | 1 | Centre Corridor | Goal Square(North) | 33.5 | 300 | 450 | 600 | 900 | 900 | 225 |
| 2 | 2 | Centre Corridor | Half Forward (North) | 23.0 | 300 | 450 | 600 | 900 | 900 | 225 |
| 3 | 3 | Centre Corridor | Centre line (Centre) | 38.0 | 400 | 600 | 900 | 900 | 900 | 225 |
| 4 | 4 | Centre Corridor | Half Back South | 32.3 | 300 | 450 | 600 | 900 | 900 | 250 |
| 5 | 5 | Centre Corridor | Goal square (South) | 39.2 | 400 | 400 | 600 | 900 | 900 | 250 |
| 6 | 6 | Wing Corridor West | West Back Line (Sth) | 30.8 | 300 | 450 | 600 | 900 | 900 | 225 |
| 7 | 7 | Wing Corridor West | Half Back West | 34.8 | 300 | 450 | 600 | 900 | 900 | 250 |
| 8 | 8 | Wing Corridor West | Centre Line West | 33.1 | 400 | 450 | 900 | 900 | 900 | 225 |
| 9 | 9 | Wing Corridor West | Half Forward West | 33.7 | 300 | 450 | 600 | 900 | 900 | 225 |
| 10 | 10 | Wing Corridor West | Forward Line West (Nth) | 37.5 | 300 | 350 | 600 | 900 | 900 | 225 |
| 11 | 11 | Wing Corridor East | forward line East (Nth) | 41.2 | 300 | 400 | 900 | 900 | 900 | 225 |
| 12 | 12 | Wing Corridor East | Half Forward East | 37.8 | 300 | 600 | 700 | 900 | 900 | 225 |
| 13 | 13 | Wing Corridor East | Centre Line East | 40.3 | 300 | 450 | 450 | 500 | 650 | 450 |
| 14 | 14 | Wing Corridor East | Half Back East | 35.7 | 300 | 450 | 450 | 600 | 900 | 350 |
| 15 | 15 | Wing Corridor East | Back Line East (Sth) | 47.7 | 300 | 450 | 600 | 900 | 900 | 250 |
| Locale | | | | AVG Soil Moisture (%) | AVG 75mm | AVG 150mm | AVG 225mm | AVG 300mm | AVG >300mm | Max Depth (mm) |
| Centre Corridor | | | | 33.2 | 340.0 | 470.0 | 660.0 | 900.0 | 900.0 | 250 |
| Wing Corridor East | | | | 40.5 | 300.0 | 470.0 | 620.0 | 760.0 | 850.0 | 450 |
| Wing Corridor West | | | | 34.0 | 320.0 | 430.0 | 660.0 | 900.0 | 900.0 | 250 |

