

6 August 2012

Mr S. Teague  
Parks & Open Spaces  
Ipswich Borough Council  
Gipping House  
7 Whittle Road  
Ipswich  
SUFFOLK. IP2 0UH.

Dear Mr Teague

**TENNIS COURT ADVISORY SERVICE – MURRAY ROAD RECREATION GROUND**

Further to our recent meeting in respect of the above I now attach my initial condition survey and inspection report for your information and comment.

If you have any queries with the above, or require further detailed advice, please contact me.

When I am out of the office you can contact me on my **mobile phone - 07770 366259**.

Yours sincerely  
for *SPORTS FACILITY PLANNING & DESIGN*

**LEE WEST**

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**MURRAY ROAD RECREATION GROUND  
CONDITION SURVEY AND SITE INVESTIGATION REPORT**

**1.00 INTRODUCTION**

1.01 Sports Facility Planning & Design Limited have been commissioned to undertake a condition survey on behalf of Ipswich Borough Council for proposed tennis court construction works to be undertaken at Murray Road Recreation Ground.

Matters concerning health and safety are also addressed within the report where applicable.

1.02 The scope of commission is detailed as follows :-

- i) Visit to site and survey the existing courts ;
- ii) Prepare site inspection and condition survey report.

1.03 Three existing porous macadam tennis court Nrs 1 – 7 were also subject to a detailed site inspection, trial section investigation and level survey.

**2.00 COURT NRS 1 – 7 : GREY GREEN PLAYING SURFACE**

**COURT NRS 1 – 3 : THREE COURT BLOCK DIMENSIONS : 34.60M LONG (MAXIMUM) & 34.55M LONG (MINIMUM) x 46.30M WIDE (MAXIMUM) & 46.25M (MINIMUM)**

**COURT NRS 4 – 7 : FOUR COURT BLOCK DIMENSIONS : 34.55M LONG (MAXIMUM) & 34.40M LONG (MINIMUM) x 59.70M WIDE (MAXIMUM) & 59.60M WIDE (MINIMUM)**

**2.01 INSPECTION COMMENTS**

a) The existing court Nrs 1 – 7 were considered to have constructed in excess of 20 years ago.

The existing playing surface to court Nrs 1 – 7 is subject to significant displacement and settlement within the areas of the court markings.

A series of regularly spaced large oval shaped depressions are present with some of depressions subject to collapse of the upper playing surface layer revealing a void below in the order of 300 – 500mm depth.

Inspection of the voided areas indicate settlement of material below (i.e. ash and clinker and sand) the macadam layers.

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As such it is high likely or probable that voids have formed to all displaced areas, below the macadam layers, with the subsequent risk of further collapse to the upper playing surface.

S.F.P.D. consider that the Council should erect further signage to warn the public the potential of collapse of the existing playing surfaces.

The existing playing surface to court Nr 1 - 7 is subject to a high level of fretting, pitting and aggregate loss.

A number of the areas of settlement have been subject to previous patch repair with porous macadam.

- b) Existing chainlink mesh subject to distortion and ballooning at lower level with perimeter fence posts generally upright and subject to rusting.
- c) The L.T.A. overall minimum dimensions for a three doubles court block are 34.75m long x 46.33m wide and recommended (or full-size) dimensions 36.58m long x 48.77m wide.

The L.T.A. overall minimum dimensions for a four doubles court block are 34.75m long x 60.96m wide and recommended (or full-size) dimensions 36.58m long x 64.01m wide.

The L.T.A. minimum outer side run dimension is 3.05m, the minimum intermediate side run dimension 3.66m and the minimum run back dimension is 5.49m.

The existing court blocks are dimensioned marginally below the L.T.A. minimum court block length and width dimensions.

The Council representative confirmed that the courts had been originally configured as one block of seven courts but then a division fence had been erected to continued use of three courts which were less affected by settlement.

- d) A rotating laser was erected to the court block and a number of readings taken which indicated that the courts had been constructed with a single plane long fall slightly below the minimum fall of 1:200 for porous macadam tennis courts.

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**2.02 TRIAL SECTION INVESTIGATION**

- a) A number of trial sections were agreed to be taken through the court block's to establish the nature of the original sub-base construction when not already subsided.

Court Nr 1 : The trial section taken within the central outer side run area revealed the following court construction :-

- i) 15mm depth of grey green macadam ;
- ii) 20mm depth of bitumen bound gravel ;
- iii) 100mm depth of ash and clinker (which had been subject to substantial degradation i.e. dense mass of fine particles) ;
- iv) Sand sub-grade

Court Nr 6 : The trial section taken within the central outer side run area revealed the following court construction :-

- i) 15mm depth of grey green macadam ;
- ii) 35mm depth of bitumen bound gravel ;
- iii) 150mm depth of ash and clinker (which had been subject to substantial degradation i.e. dense mass of fine particles) ;
- iv) Sand sub-grade ;

The trial section taken revealed that the court Nrs 1 - 7 have not been constructed with a suitable depth of non-frost susceptible aggregate sub-base (i.e. carboniferous limestone or granite chipping's).

The trial sections indicates that the court Nrs 1 - 7 have been originally constructed as grey green courts.

Ash and clinker has been utilised within the sub-base material. The ash and clinker was noted as being particularly subject to substantial degradation and generally comprised a particulate mass. As previously advised on site ash and clinker is a frost susceptible material and a very poor quality foundation material for porous macadam tennis courts.



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The presence of this type of court sub-base material will eventually give rise to the effects of frost action to the porous macadam surface i.e. general displacement, numerous humps and depressions are usually created which eventually leads to cracks being formed.

Ash and clinker also degrades to a particulate mass over the passage of time which leads to additional settlement and drainage problems.

Where ash and clinker is to be retained on site, usually arising from previous shale or grey-green court construction, a suitable depth of non-frost susceptible aggregate sub-base should be overlaid together with the installation of a separating geotextile membrane. I consider a 'suitable' compacted depth to be in the order of at least 225mm.

A copy of a report dated 5 December 2008 was provided to S.F.P.D. during the site inspection which provided historic detail of previous deeper trial pit investigations with a mechanical excavator. This report stated that precast concrete air raid shelters were present below the court surfaces. The uppermost part of the pre-cast concrete arches forming the shelters had been broken through and then the shelters filled with sand. The sand infill was considered to have been not fully compacted initially leading the current problem of settlement.

Inspection of the larger holes and voids present did not indicate the precast concrete sections to a depth of 600mm.

- c) For your general information modern tennis courts (porous macadam, porous acrylic and sand-filled synthetic turf) constructed over a sand sub-grade should have a geotextile membrane, at least 225mm minimum compacted depth of non-frost susceptible aggregate sub-base and a 65mm total combined compacted depth of macadam binder and surface course's.

### **2.03 TECHNICAL RECOMMENDATION**

- a) The trial section taken through existing court Nrs 1 - 7 indicates that these courts have not be constructed in accordance with modern standards in respect of the existing type and depth of aggregate sub-base material.

The nature of existing under-ground precast concrete structures cannot be fully discerned from above nor from the trial section findings previously undertaken by the Council consultants.

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Continuing settlement is considered to be highly likely with incidence of further collapse of the existing playing surfaces with additional holes forming.

Construction of new porous macadam courts over the existing court block area is not considered to be an option for the Council to adopt as this would be high risk and not economic in terms of cost.

- b) S.F.P.D. recommend that the existing court area is rendered safe by breaking up the existing macadam surfacing and combined with the ash and clinker material to fill any voids present below the playing surface.

The entire court block area would then be topsoiled to a depth of 200mm, seeded and returned to a grassed recreation area.

If any further settlement manifested requiring further remedial filling and reinstatement works would be easily undertaken with a low level of cost for Council.

- c) New porous macadam tennis courts are best construct in virgin ground at the other end of the recreation ground.
- d) My technical recommendation would be to produce tender documentation for the new porous macadam full size court sub-base construction to comprise a geotextile membrane, 225mm depth of non-frost susceptible aggregate sub-base material and a 65mm total combined compacted depth of porous macadam binder and surface course's with colour coating and line markings applied above.

Given the proposed position of the courts within a recreation ground S.F.P.D. recommend that the perimeter fencing comprises rectangular hollow section fence posts with 50mm x 50mm roll weld mesh as a minimum specification rather than chainlink and angle section posts which would not be robust enough to withstand foot balls.

The Council should make the following budget allowances for the court construction works as set out above :-

- i) Construction of three full size porous macadam tennis courts including court fittings in the order of £ 75,000 ;
- ii) Installation of new roll weld mesh perimeter fencing 3.00m high, 100mm x 50mm rectangular hollow section fence posts and three access gates in the order of £ 18,500 ;



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- iii) Disposal of topsoil off site in the order of £7,500 ;

The above budget costs excludes V.A.T., design risk (i.e. contingency), inflation and professional fees.

**3.00 MAINTENANCE REQUIREMENTS FOR POROUS MACADAM TENNIS COURTS**

- a) Porous macadam court surfaces generally require the following maintenance regime (as a minimum):-
- i) the annual (or six monthly if the growth rates dictates) application of moss and total weed killer's ;
  - ii) power washing every year ;
  - iii) re-colour coating every 4 – 6 years ;
  - iv) resurfacing every 8 – 12 years.

**4.00 SUMMARY AND WAY FORWARD**

- a) In summary the existing court construction is defective and provides no residual suitable materials for incorporation within any new court construction.

The large areas of settlement with the un-certain nature of the structures below indicate to S.F.P.D. that this area be returned to soft landscaping and new courts constructed elsewhere on the recreation ground site.