Deed

Catherine Park Planning Agreement

Under s93F of the *Environmental Planning and Assessment Act 1979*

Camden Council

Hixson Pty Limited

Dandaloo Pty Limited

Edgewater Homes Pty Limited

Date:

Catherine Park Planning Agreement

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Summary Sheet

Council:

Name: The Council of Camden
Address: 37 John Street, CAMDEN, NSW 2570
Telephone: (02) 4654 7777
Facsimile: (02) 4654 7829
Email: mail@camden.nsw.gov.au
Representative: Mr Ron Moore – General Manager

Developer:

Name: Hixson Pty Limited
Address: PO Box 42, NARELLAN, NSW 2567
Telephone: (02) 4631 3200
Facsimile: (02) 4631 3299
Email: trevor@harrington.com.au
Representative: Trevor Jensen

and

Name: Dandaloo Pty Limited
Address: PO Box 42, NARELLAN NSW 2567
Telephone: (02) 4631 3200
Facsimile: (02) 4631 3299
Email: trevor@harrington.com.au
Representative: Trevor Jensen

and

Name: Edgewater Homes Pty Limited
Address: 395 Ferntree Gully Road, MOUNT WAVERLEY VIC 3149
Telephone: (03) 9574 5333
Facsimile: (03) 9574 5411
Email: cbetts@henley.com.au
Representative: Christopher Betts

Land:

See definition of *Land* in clause 1.1.

Development:

See definition of *Development* in clause 1.1.

Development Contributions:

See Clause 9 and Schedule 1.

Application of s94, s94A and s94EF of the Act:

See clause 8.

Security:

See Part 4.

Registration:

See clause 31.

Restriction on dealings:

See clause 32.

Dispute Resolution:

See Part 3.

Catherine Park Planning Agreement

Under s93F of the *Environmental Planning and Assessment Act 1979*

Parties

The Council of Camden ABN 31 117 341 764 of 37 John Street, Camden, NSW 2570 (**Council**)

and

Hixson Pty Limited ABN 85 156 636 770 of PO Box 42, Narellan, NSW 2567 (**Hixson**)

and

Dandaloo Pty Limited ABN 77 002 338 543 of PO Box 42, Narellan, NSW 2567 (**Dandaloo**)

and

Edgewater Homes Pty Limited ABN 36 141 446 102 of 395 Ferntree Gully Road, Mount Waverley, VIC 3149 (**Edgewater**)

Background

A The Developer owns the Land.

B The Developer has lodged a Development Application to carry out the Development.

C The Developer is prepared to make Development Contributions to the Council in accordance with the Deed in connection with the carrying out of the Development.

Operative provisions

Part 1 - Preliminary

1 Interpretation

1.1 In this Deed the following definitions apply:

Act means the *Environmental Planning and Assessment Act 1979* (NSW).

Approval includes approval, consent, licence, permission or the like.

Authority means the Commonwealth or New South Wales government, a Minister of the Crown, a government department, a public authority established by or under any Act, a council or county council constituted under the *Local Government Act 1993*, or a person or body exercising functions under any Act including a commission, panel, court, tribunal and the like.

Bank Guarantee means an irrevocable and unconditional undertaking without any expiry or end date in favour of the Council to pay an amount or amounts of money to the Council on demand issued by:

(a) one of the following trading banks:

(i) Australia and New Zealand Banking Group Limited,

(ii) Commonwealth Bank of Australia,

(iii) Macquarie Bank Limited,

(iv) National Australia Bank Limited,

(iv) St George Bank Limited,

(v) Westpac Banking Corporation, or

(b) any other financial institution approved by the Council in its absolute discretion.

Certifying Authority means a certifying authority within the meaning of s109D of the Act.

Claim includes a claim, demand, remedy, suit, injury, damage, loss, Cost, liability, action, proceeding or right of action.

Construction Certificate has the same meaning as in the Act.

Contributions Plan means the Catherine Fields (Part) Precinct Section 94 Contributions Plan being a plan referred to in s94EA of the Act and approved by the Council on 20 December 2013.

Contribution Value means the $ amount agreed between the Parties as the value of a Development Contribution made under this Deed indexed from June 2013 in accordance with the *Consumer Price Index (All Groups – Sydney)* published by the Australia Bureau of Statistics.

Cost means a cost, charge, expense, outgoing, payment, fee and other expenditure of any nature.

Costs Budget means $19,000.00 inclusive of GST.

Deed means this Deed and includes any schedules, annexures and appendices to this Deed.

Defect means anything that adversely affects, or is likely to adversely affect, the appearance, structural integrity, functionality or use or enjoyment of a Work or any part of a Work.

Defects Liability Period means the period of 1 year commencing on the day immediately after a Work is completed for the purposes of this Deed.

Developer means Hixson, Dandaloo and Edgewater jointly and severally unless the context or subject-matter otherwise indicates or requires.

Development means development, within the meaning of the Act, of the Land for urban purposes generally in accordance with the Staging Plan involving the Subdivision of the Land into not more than 1,850 Final Lots, establishment of transport, utilities and stormwater management networks, provision of open space, recreation area embellishment, riparian corridor and transmission easement restoration and embellishment, and associated site works.

Development Application has the same meaning as in the Act.

Development Consent has the same meaning as in the Act.

Development Contribution means a monetary contribution, the dedication of land free of cost, the carrying out of work, or the provision of any other material public benefit, or any combination of them, to be used for, or applied towards a public purpose, but does not include any Security or other benefit provided by a Party to the Council to secure the enforcement of that Party's obligations under this Deed for the purposes of s93F(3)(g) of the Act.

Development Contribution Item means an item of Development Contribution specified in Column 1 of Schedule 1.

Design Standards means the documents titled '*Design Standards for Urban Infrastructure 24 Sportsground Design*' Edition 1, Revision 2 contained in Schedule 4.

Dispute means a dispute or difference between the Parties under or in relation to this Deed.

Equipment means any equipment, apparatus, vehicle or other equipment or thing to be used by or on behalf of the Developer in connection with the performance of its obligations under this Deed.

Final Lot means a lot created in the Development for separate residential occupation and disposition or a lot of a kind or created for a purpose that is otherwise agreed by the Parties, not being a lot created by a subdivision of the Land:

(a) that is to be dedicated or otherwise transferred to the Council, or

(b) on which is situated a dwelling-house that was in existence on the date of this Deed.

GST has the same meaning as in the GST Law.

GST Law has the same meaning as in *A New Tax System (Goods and Services Tax) Act 1999* (Cth) and any other Act or regulation relating to the imposition or administration of the GST.

Just Terms Act means the *Land Acquisition (Just Terms Compensation) Act 1991*.

Land means Lot 27 in DP 213330, Lot 293 in DP 708154, Lots 2 and 5 in DP 1173813, and Lots 10 to 17 inclusive and Lots 24 to 26 inclusive in DP 31996, and any part of that land comprised in a lot created by a Subdivision of that land, being land shown bounded by a red dashed line on the Staging Plan.

LG Act means the *Local Government Act 1993*.

Maintain, in relation to a Work, means keep in a good state of repair and working order, and includes repair of any damage to the Work.

Neighbourhood Centre means development for the purposes of a neighbourhood centre on the land coloured dark blue and identified as '*Neighbourhood Centre*' within the legend of the Staging Plan.

Occupation Certificate has the same meaning as in the Act.

Open Space and Recreation Strategy means the strategy referred to in clause 14.

Party means a party to this Deed.

Permitted Encumbrances means the registered dealings on the following parcels of land:

(a) Lot 27 DP 213330,

(b) Lot 293 DP 708154,

(c) Lots 2 DP 1173813,

(d) Lot 10 DP 31996, and

(e) Lot 11 DP 31996.

Plan of Management means a plan of management within the meaning of s36 of the LG Act.

Rectification Notice means a notice in writing:

(a) identifying the nature and extent of a Defect,

(b) specifying the works or actions that are required to Rectify the Defect,

(c) specifying the date by which or the period within which the Defect is to be rectified.

Rectify means rectify, remedy or correct.

Regulation means the *Environmental Planning and Assessment Regulation 2000*.

Relevant Stage, in relation to a Development Contribution Item, means the Stage referred to in Column 2 of the table in Schedule 1 corresponding to the item.

Security means a Bank Guarantee, or a bond or other form of security to the satisfaction of the Council indexed annually in accordance with the annual

movements in the Consumer Price Index (All Groups Sydney) published by the Australian Bureau of Statistics on and from the date of this Deed.

Stage means a stage of the Development approved by a Development Consent or otherwise approved in writing by the Council for the purposes of this Deed.

Staging Plan means the document titled '*VPA Plan with Staging Boundary – Catherine Park Estate*' contained in Schedule 3.

Subdivision in relation to land has the meaning given to it in s4B of the Act.

Subdivision Certificate has the same meaning as in the Act.

Vegetation Management Plan means a plan that contains provisions relating to the establishment and maintenance of land.

Work means the physical result of any building, engineering or construction work in, on, over or under land.

1.2 In the interpretation of this Deed, the following provisions apply unless the context otherwise requires:

1.2.1 Headings are inserted for convenience only and do not affect the interpretation of this Deed.

1.2.2 A reference in this Deed to a business day means a day other than a Saturday or Sunday on which banks are open for business generally in Sydney.

1.2.3 If the day on which any act, matter or thing is to be done under this Deed is not a business day, the act, matter or thing must be done on the next business day.

1.2.4 A reference in this Deed to dollars or $ means Australian dollars and all amounts payable under this Deed are payable in Australian dollars.

1.2.5 A reference in this Deed to a $ value relating to a Development Contribution is a reference to the value exclusive of GST.

1.2.6 A reference in this Deed to any law, legislation or legislative provision includes any statutory modification, amendment or re-enactment, and any subordinate legislation or regulations issued under that legislation or legislative provision.

1.2.7 A reference in this Deed to any agreement, deed or document is to that agreement, deed or document as amended, novated, supplemented or replaced.

1.2.8 A reference to a clause, part, schedule or attachment is a reference to a clause, part, schedule or attachment of or to this Deed.

1.2.9 An expression importing a natural person includes any company, trust, partnership, joint venture, association, body corporate or governmental agency.

1.2.10 Where a word or phrase is given a defined meaning, another part of speech or other grammatical form in respect of that word or phrase has a corresponding meaning.

1.2.11 A word which denotes the singular denotes the plural, a word which denotes the plural denotes the singular, and a reference to any gender denotes the other genders.

1.2.12 References to the word 'include' or 'including' are to be construed without limitation.

1.2.13 A reference to this Deed includes the agreement recorded in this Deed.

1.2.14 A reference to a Party to this Deed includes a reference to the servants, agents and contractors of the Party, the Party's successors and assigns.

1.2.15 A reference to 'dedicate' or 'dedication' in relation to land is a reference to dedicate or dedication free of cost.

1.2.16 Any schedules, appendices and attachments form part of this Deed.

1.2.17 Notes appearing in this Deed are operative provisions of this Deed.

2 Status of this Deed

2.1 This Deed is a planning agreement within the meaning of s93F(1) of the Act.

3 Commencement

3.1 This Deed takes effect on the date when all Parties have executed this Deed.

3.2 The Party who executes this Deed last is to insert on the front page the date they did so and provide a copy of the fully executed and dated Deed to any other person who is a Party.

4 Application of this Deed

4.1 This Deed applies to the Land and to the Development.

5 Warranties

5.1 The Parties warrant to each other that they:

5.1.1 have full capacity to enter into this Deed, and

5.1.2 are able to fully comply with their obligations under this Deed.

6 Further agreements

6.1 The Parties may, at any time and from time to time, enter into agreements relating to the subject-matter of this Deed that are not inconsistent with this Deed for the purpose of implementing this Deed.

7 Surrender of right of appeal, etc.

7.1 The Developer is not to commence or maintain, or to cause or procure the commencement or maintenance, of any proceedings in any court or tribunal or similar body appealing against, or questioning the validity of this Deed, or an Approval relating to the Development in so far as the subject-matter of the proceedings relates to this Deed.

8 Application of s94, s94A and s94EF of the Act to the Development

8.1 This Deed excludes the application of s94 and s94A of the Act to the Development.

8.2 This Deed does not exclude the application of s94EF of the Act to the Development.

Part 2 – Development Contributions

9 Provision of Development Contributions

9.1 The Developer is to make Development Contributions to the Council in accordance with Schedule 1 and Schedule 2, any other provision of this Deed relating to the making of Development Contributions and otherwise to the satisfaction of the Council.

9.2 Any Contribution Value specified in this Deed in relation to a Development Contribution does not serve to define the extent of the Developer's obligation to make the Development Contribution.

9.3 The Council is to apply each Development Contribution made by the Developer under this Deed towards the public purpose for which it is made and otherwise in accordance with this Deed.

9.4 Despite clause 9.3, the Council may apply a Development Contribution made under this Deed towards a public purpose other than the public purpose specified in this Deed if the Council reasonably considers that the public interest would be better served by applying the Development Contribution towards that other purpose rather than the purpose so specified.

10 Payment of monetary Development Contributions

10.1 A monetary Development Contribution is made for the purposes of this Deed when the Council receives the full amount of the contribution payable under this Deed in cash or by unendorsed bank cheque or by the deposit by means of electronic funds transfer of cleared funds into a bank account nominated by the Council.

11 Dedication of land

11.1 A Development Contribution comprising the dedication of land is made for the purposes of this Deed when:

11.1.1 a deposited plan is registered in the register of plans held with the Registrar-General that dedicates land as a public road (including a temporary public road) under the *Roads Act 1993* or creates a public reserve or drainage reserve under the *Local Government Act 1993*, or

11.1.2 the Council is given:

(a) an instrument in registrable form under the *Real Property Act 1900* duly executed by the Developer as transferor that is effective to transfer the title to the land to the Council when executed by the Council as transferee and registered,

(b) the written consent to the registration of the transfer of any person whose consent is required to that registration, and

(c) a written undertaking from any person holding the certificate of title to the production of the certificate of title for the purposes of registration of the transfer.

11.2 The Developer is to do all things reasonably necessary to enable registration of the instrument of transfer to occur.

11.3 The Developer is to ensure that land dedicated to the Council under this Deed is free of all encumbrances and affectations (whether registered or unregistered and including without limitation any charge or liability for rates, taxes and charges) with the exception of the Permitted Encumbrances and as otherwise agreed in writing by the Council.

11.4 If, having used all reasonable endeavours, the Developer cannot ensure that land to be dedicated to the Council under this Deed is free from all encumbrances and affectations (except the Permitted Encumbrances), the Developer may request that Council agree to accept the land subject to those encumbrances and affectations, but the Council may withhold its agreement in its absolute discretion.

11.5 Despite any other provision of this Deed, if the Developer is required to dedicate land to the Council on which the Developer is also required to carry out a Work under this Deed, the Developer is to comply with clause 11.1.2 not later than 28 days after the Work is completed for the purposes of this Deed.

12 Carrying out of Work

12.1 Without limiting any other provision of this Deed, any Work that is required to be carried out by the Developer under this Deed is to be carried out in accordance with any design or specification specified or approved by the Council, any relevant Approval and any other applicable law.

12.2 The Developer, at its own cost, is to comply with any reasonable direction given to it by the Council to prepare or modify a design or specification relating to a Work that the Developer is required to carry out under this Deed.

13 Approval of design of Work

13.1 This clause 13 applies to a Development Contribution Item comprising a Work for which 'Yes' is specified in Column 3 of the table in Schedule 2 corresponding to the item.

13.2 If this clause requires Council to approve or certify something within a certain period of time, and the Council has not provided its approval or certification, nor advised the Developer that it will not provide its approval or certification within that period of time, then the Council is deemed to have provided its approval or waived the requirement for the certification.

13.3 Prior to lodging a Development Application seeking Development Consent for a Work, the Developer is to obtain the Council's approval under this clause for the design and specifications for the Work unless otherwise agreed in writing by the Council in relation to the Work.

13.4 Prior to commencing design of a Work, the Developer is to request that the Council provide the Developer with its requirements for the location (generally in accordance with the Staging Plan), design, materials and specifications for the provision of the Work.

13.5 When requesting Council's requirements under clause 4, the Developer may provide a proposal, including preliminary concept designs, to assist Council in preparing its requirements.

13.6 The Council is to provide the Developer with its requirements for the Work in writing within 1 month of receiving the request under clause 13.4.

13.7 Once the Developer receives the Council's requirements for a Work under clause 13.6, the Developer is to provide the initial design for the Work to Council for the Council's approval.

13.8 The initial design for a Work is to include, or be accompanied by, such information as is required for the making of a Development Application for the Work including:

13.8.1 if 'Yes' is specified in Column 7 of the table in Schedule 2 corresponding to the Work - a draft Vegetation Management Plan for the land on which the Work is to be located; and

13.8.2 if 'Yes' is specified in Column 5 of the table in Schedule 2 corresponding to the Work - a detailed maintenance regime for the Work, which provides for the Maintenance Period specified in Column 6 of Schedule 2 corresponding to the Work, and includes detailed costings, prepared by a suitably qualified person, for the carrying out of the maintenance regime.

13.9 The Council is to advise the Developer in writing whether it approves of the initial design of the Work within 2 months of receiving the initial design from the Developer.

13.10 The Developer is to make any change to the initial design for the Work required by the Council.

13.11 Once the initial design for a Work is approved, the Developer must submit a full copy of the Development Application for the Work to Council in draft and seek written certification from Council that the Development Application is consistent with the approved initial design of the Work, and the Council must

either provide the written certification, or advise the Developer that it will not provide the written certification, within 14 days.

13.12 The Developer is not to lodge any Development Application for a Work unless:

13.12.1 the Council has first approved the initial design for the Work or is taken to have approved the initial design for the Work in accordance with this clause 13; and

13.12.2 Council has provided its written certification under clause 13.11 for that Development Application or is taken to have waived the requirement for that certification.

13.13 The Developer is to bear all Costs associated with obtaining the Council's approval or certification under this clause.

13.14 Following Development Consent being issued for a Work, the Developer is to work with Council in the preparation of the detailed design for it and submit the detailed design to the Council for its approval.

13.15 The Developer is not to lodge any application for a Construction Certificate for a Work, with any Certifying Authority, unless the Council has first approved the detailed design for the Work, and provided its written certification that the application for a Construction Certificate is consistent with the approved detailed design of the Work.

13.16 The Council is to provide the written certification referred to in clause 13.15, or notify the Developer that it will not provide the written certification, within 14 days of being provided with a copy of the application for a Construction Certificate by the Developer.

13.17 Council's written certification specified in clause 13.14 shall specify any particular milestones of construction of a Work and if so, the Developer is to provide the Council with a minimum of 24 hours' notice prior to commencing a particular milestone and allow the Council access to the relevant land to inspect the Work.

13.18 An application for a Construction Certificate for a Work is to be accompanied by the written certification referred to in clause 6 when lodged with the Certifying Authority, unless the Council is deemed to have waived the requirement for certification under this clause 13.

13.19 For the avoidance of doubt, nothing in this clause operates to fetter the Council's discretion, as consent authority, in determining any Development Application for the Work.

14 Open Space and Recreation Strategy

14.1 This clause applies to a Work comprising Development Contribution Items 1, 3, 4, 5 and 6.

14.2 Prior to preparing the Open Space and Recreation Strategy, the Developer is to consult with the Council to enable Council to notify the Developer of its requirements for the Open Space and Recreation Strategy.

14.3 The Developer is to prepare the Open Space and Recreation Strategy and submit it to Council for approval.

14.4 The Open Space and Recreation Strategy is to include:

14.4.1 provisions to meet Council's requirements notified under clause 14.2;

14.4.2 design principles and concepts for the open space and recreation land to be dedicated under this Deed;

14.4.3 diagrams identifying hierarchy, role and purpose of the open space and recreation land to be dedicated under this Deed; and

14.4.4 details of any relevant standards or specifications which are intended to apply to the design of the open space and recreation land to be provided under this Deed.

14.5 The Council is to notify the Developer in writing whether it approves of the Open Space and Recreation Strategy or whether it requires changes in order to approve it within 2 months of receiving the draft strategy from the Developer.

14.6 The Developer is to make any change to the draft Open Space and Recreation Strategy notified by the Council.

14.7 The Developer is not to lodge a Development Application for a Work unless the Council has first approved the Open Space and Recreation Strategy and provided its written certification that the Development Application is consistent with the Strategy so approved.

15 Design and Construction of Community Facility

15.1 This clause applies to Development Contribution Item 42.

15.2 In this clause:

Authority Approval means an Approval from an Authority that is required for the construction of the Community Facility and Amenities Building,

Authority Approval Application means an application for an Authority Approval.

Community Facility and Amenities Building means the community facility and amenities building to which Development Contribution Item 42 is to be applied.

Construction Commencement Notice means notice by the Developer to the Council to commence the construction of the Community Facility and Amenities Building.

Contribution Amount means the monetary Development Contribution Amount specified in Development Contribution Item 42.

Design Commencement Notice means notice given by the Developer to the Council requiring the Council to commence the design of the Community Facility and Amenities Building.

First Contribution Instalment means payment by the Developer to the Council of 20% of the Contribution Amount.

Second Contribution Instalment means payment by the Developer to the Council of 40% of the Contribution Amount.

Third Contribution Instalment means payment by the Developer to the Council of 40% of the Contribution Amount.

LS2 means the land to which Development Contribution Item 6 relates, being the land on which the Community Facility and Amenities Building is to be constructed.

Sportsground Approval means a Development Consent authorising the embellishment of LS2.

Step-in Right means the right of the Developer to step-in and complete the design and/or construction of the Community Facility and Amenities Building instead of the Council..

15.3 The Developer may give the Council a Design Commencement Notice at any time after the Sportsground Approval has been granted.

15.4 The Developer may give the Council a Construction Commencement Notice at any time after all necessary Authority Approvals and a Construction Certificate have been obtained for the construction of the Community Facility and Amenities Building by the Council.

15.5 The Developer is to pay the Contribution Amount to the Council in instalments in accordance with this clause and otherwise in accordance with this Deed.

15.6 The Developer is to pay:

15.6.1 the First Contribution Instalment by not later than the date of the Design Commencement Notice,

15.6.2 the Second Contribution Instalment by not later than the date of the Construction Commencement Notice, and

15.6.3 the Third Contribution Instalment by not later than the date of completion of the ground floor concrete slab of the Community Facility and Amenities Building.

15.7 At the time the Developer gives the Council the Design Commencement Notice, the Developer is to provide the Sportsground Approval and all available title and utility information to Council.

15.8 The Council is to provide the Developer with a concept design and a preliminary costs estimate for the Community Facility and Amenities Building within 6 months of receiving the Design Commencement Notice, and the concept design must be sufficiently detailed to enable any necessary Authority Approval Applications to be made for the Community Facility and Amenities Building.

15.9 The Developer is to provide the Council with any comments on the concept design for the Community Facility and Amenities Building within 1 month of receiving them from Council.

15.10 The Council will consider the Developer's comments on the concept design for the Community Facility and Amenities Building and incorporate any changes requested by the Developer into the concept design of the Community Facility and Amenities Building as far as is reasonable and at Council's absolute discretion, and provided that in Council's opinion the changes will not cause the estimated costs of the Community Facility and Amenities Building to exceed the Contribution Amount, and before making any Authority Approval Applications.

15.11 The Council is to commence the detailed design of the Community Facility and Amenities Building once it has received any Authority Approval for the Community Facility and Amenities Building.

15.12 The Council is to provide the Developer with a detailed design of the Community Facility and Amenities Building and a third-party cost estimate for the work within 6 months of commencing the detailed design.

15.13 The Developer is to provide the Council with any comments on the detailed design and third-party costs estimate for the Community Facility and Amenities Building within 1 month of receiving them from the Council.

15.14 The Council will consider the Developer's comments on the detailed design and third party costs estimate and incorporate any changes requested by the Developer into the final design of the Community Facility and Amenities Building as far as is reasonable and at Council's absolute discretion, and provided that in Council's opinion the changes will not cause the estimated costs of the Community Facility and Amenities Building to exceed the Contribution Amount, and provided that the changes would not necessitate any modification to any Authority Approval.

15.15 The Council is to lodge an application for a Construction Certificate for the Community Facility and Amenities Building within 1 month of receiving the Developer's comments under clause 15.13, or if no comments are received, within 2 months of providing the Developer with the detailed design and third-party costs estimate under clause 15.12.

15.16 The Council is to commence the tendering process for the construction of the Community Facility and Amenities Building upon receipt of the Construction Commencement Notice. At the conclusion of the tendering process, Council is to notify the Developer in writing of the identity of the successful tenderer. Construction works on the Community Facility and Amenities Building are to commence on site 6 months after the Council receives the Construction Commencement Notice.

15.17 The Developer may exercise its Step-in Right if the Council fails to meet any of its obligations in clauses 15.8, 15.12 and 15.16 within the time period specified in those clauses by issuing Council with a Notice under Clause 40 of this Deed

15.18 If the Developer exercises its Step-in Right it must deliver the Community Facility and Amenities Building from the point at which the right is exercised until completion of the work.

15.19 The Council is to obtain all Authority Approvals necessary to enable the construction of the Community Facility and Amenities Building unless the Developer has exercised its Step-In-Right prior to the Council having obtained the Authority Approvals, in which case the Developer is to obtain all Authority Approvals necessary to enable the construction of the Community Facility and Amenities Building

15.20 The Council is not required to make an Authority Approval Application unless and until the part of LS2 on which the Community Facility and Amenities Building is proposed to be constructed (**Relevant Land**) is cleared, compacted and levelled to the satisfaction of the Council, and Council will not be in breach of any requirement in this clause 15 that it do anything by a certain time if it cannot do so as a result of the Relevant Land not being cleared, compacted and levelled to its satisfaction.

15.21 The Developer is to procure the Approval of any person whose Approval is necessary to the making of an Authority Approval Application by the Council.

15.22 If LS2 is not owned by the Council when the Developer gives the Council the Construction Commencement Notice, the Developer is to:

15.22.1 procure the Approval in writing on terms and conditions satisfactory to the Council of any person whose Approval is necessary to enable the Council to enter and occupy LS2 for the purposes of constructing the Community Facility and Amenities Building, and

15.22.2 do all things necessary to ensure that the Council is not obstructed, impeded or interfered with while constructing the Community Facility and Amenities Building on LS2 while ever LS2 in not owned by the Council.

15.23 The Council is to do all things necessary to ensure that the Developer is not obstructed, impeded or interfered with while designing and/or constructing the Community Facility and Amenities Building on LS2 pursuant to Step-in Rights exercised by the Developer.

15.24 Nothing in this clause obliges the Council to expend more than the Contribution Amount on the design and construction of the Community Facility and Amenities Building.

15.25 If the Council is the owner of LS2 on the date when the Community Facility and Amenities Building is completed, the Council assumes responsibility for the Community Facility and Amenities Building upon that date, but if it is not the owner at that time, the Council assumes that responsibility when LS2 is dedicated to Council under this Deed.

16 Variation to Work

16.1 The design or specification of any Work that is required to be carried out by the Developer under this Deed may be varied by agreement in writing between the Parties, acting reasonably, without the necessity for an amendment to this Deed

16.2 Without limiting clause 16.1, the Developer may make a written request to the Council to approve a variation to the design or specification of a Work in order to enable it to comply with the requirements of any Authority imposed in connection with any Approval relating to the carrying out of the Work.

16.3 The Council is not to unreasonably delay or withhold its approval to a request made by the Developer under clause 16.2.

16.4 The Council, acting reasonably, may from time to time give a written direction to the Developer requiring it to vary the design or specification of a Work before the Work is carried out in a specified manner and submit the variation to the Council for approval.

16.5 The Developer is to comply promptly with a direction referred to in clause 16.4.

16.6 If the Council gives a direction under clause 16.4 for a Work before a Construction Certificate has been issued for the Work, the Developer is to comply with the direction at its own cost.

16.7 If the Council gives a direction under clause 16.4 for a Work after a Construction Certificate has been issued for the Work, the Council is to reimburse the Developer an amount equal to the increase (if any) in the Costs of completing the Work as a result of the variation requested by the Council.

16.8 The Council is to reimburse the Developer the amount referred to in clause 16.7 after the relevant Work is complete for the purposes of this Deed, and within 28 days of receipt of:

16.8.1 a tax invoice for the amount claimed by the Developer; and

16.8.2 documentation which demonstrates to the Council's satisfaction, the increase in the Costs of completing the Work as a result of the variation requested by the Council.

17 Access to land

17.1 The Developer is to permit the Council, upon receiving reasonable prior notice from the Council:

17.1.1 to enter any land on which Work is being carried out by the Developer under this Deed at any time, in order to inspect, examine or test the Work, or to remedy any breach by the Developer of its obligations under this Deed; and

17.1.2 to enter, occupy and use the land identified as 'LS2' on the Staging Plan in order to prepare for and carry out construction of the community facility and amenities building identified as 'CF1' on the Staging Plan.

17.2 The Council is to permit the Developer, upon receiving reasonable prior notice from the Developer, to enter, occupy and use any Council owned or controlled land in order to enable the Developer to properly perform its obligations under this Deed.

17.3 Nothing in this Deed creates or gives the Developer any estate or interest in any part of the land referred to in clause 17.2.

18 Protection of people, property & utilities

18.1 The Developer is to ensure to the fullest extent reasonably practicable in relation to the performance of its obligations under this Deed that:

18.1.1 all necessary measures are taken to protect people and property,

18.1.2 unnecessary interference with the passage of people and vehicles is avoided, and

18.1.3 nuisances and unreasonable noise and disturbances are prevented.

18.2 Without limiting clause 18.1, the Developer is not to obstruct, interfere with, impair or damage any public road, public footpath, public cycleway or other public thoroughfare, or any pipe, conduit, drain, watercourse or other public utility or service on any land except as authorised in writing by the Council or any relevant Authority.

19 Repair of damage

19.1 The Developer is to Maintain any Work required to be carried out by the Developer under this Deed until the Work is completed for the purposes of this Deed or such later time as agreed between the Parties.

19.2 The Developer is to carry out its obligation under clause 19.1 at its own cost and to the satisfaction of the Council.

20 Completion of Work

20.1 When the Developer believes that a Development Contribution Item comprising a Work is complete, it must give the Council a written notice (**Completion Notice**) which:

20.1.1 specifies the Development Contribution Item to which it applies; and

20.1.2 states that it has been issued under this clause 20.1.

20.2 The Council must, and the Developer must permit the Council to, inspect the Development Contribution Item the subject of the Completion Notice in the presence of a representative of the Developer within twenty one (21) days of the date that the notice is given to the Council.

20.3 Within seven (7) days of inspecting a Development Contribution Item that is the subject of a Completion Notice, the Council must give the Developer a notice:

20.3.1 confirming that the Development Contribution Item has been completed in accordance with this Deed; or

20.3.2 advising:

(a) that the Council does not accept that the Development Contribution Item has been completed in accordance with this Deed; and

(b) the reasons for that non-acceptance and directing the Developer to complete, rectify or repair any specified part of the Work.

20.4 For the avoidance of doubt, the Council may give more than one written notice under clause 20.3.2 if the Council reasonably considers that it is necessary to do so.

20.5 If the Developer does not accept the matters contained in a notice issued by the Council under clause 20.3.2 then it must, within 14 days, serve notice on Council to that effect, in which case the Council is to appoint a suitably qualified expert at the Cost of the Developer to determine whether the Development Contribution Item has been completed in accordance with this Deed.

20.6 If a Party does not accept the determination of the expert in clause 20.5, then that Party may, within 14 days of the expert determination:

20.6.1 serve notice on the other Party to that effect, in which case the matter will be a Dispute; and

20.6.2 refer that Dispute immediately to the President of the Law Society and clauses 24.4 to 24.7 (inclusive) apply to that Dispute.

20.7 The Developer, at its Cost, is to promptly comply with:

20.7.1 a written notice under clause 20.3.2, if it does not serve notice on the Council under clause 20.5, or

20.7.2 the expert determination of the Council's appointed expert under clause 20.5, if no notice is served under clause 20.6, or

20.7.3 the expert determination of the expert appointed by the President of the NSW Law Society under clause 24.4, if a Dispute has been referred under clause 20.6.2.

20.8 If:

20.8.1 the Council gives a notice under clause 20.3.2; and

20.8.2 the Developer believes it has complied with that notice or an expert determination under clause 20.5 or clause 24, as the case may be, then

the Developer must issue a further Completion Notice with respect to that Development Contribution Item and clauses 20.2 to 20.7 inclusive reapplies.

20.9 A Development Contribution Item comprising a Work will be complete for the purpose of this Deed:

20.9.1 on the date the Council issues a notice under clause 20.3.1 confirming that the Development Contribution Item is complete; or

20.9.2 if the Council fails to issue any notice under clause 20.3, at the end of the period of 28 days from the date the Completion Notice is given to the Council, or

20.9.3 if an expert has determined under clause 20.5 or clause 24 that the Work is complete for the purposes of this Deed, on the date of the expert determination .

20.10 If the Council is the owner of the Land on which a Development Contribution Item has been completed, the Council assumes responsibility for the Work upon the date that Development Contribution Item was completed, but if it is not the owner at that time, it assumes that responsibility when the Development Contribution comprising the dedication of the Land upon which that Work is carried out is made to Council under this Deed.

20.11 The Developer will Maintain any Development Contribution Item for which a Maintenance Period is specified in Column 6 of the table in Schedule 2 for the Development Contribution Item, during that Maintenance Period.

21 Rectification of defects

21.1 The Council may give the Developer a Rectification Notice during the Defects Liability Period.

21.2 The Developer, at its own cost, is to comply with a Rectification Notice according to its terms and to the reasonable satisfaction of the Council.

21.3 The Council is to do such things as are reasonably necessary to enable the Developer to comply with a Rectification Notice that has been given to it under clause 21.1.

22 Works-As-Executed-Plan

22.1 No later than 60 days after Work is completed for the purposes of this Deed, the Developer is to submit to the Council a full works-as-executed-plan in respect of the Work.

22.2 The Developer, being the copyright owner in the plan referred to in clause 22.1, gives the Council a non-exclusive licence to use the copyright in the plans for the purposes of this Deed.

23 Removal of Equipment

23.1 When Work on any Council owned or controlled land is completed for the purposes of this Deed, the Developer, without delay, is to:

23.1.1 remove any Equipment from Land and make good any damage or disturbance to the land as a result of that removal, and

23.1.2 leave the land in a neat and tidy state, clean and free of rubbish.

Part 3 – Dispute Resolution

24 Dispute resolution – expert determination

24.1 This clause applies to a Dispute between any of the Parties to this Deed concerning a matter arising in connection with this Deed that can be determined by an appropriately qualified expert if:

24.1.1 the Parties to the Dispute agree that it can be so determined, or

24.1.2 the Chief Executive Officer of the professional body that represents persons who appear to have the relevant expertise to determine the Dispute gives a written opinion that the Dispute can be determined by a member of that body.

24.2 A Dispute to which this clause applies is taken to arise if one Party gives another Party a notice in writing specifying particulars of the Dispute.

24.3 If a notice is given under clause 24.2, the Parties are to meet within 14 days of the notice in an attempt to resolve the Dispute.

24.4 If the Dispute is not resolved within a further 28 days, the Dispute is to be referred to the President of the NSW Law Society to appoint an expert for expert determination.

24.5 The expert determination is binding on the Parties except in the case of fraud or misfeasance by the expert.

24.6 Each Party is to bear its own costs arising from or in connection with the appointment of the expert and the expert determination.

24.7 The Parties are to share equally the costs of the President, the expert, and the expert determination.

25 Dispute Resolution - mediation

25.1 This clause applies to any Dispute arising in connection with this Deed other than a Dispute to which clause 24 applies.

25.2 Such a Dispute is taken to arise if one Party gives another Party a notice in writing specifying particulars of the Dispute.

25.3 If a notice is given under clause 25.2, the Parties are to meet within 14 days of the notice in an attempt to resolve the Dispute.

25.4 If the Dispute is not resolved within a further 28 days, the Parties are to mediate the Dispute in accordance with the Mediation Rules of the Law Society of New South Wales published from time to time and are to request the President of the Law Society to select a mediator.

25.5 If the Dispute is not resolved by mediation within a further 28 days, or such longer period as may be necessary to allow any mediation process which has been commenced to be completed, then the Parties may exercise their legal rights in relation to the Dispute, including by the commencement of legal proceedings in a court of competent jurisdiction in New South Wales.

25.6 Each Party is to bear its own costs arising from or in connection with the appointment of a mediator and the mediation.

25.7 The Parties are to share equally the costs of the President, the mediator, and the mediation.

Part 4 - Enforcement

26 Security for performance of obligations

26.1 In this clause 26 the following definitions apply:

Number of Final Lots for the Stage means:

(a) for Stage 1 - 180 Final Lots.

(b) for Stage 2 - 149 Final Lots.

(c) for Stage 3 – 150 Final Lots.

(d) for Stage 4 – 225 Final Lots.

(e) for Stage 5 – 62 Final Lots.

(f) for Stage 6 – 188 Final Lots.

(g) for Stage 7 – 59 Final Lots.

(h) for Stage 8 – 199 Final Lots.

(i) for Stage 9 – 304 Final Lots.

(j) for Stage 10 – 32 Final Lots.

(k) for Stage 11 – 37 Final Lots.

(l) for Stage 20 – 257 Final Lots.

Final Lot Subdivision Certificate means a Subdivision Certificate that:

(a) authorises the registration of a plan of subdivision or strata plan which, on registration, will create a Final Lot; and

(b) is able to be issued because a Development Consent for the Development granted after the date of this Deed is in force with respect to the proposed subdivision.

Security Amount means:

(a) Security in the amount of:

(i) $TSCV divided by the Number of Final Lots for the Stage in respect of which a Final Lot Subdivision Certificates is being sought, then multiplied by the number of Final Lots in that Stage for which Final Lot Subdivision Certificates have been issued or are sought; or

(b) Security to such other amount as the Developer and the Council agree in writing.

TSCV means the sum of the Contribution Values of all Development Contribution Items comprising Works (other than Development Contribution Item No. 14) which are to be located within a Stage in respect of which a Final Lot Subdivision Certificate is sought, other than those Items within the Stage that have been completed in accordance with this Deed and are the responsibility of the Council.

26.2 Prior to the issuing of a Final Lot Subdivision Certificate for a Stage, the Developer is to provide the Council with a Security for the difference between the value of Security Amount and the Security already held by Council (if any) in respect of that Stage.

26.3 The Council, in its absolute discretion and despite clause 17, may refuse to allow the Developer to enter, occupy or use any land owned or controlled by the Council or refuse to provide the Developer with any plant, equipment, facilities or assistance relating to the carrying out the Development if the Developer has not provided the Security to the Council in accordance with this Deed.

26.4 The Council may call-up and apply the Security in accordance with clause 29 to remedy any breach of this Deed notwithstanding any other remedy it may have under this Deed, under any Act or otherwise at law or in equity.

26.5 The Council is to release and return the Security provided in respect of a Stage, or any unused part of it to the Developer within 14 days of the Developer completing all of their obligations under this Deed in respect of that Stage.

26.6 The Developer may at any time provide the Council with a replacement Security.

26.7 On receipt of a replacement Security, the Council is to release and return the Security that has been replaced to the Developer.

26.8 If the Council calls-up the Security or any portion of it, it may, by written notice to the Developer, require the Developer to provide a further or replacement Security to ensure that the amount of Security held by the Council equals the amount it is entitled to hold under this Deed.

26.9 The Developer is to ensure that the Security provided to the Council is at all times maintained to the full current indexed value.

27 Restriction on application for Subdivision Certificates

27.1 The Parties acknowledge and agree that under s109J(1)(c1) of the Act, a Subdivision Certificate for the Development must not be issued unless and until all the requirements of this Deed that are to be complied with before the issuing of that Subdivision Certificate have been complied with.

28 Acquisition of land required to be dedicated

28.1 If the Developer does not dedicate land required to be dedicated under this Deed at the time at which it is required to be dedicated, the Developer consents to the Council compulsorily acquiring the land for compensation in the amount of $1.00 without having to follow the pre-acquisition procedure under the Just Terms Act.

28.2 The Council is to only acquire land pursuant to clause 28.1 if it considers it reasonable to do so having regard to the circumstances surrounding the failure by the Developer to dedicate the land required to be dedicated under this Deed.

28.3 Clause 28.1 constitutes an agreement for the purposes of s30 of the Just Terms Act.

28.4 If, as a result of the acquisition referred to in clause 28.1, the Council is required to pay compensation to any person other than the Developer, the Developer is to reimburse the Council that amount, upon a written request being made by the Council, or the Council can call on any Security provided under clause 26.

28.5 The Developer indemnifies and keeps indemnified the Council against all Claims made against the Council as a result of any acquisition by the Council of the whole or any part of the land concerned except if, and to the extent that, the Claim arises because of the Council's negligence or default.

28.6 The Developer is to promptly do all things necessary, and consents to the Council doing all things necessary, to give effect to this clause 28, including without limitation:

28.6.1 signing any documents or forms,

28.6.2 giving land owner's consent for lodgement of any Development Application,

28.6.3 producing certificates of title to the Registrar-General under the *Real Property Act 1900*, and

28.6.4 paying the Council's costs arising under this clause 28.

29 Breach of obligations

29.1 If the Council reasonably considers that the Developer is in breach of any obligation under this Deed, it may give a written notice to the Developer:

29.1.1 specifying the nature and extent of the breach,

29.1.2 requiring the Developer to:

(a) rectify the breach if it reasonably considers it is capable of rectification, or

(b) pay compensation to the reasonable satisfaction of the Council in lieu of rectifying the breach if it reasonably considers the breach is not capable of rectification,

29.1.3 specifying the period within which the breach is to be rectified or compensation paid, being a period that is reasonable in the circumstances.

29.2 If the Developer fails to fully comply with a notice referred to in clause 29.1, the Council may, without further notice to the Developer, call-up the Security provided by the Developer under this Deed and apply it to remedy the Developer's breach.

29.3 If the Developer fails to comply with a notice given under clause 29.1 relating to the carrying out of Work under this Deed, the Council may step-in and remedy the breach and may enter, occupy and use any land owned or controlled by the Developer and any Equipment on such land for that purpose.

29.4 Any costs incurred by the Council in remedying a breach in accordance with clause 29.2 or clause 29.3 may be recovered by the Council by either or a combination of the following means:

29.4.1 by calling-up and applying the Security provided by the Developer under this Deed, or

29.4.2 as a debt due in a court of competent jurisdiction.

29.5 For the purpose of clause 29.4, the Council's costs of remedying a breach the subject of a notice given under clause 29.1 include, but are not limited to:

29.5.1 the costs of the Council's servants, agents and contractors reasonably incurred for that purpose,

29.5.2 all fees and charges necessarily or reasonably incurred by the Council in remedying the breach, and

29.5.3 all legal costs and expenses reasonably incurred by the Council, by reason of the breach.

29.6 Nothing in this clause 29 prevents the Council from exercising any rights it may have at law or in equity in relation to a breach of this Deed by the Developer, including but not limited to seeking relief in an appropriate court.

30 Enforcement in a court of competent jurisdiction

30.1 Without limiting any other provision of this Deed, the Parties may enforce this Deed in any court of competent jurisdiction.

30.2 For the avoidance of doubt, nothing in this Deed prevents:

30.2.1 a Party from bringing proceedings in the Land and Environment Court to enforce any aspect of this Deed or any matter to which this Deed relates, or

30.2.2 the Council from exercising any function under the Act or any other Act or law relating to the enforcement of any aspect of this Deed or any matter to which this Deed relates.

Part 5 – Registration & Restriction on Dealings

31 Registration of this Deed

31.1 The Parties agree to register this Deed for the purposes of s93H(1) of the Act.

31.2 Before the Council executes this Deed, the Developer is to deliver to the Council in registrable form:

31.2.1 an instrument requesting registration of this Deed on the title to the Land duly executed by the Developer, and

31.2.2 the written irrevocable consent of each person referred to in s93H(1) of the Act to that registration.

31.3 The Developer is to do such other things as are reasonably necessary to enable registration of this Deed to occur.

31.4 The Parties are to do such things as are reasonably necessary to remove any notation relating to this Deed from the title to the Land:

31.4.1 in so far as the part of the Land concerned is a Final Lot,

31.4.2 in relation to any other part of the Land, once the Developer has completed its obligations under this Deed to the reasonable satisfaction of the Council or this Deed is terminated or otherwise comes to an end for any other reason.

31.5 This clause 31 takes effect and operates as a deed poll in favour of the Council on and from the date this Deed it is executed by the Developer.

32 Restriction on dealings

32.1 The Developer is not to:

32.1.1 sell or transfer the Land, other than a Final Lot, or

32.1.2 assign the Developer's rights or obligations under this Deed, or novate this Deed,

to any person unless:

32.1.3 the Developer has, at no cost to the Council, first procured the execution by the person to whom the Land or part is to be sold or transferred or the Developer's rights or obligations under this Deed are to be assigned or novated, of a deed in favour of the Council on terms reasonably satisfactory to the Council, and

32.1.4 the Council has given written notice to the Developer stating that it reasonably considers that the purchaser, transferee, assignee or novatee, is reasonably capable of performing its obligations under this Deed, and

32.1.5 the Developer is not in breach of this Deed, and

32.1.6 the Council otherwise consents to the transfer, assignment or novation, such consent not to be unreasonably withheld.

32.2 Clause 32.1 does not apply in relation to any sale or transfer of the Land if this Deed is registered on the title to the Land at the time of the sale.

Part 6 – Indemnities & Insurance

33 Risk

33.1 The Developer performs this Deed at its own risk and its own cost.

34 Release

34.1 The Developer releases the Council from any Claim it may have against the Council arising in connection with the performance of the Developer's obligations under this Deed except if, and to the extent that, the Claim arises because of the Council's negligence or default.

35 Indemnity

35.1 The Developer indemnifies the Council from and against all Claims that may be sustained, suffered, recovered or made against the Council arising in connection with the performance of the Developer's obligations under this Deed except if, and to the extent that, the Claim arises because of the Council's negligence or default.

36 Insurance

36.1 The Developer is to take out and keep current to the satisfaction of the Council the following insurances in relation to Work required to be carried out by the Developer under this Deed up until the Work is taken to have been completed in accordance with this Deed:

36.1.1 contract works insurance, noting the Council as an interested party, for the full replacement value of the Works (including the cost of demolition and removal of debris, consultants' fees and authorities' fees), to cover the Developer's liability in respect of damage to or destruction of the Works,

36.1.2 public liability insurance for at least $20,000,000.00 for a single occurrence, which covers the Council, the Developer and any subcontractor of the Developer, for liability to any third party,

36.1.3 workers compensation insurance as required by law, and

36.1.4 any other insurance required by law.

36.2 If the Developer fails to comply with clause 36.1, the Council may effect and keep in force such insurances and pay such premiums as may be necessary for that purpose and the amount so paid shall be a debt due from the Developer to the Council and may be recovered by the Council as it deems appropriate including:

36.2.1 by calling upon the Security provided by the Developer to the Council under this Deed, or

36.2.2 recovery as a debt due in a court of competent jurisdiction.

36.3 The Developer is not to commence to carry out any Work unless it has first provided to the Council satisfactory written evidence of all of the insurances specified in clause 36.1.

Part 7 – Other Provisions

37 Development in excess of 1,850 Final Lots

37.1 The Developer is not to apply for, or cause, suffer or permit an application to be made for, or procure the issuing of, an Approval for the Subdivision of the Land into more than 1,850 Final Lots unless and until the Parties have agreed on and implemented suitable amendments to this Deed, or entered into other agreed arrangements, for the provision of Development Contributions for the Development of those lots.

38 Reports by Developer

38.1 The Developer is to provide the Council with a report detailing the performance of its obligations under this Deed at each of the following times:

38.1.1 by not later than each anniversary of the date on which this Deed is entered into, and

38.1.2 each time a Development Application is lodged for the Development,

38.1.3 each time an application is made for a Subdivision Certificate that creates one or more Final Lot.

38.2 The reports referred to in clause 38.1 are to include sufficient detail to enable the Council to determine whether the Developer has complied with its obligations under this Deed at the relevant time and be in such a form and to address such matters as required by the Council from time to time.

39 Review of Deed

39.1 The Parties agree to review this Deed every year, and otherwise if either party is of the opinion that any change of circumstance has occurred, or is imminent, that materially affects the operation of this Deed.

39.2 For the purposes of clause 39.1, the relevant changes include (but are not limited to) any change to a law that restricts or prohibits or enables the Council or any other planning authority to restrict or prohibit any aspect of the Development.

39.3 For the purposes of addressing any matter arising from a review of this Deed referred to in clause 39.1, the Parties are to use all reasonable endeavours to agree on and implement appropriate amendments to this Deed.

39.4 If this Deed becomes illegal, unenforceable or invalid as a result of any change to a law, the Parties agree to do all things necessary to ensure that an enforceable agreement of the same or similar effect to this Deed is entered into.

39.5 A failure by a Party to agree to take action requested by the other Party as a consequence of a review referred to in clause 39.1 (but not 39.4) is not a Dispute for the purposes of this Deed and is not a breach of this Deed.

40 Notices

40.1 Any notice, consent, information, application or request that is to or may be given or made to a Party under this Deed is only given or made if it is in writing and sent in one of the following ways:

40.1.1 delivered or posted to that Party at its address set out in the Summary Sheet,

40.1.2 faxed to that Party at its fax number set out in the Summary Sheet, or

40.1.3 emailed to that Party at its email address set out in the Summary Sheet.

40.2 If a Party gives the other Party 3 business days' notice of a change of its address, fax number or email, any notice, consent, information, application or request is only given or made by that other Party if it is delivered, posted, faxed or emailed to the latest address or fax number.

40.3 Any notice, consent, information, application or request is to be treated as given or made if it is:

40.3.1 delivered, when it is left at the relevant address,

40.3.2 sent by post, 2 business days after it is posted,

40.3.3 sent by fax, as soon as the sender receives from the sender's fax machine a report of an error free transmission to the correct fax number, or

40.3.4 sent by email and the sender does not receive a delivery failure message from the sender's internet service provider within a period of 24 hours of the email being sent.

40.4 If any notice, consent, information, application or request is delivered, or an error free transmission report in relation to it is received, on a day that is not a business day, or if on a business day, after 5pm on that day in the place of the Party to whom it is sent, it is to be treated as having been given or made at the beginning of the next business day.

41 Approvals and Consent

41.1 Except as otherwise set out in this Deed, and subject to any statutory obligations, a Party may give or withhold an approval or consent to be given under this Deed in that Party's absolute discretion and subject to any conditions determined by the Party.

41.2 A Party is not obliged to give its reasons for giving or withholding consent or for giving consent subject to conditions.

42 Costs

42.1 Subject to clause 42.2, the Developer is to pay to the Council the Council's costs, not exceeding the Costs Budget, of preparing, negotiating, executing and stamping this Deed, and any document related to this Deed within 7 days of a written demand by the Council for such payment.

42.2 The Developer is also to pay to the Council the Council's reasonable costs of enforcing this Deed within 7 days of a written demand by the Council for such payment.

43 Entire Deed

43.1 This Deed contains everything to which the Parties have agreed in relation to the matters it deals with.

43.2 No Party can rely on an earlier document, or anything said or done by another Party, or by a director, officer, agent or employee of that Party, before this Deed was executed, except as permitted by law.

44 Further Acts

44.1 Each Party must promptly execute all documents and do all things that another Party from time to time reasonably requests to effect, perfect or complete this Deed and all transactions incidental to it.

45 Governing Law and Jurisdiction

45.1 This Deed is governed by the law of New South Wales.

45.2 The Parties submit to the non-exclusive jurisdiction of its courts and courts of appeal from them.

45.3 The Parties are not to object to the exercise of jurisdiction by those courts on any basis.

46 Joint and Individual Liability and Benefits

46.1 Except as otherwise set out in this Deed:

46.1.1 any agreement, covenant, representation or warranty under this Deed by 2 or more persons binds them jointly and each of them individually, and

46.1.2 any benefit in favour of 2 or more persons is for the benefit of them jointly and each of them individually.

47 No Fetter

47.1 Nothing in this Deed shall be construed as requiring Council to do anything that would cause it to be in breach of any of its obligations at law, and without limitation, nothing shall be construed as limiting or fettering in any way the exercise of any statutory discretion or duty.

48 Illegality

48.1 If this Deed or any part of it becomes illegal, unenforceable or invalid as a result of any change to a law, the Parties are to co-operate and do all things necessary to ensure that an enforceable agreement of the same or similar effect to this Deed is entered into.

49 Severability

49.1 If a clause or part of a clause of this Deed can be read in a way that makes it illegal, unenforceable or invalid, but can also be read in a way that makes it legal, enforceable and valid, it must be read in the latter way.

49.2 If any clause or part of a clause is illegal, unenforceable or invalid, that clause or part is to be treated as removed from this Deed, but the rest of this Deed is not affected.

50 Amendment

50.1 No amendment of this Deed will be of any force or effect unless it is in writing and signed by the Parties to this Deed in accordance with clause 25D of the Regulation.

51 Waiver

51.1 The fact that a Party fails to do, or delays in doing, something the Party is entitled to do under this Deed, does not amount to a waiver of any obligation of, or breach of obligation by, another Party.

51.2 A waiver by a Party is only effective if it is in writing.

51.3 A written waiver by a Party is only effective in relation to the particular obligation or breach in respect of which it is given. It is not to be taken as an implied waiver of any other obligation or breach or as an implied waiver of that obligation or breach in relation to any other occasion.

52 GST

52.1 In this clause:

Adjustment Note, **Consideration**, **GST**, **GST Group**, **Margin Scheme**, **Money**, **Supply** and **Tax Invoice** have the meaning given by the GST Law.

GST Amount means in relation to a Taxable Supply the amount of GST payable in respect of the Taxable Supply.

GST Law has the meaning given by the *A New Tax System (Goods and Services Tax) Act 1999* (Cth).

Input Tax Credit has the meaning given by the GST Law and a reference to an Input Tax Credit entitlement of a party includes an Input Tax Credit for an acquisition made by that party but to which another member of the same GST Group is entitled under the GST Law.

Taxable Supply has the meaning given by the GST Law excluding (except where expressly agreed otherwise) a supply in respect of which the supplier chooses to apply the Margin Scheme in working out the amount of GST on that supply.

52.2 Subject to clause 52.4, if GST is payable on a Taxable Supply made under, by reference to or in connection with this Deed, the Party providing the Consideration for that Taxable Supply must also pay the GST Amount as additional Consideration.

52.3 Clause 52.2 does not apply to the extent that the Consideration for the Taxable Supply is expressly stated in this Deed to be GST inclusive.

52.4 No additional amount shall be payable by the Council under clause 52.2 unless, and only to the extent that, the Council (acting reasonably and in accordance with the GST Law) determines that it is entitled to an Input Tax Credit for its acquisition of the Taxable Supply giving rise to the liability to pay GST.

52.5 If there are Supplies for Consideration which is not Consideration expressed as an amount of Money under this Deed by one Party to the other Party that are not subject to Division 82 of the *A New Tax System (Goods and Services Tax) Act 1999*, the Parties agree:

52.5.1 to negotiate in good faith to agree the GST inclusive market value of those Supplies prior to issuing Tax Invoices in respect of those Supplies;

52.5.2 that any amounts payable by the Parties in accordance with clause 52.2 (as limited by clause 52.4) to each other in respect of those Supplies will be set off against each other to the extent that they are equivalent in amount.

52.6 No payment of any amount pursuant to this clause 52, and no payment of the GST Amount where the Consideration for the Taxable Supply is expressly agreed to be GST inclusive, is required until the supplier has provided a Tax Invoice or Adjustment Note as the case may be to the recipient.

52.7 Any reference in the calculation of Consideration or of any indemnity, reimbursement or similar amount to a cost, expense or other liability incurred by a party, must exclude the amount of any Input Tax Credit entitlement of that party in relation to the relevant cost, expense or other liability.

52.8 This clause continues to apply after expiration or termination of this Deed.

53 Explanatory Note

53.1 The Appendix contains the Explanatory Note relating to this Deed required by clause 25E of the Regulation.

53.2 Pursuant to clause 25E(7) of the Regulation, the Parties agree that the Explanatory Note is not to be used to assist in construing this Planning Deed.

Schedule 1

(Clause 9)

Development Contributions

Column 1 Item No.	Column 2 Relevant Stage	Column 3 Identifier on Staging Plan	Column 4 Public Purpose	Column 5 Nature / Extent	Column 6 Timing	Column 7 Contribution Value
Carrying Out of Work						
1	4	LP2	Passive open space and recreation	Embellishment of approximately 2.71 ha of passive open space at a location that is generally consistent with the area identified as *'LP2'* on the Staging Plan and that is generally in accordance with the Open Space and Recreation Strategy prepared under this Deed.	Prior to the issue of an Occupation Certificate in the Neighbourhood Centre.	$2,292,496.00

Column 1 Item No.	Column 2 Relevant Stage	Column 3 Identifier on Staging Plan	Column 4 Public Purpose	Column 5 Nature / Extent	Column 6 Timing	Column 7 Contribution Value
2	3	LP3	Passive open space and recreation	Embellishment of approximately 0.32 ha of passive open space at a location that is generally consistent with the areas identified as '*LP3*' on the Staging Plan and that is generally in accordance with the Development Consent granted to DA 228/2014.	Prior to the issue of a Subdivision Certificate for the creation of a Final Lot within Stage 4 of the Development.	$412,184.00
3	7	LP5	Passive open space and recreation	Embellishment of approximately 0.43 ha of passive open space at a location that is generally consistent with the areas identified as '*LP5*' on the Staging Plan and that is generally in accordance with the Open Space and Recreation Strategy prepared under this Deed.	Prior to the issue of a Subdivision Certificate for the creation of a Final Lot within Stage 9 of the Development.	$493,853.00
4	20	LP6	Passive open space and recreation	Embellishment of approximately 1.24 ha of passive open space at a location that is generally consistent with the areas identified as '*LP6*' on the Staging Plan and that is generally in accordance with the Open Space and Recreation Strategy prepared under this Deed.	Prior to the issue of a Subdivision Certificate for the creation of a Final Lot within Stage 9 of the Development.	$1,130,863.00

Column 1 Item No.	Column 2 Relevant Stage	Column 3 Identifier on Staging Plan	Column 4 Public Purpose	Column 5 Nature / Extent	Column 6 Timing	Column 7 Contribution Value
5	9	LP7	Passive open space and recreation	Embellishment of approximately 0.37 ha of passive open space at a location that is generally consistent with the areas identified as '*LP7*' on the Staging Plan and that is generally in accordance with the Open Space and Recreation Strategy prepared under this Deed.	Prior to the issue of a Subdivision Certificate for the creation of a Final Lot within Stage 10 of the Development.	$451,256.00
6	8	LS2	Active open space and recreation	Embellishment of a 4.7 hectare site including a double playing field consistent with the design requirements specified in the Design Standards, a 120 space car park, and a cleared, compacted and levelled site upon which a community facility and amenities building will be constructed by Council under Development Contribution Item No. 42 of this Deed, in a location generally consistent with that marked '*LS2*' on the Staging Plan, and that is generally in accordance with the Open Space and Recreation Strategy prepared under this Deed.	Prior to the issue of a Subdivision Certificate for the creation of a Final Lot within Stage 9 of the Development.	$3,251,648.00

Column 1 Item No.	Column 2 Relevant Stage	Column 3 Identifier on Staging Plan	Column 4 Public Purpose	Column 5 Nature / Extent	Column 6 Timing	Column 7 Contribution Value
7	5	LR1	Transport Infrastructure	Local Road to the south of South Creek and adjacent to Catherine Park Drive at a location that is generally consistent with the areas identified as '*LR1*' on the Staging Plan.	Prior to the issue of a Subdivision Certificate for the creation of a Final Lot within Stage 5 of the Development.	$912,934.00
8	20	CC2	Transport Infrastructure	Harrington Creek crossing at a location that is generally consistent with the areas identified as '*CC2*' on the Staging Plan.	Prior to the issue of a Subdivision Certificate for the creation of a Final Lot within Stage 20 of the Development.	$190,103.00
9	N/A	PB2	Transport Infrastructure	Pedestrian Bridge South at a location that is generally consistent with the areas identified as '*PB2*' on the Staging Plan.	Prior to the issue of a Subdivision Certificate for the creation of a Final Lot within the latter of of Stages 4 or 6 of the Development.	$118,790.00
10	N/A	PB3	Transport Infrastructure	Pedestrian Bridge South 2 at a location that is generally consistent with the areas identified as '*PB3*' on the Staging Plan.	Prior to the issue of a Subdivision Certificate for the creation of a Final Lot within Stage 10 of the Development.	$65,304.00

Column 1 Item No.	Column 2 Relevant Stage	Column 3 Identifier on Staging Plan	Column 4 Public Purpose	Column 5 Nature / Extent	Column 6 Timing	Column 7 Contribution Value
11	4, 5, 6, 8, 9, 10, 20	Shared Path along Water Management	Transport Infrastructure	Shared pedestrian and cycle paths of 2.5m width along water cycle management corridors approximately 2,500 metres long at a location that is generally consistent with the areas identified as '*SP Along Water Management*' on the Staging Plan.	Prior to the issue of a Subdivision Certificate for the creation of a Final Lot within the relevant stage of the Development.	$777,777.00
12	6	Shared Path along Road	Transport Infrastructure	Shared pedestrian and cycle paths of 2.5m width along road approximately 110 metres long at a location that is generally consistent with the areas identified as '*SP Along Road*' on the Staging Plan.	Prior to the issue of a Subdivision Certificate for the creation of a Final Lot within the Relevant Stage of the Development.	$36,955.00
13	1	Shared Path along Moore's Prospect	Transport Infrastructure	Shared pedestrian and cycle paths of 2.5m width along Moore's Prospect approximately 480 metres long at a location that is generally consistent with the areas identified as '*SP Along Moore's Prospect*' on the Staging Plan.	Prior to the issue of a Subdivision Certificate for the creation of a Final Lot within Stage 3 of the Development.	$148,205.00
14	ALL	R1, R2, R3, R4, TE1, TE2, TE3, TE4, TE5, TE6	Riparian Corridor and Transmission Easement	Embellishment of 20.45 hectares of Riparian Corridor and Transmission Easement land at the locations that are generally consistent with the areas identified as '*R1, R2, R3, R4, TE1, TE4, TE5 and TE6* ' on the Staging Plan.	Prior to the issue of a Subdivision Certificate for the creation of a Final Lot within Stage 10 of the Development.	$2,550,000.00

Column 1 Item No.	Column 2 Relevant Stage	Column 3 Identifier on Staging Plan	Column 4 Public Purpose	Column 5 Nature / Extent	Column 6 Timing	Column 7 Contribution Value
15	6	B3	Water Management	Construction of basins at a location that is generally consistent with the areas identified as B3 on the Staging Plan in accordance with *Water Cycle & Flooding – Catherine Field (Part) Precinct,* prepared by Brown Consulting (NSW) Pty Ltd, August 13 with such amendments as are approved by the Council from time to time.	Prior to the issue of a Subdivision Certificate for the creation of a Final Lot within Stage 7 of the Development	$5,346,817.00
16	4	B4	Water Management	Construction of basins at a location that is generally consistent with the areas identified as '*B4a*' and '*B4b*' on the Staging Plan in accordance with *Water Cycle & Flooding – Catherine Field (Part) Precinct,* prepared by Brown Consulting (NSW) Pty Ltd, August 13. Strategy as updated and approved by the Council from time to time..	Prior to the issue of a Subdivision Certificate for the creation of a Final Lot within Stage 8 of the Development	$1,399,226.00
17	10	B7	Water Management	Construction of basins at a location that is generally consistent with the areas identified as '*B7*' on the Staging Plan in accordance with *Water Cycle & Flooding – Catherine Field (Part) Precinct,* prepared by Brown Consulting (NSW) Pty Ltd, August 13 as updated and approved by the Council from time to time.	Prior to the issue of a Subdivision Certificate for the creation of a Final Lot within Stage 10 of the Development	$1,946,665.00

Column 1 Item No.	Column 2 Relevant Stage	Column 3 Identifier on Staging Plan	Column 4 Public Purpose	Column 5 Nature / Extent	Column 6 Timing	Column 7 Contribution Value
18	8	B8	Water Management	Construction of basins at a location that is generally consistent with the areas identified as '*B8*' on the Staging Plan in accordance with *Water Cycle & Flooding – Catherine Field (Part) Precinct,* prepared by Brown Consulting (NSW) Pty Ltd, August 13 as updated and approved by the Council from time to time.	Prior to the issue of a Subdivision Certificate for the creation of a Final Lot within Stage 8 of the Development	$749,609.00
19	8	B9	Water Management	Construction of basins at a location that is generally consistent with the areas identified as '*B9*' on the Staging Plan in accordance with *Water Cycle & Flooding – Catherine Field (Part) Precinct,* prepared by Brown Consulting (NSW) Pty Ltd, August 13 as updated and approved by the Council from time to time.	Prior to the issue of a Subdivision Certificate for the creation of a Final Lot within Stage 9 of the Development	$1,280,121.00
20	20	B10	Water Management	Construction of basins at a location that is generally consistent with the areas identified as '*B10*' on the Staging Plan in accordance with *Water Cycle & Flooding – Catherine Field (Part) Precinct,* prepared by Brown Consulting (NSW) Pty Ltd, August 13 as updated and approved by the Council from time to time.	Prior to the issue of a Subdivision Certificate for the creation of a Final Lot within Stage 20 of the Development	$232,747.00

Column 1 Item No.	Column 2 Relevant Stage	Column 3 Identifier on Staging Plan	Column 4 Public Purpose	Column 5 Nature / Extent	Column 6 Timing	Column 7 Contribution Value
21	20	B11	Water Management	Construction of basins at a location that is generally consistent with the areas identified as *'B11'* on the Staging Plan in accordance with *Water Cycle & Flooding – Catherine Field (Part) Precinct,* prepared by Brown Consulting (NSW) Pty Ltd, August 13 as updated and approved by the Council from time to time.	Prior to the issue of a Subdivision Certificate for the creation of a Final Lot within Stage 9 of the Development	$894,675.00
22	5	B12	Water Management	Construction of basins at a location that is generally consistent with the areas identified as *'B12'* on the Staging Plan in accordance with *Water Cycle & Flooding – Catherine Field (Part) Precinct,* prepared by Brown Consulting (NSW)Pty Ltd, August 13 as updated and approved by the Council from time to time.	Prior to the issue of a Subdivision Certificate for the creation of a Final Lot within Stage 9 of the Development	$674,378.00
23	8	B15 & B16	Water Management	Construction of basins at a location that is generally consistent with the areas identified as *'B15' and 'B16'* on the Staging Plan in accordance with *Water Cycle & Flooding – Catherine Field (Part) Precinct,* prepared by Brown Consulting (NSW) Pty Ltd, August 13. Strategy as updated and approved by the Council from time to time.	Prior to the issue of a Subdivision Certificate for the creation of a Final Lot within Stage 9 of the Development	$1,002,556.00

Column 1 Item No.	Column 2 Relevant Stage	Column 3 Identifier on Staging Plan	Column 4 Public Purpose	Column 5 Nature / Extent	Column 6 Timing	Column 7 Contribution Value
24	ALL	N/A	Public Transport Infrastructure	The provision of four bus shelters at appropriate locations on the future internal bus route. The final location of the bus shelters will be determined in consultation with Council and the relevant bus service provider.	Prior to the commencement of internal bus services within the Development	$106,400.00
Dedication of Land						
25	6	LP2	Passive open space and recreation	Dedication of approximately 2.71 ha of embellished open space at a location that is generally consistent with the area identified as *'LP2'* on the Staging Plan.	Within 12 months of the completion of the Work comprising Development Contribution Item No. 1 or at such later date as agreed between the Parties.	$2,580,711.00
26	3	LP3	Passive open space and recreation	Dedication of approximately 0.32 ha of embellished open space at a location that is generally consistent with the areas identified as *'LP3'* on the Staging Plan.	Within 12 months of the completion of the Work comprising Development Contribution Item No. 2 or at such later date as agreed between the parties.	$397,158.00

Column 1 Item No.	Column 2 Relevant Stage	Column 3 Identifier on Staging Plan	Column 4 Public Purpose	Column 5 Nature / Extent	Column 6 Timing	Column 7 Contribution Value
27	8	LP5	Passive open space and recreation	Dedication of approximately 0.43 ha of embellished open space at a location that is generally consistent with the areas identified as '*LP5*' on the Staging Plan.	Within 12 months of the completion of the Work comprising Development Contribution Item No. 3 or at such later date as agreed between the Parties.	$524,965.00
28	20	LP6	Passive open space and recreation	Dedication of approximately 1.24 ha of embellished open space that is generally consistent with the areas identified as '*LP6*' on the Staging Plan.	Within 12 months of the completion of the Work comprising Development Contribution Item No. 4 or at such later date as agreed between the Parties.	$1,038,483.00
29	9	LP7	Passive open space and recreation	Dedication of approximately 0.37 ha of embellished open space at a location that is generally consistent with the areas identified as '*LP7*' on the Staging Plan.	Within 12 months of the completion of the Work comprising Development Contribution Item No. 5 or at such later date as agreed between the Parties.	$458,304.00

Column 1 Item No.	Column 2 Relevant Stage	Column 3 Identifier on Staging Plan	Column 4 Public Purpose	Column 5 Nature / Extent	Column 6 Timing	Column 7 Contribution Value
30	4	LS2 and CF1	Active open space and recreation	Dedication of an embellished 4.7 hectare site at a location generally consistent with that marked "*LS2*" on the Staging Plan.	Within 12 months of the completion of the Work comprising Development Contribution Items No. 6 and 7 or at such later date as agreed between the Parties.	$5,154,125.00
31	5	LR1	Transport Infrastructure	Dedication of land upon which the local Road to the south of South Creek and adjacent to Catherine Park Drive required under Development Contribution Item No. 7 of this Deed is located.	Within 28 days of the completion of the Work comprising Development Contribution Item No.7 or at such later date as agreed between the Parties.	$2,277,259.00
32	20	CC2	Transport Infrastructure	Dedication of land upon which the Harrington Creek crossing required under Development Contribution Item No. 8 of this Deed is located.	Within 28 days of the completion of the Work comprising Development Contribution Item No. 8 or at such later date as agreed between the Parties.	$81,428.00

Column 1 Item No.	Column 2 Relevant Stage	Column 3 Identifier on Staging Plan	Column 4 Public Purpose	Column 5 Nature / Extent	Column 6 Timing	Column 7 Contribution Value
33	6	B3	Water Management	Dedication of land upon which the basin required under Development Contribution Item No. 15 of this Deed is located.	Within 12 months of the completion of the Work comprising Development Contribution Item No. 15 or at such later date as agreed between the Parties	$3,238,036.00
34	4	B4	Water Management	Dedication of land upon which the Basins required under Development Contribution Item No. 16 of this Deed are located.	Within 12 months of the completion of the Work comprising Development Contribution Item No. 16 or at such later date as agreed between the Parties.	$449,800.00
35	10	B7	Water Management	Dedication of land upon which the Basin required under Development Contribution Item No. 17 of this Deed is located.	Within 12 months of the completion of the Work comprising Development Contribution Item No. 17 or at such later date as agreed between the Parties.	$546,816.00

Column 1 Item No.	Column 2 Relevant Stage	Column 3 Identifier on Staging Plan	Column 4 Public Purpose	Column 5 Nature / Extent	Column 6 Timing	Column 7 Contribution Value
36	8	B8	Water Management	Dedication of land upon which the Basin required under Development Contribution Item No. 18 of this Deed is located.	Within 12 months of the completion of the Work comprising Development Contribution Item No. 18 or at such later date as agreed between the Parties.	$238,395.00
37	8	B9	Water Management	Dedication of land upon which the Basin required under Development Contribution Item No. 19 of this Deed is located.	Within 12 months of the completion of the Work comprising Development Contribution Item No. 19 or at such later date as agreed between the Parties.	$395,100.00
38	20	B10	Water Management	Dedication of land upon which the Basin required under Development Contribution Item No. 20 of this Deed is located.	Within 12 months of the completion of the Work comprising Development Contribution Item No. 20 or at such later date as agreed between the Parties.	$626,350.00

Column 1 Item No.	Column 2 Relevant Stage	Column 3 Identifier on Staging Plan	Column 4 Public Purpose	Column 5 Nature / Extent	Column 6 Timing	Column 7 Contribution Value
39	20	B11	Water Management	Dedication of land upon which the Basin required under Development Contribution Item No. 21 of this Deed is located.	Within 12 months of the completion of the Work comprising Development Contribution Item No. 21 or at such later date as agreed between the Parties.	$540,454.00
40	5	B12	Water Management	Dedication of land upon which the Basin required under Development Contribution Item No. 22 of this Deed is located.	Within 12 months of the completion of the Work comprising Development Contribution Item No. 22 or at such later date as agreed between the Parties.	$227,885.00
41	8	B15 & B16	Water Management	Dedication of land upon which the Basin required under Development Contribution Item No. 23 of this Deed is located.	Within 12 months of the completion of the Work comprising Development Contribution Item No. 23 or at such later date as agreed between the Parties.	$451,948.00
Monetary Contributions						

Column 1 Item No.	Column 2 Relevant Stage	Column 3 Identifier on Staging Plan	Column 4 Public Purpose	Column 5 Nature / Extent	Column 6 Timing	Column 7 Contribution Value
42	2	CF1	Community facilities	Payment of $2,179,411.00 for the construction of a community facility and amenities building by Council within LS2.	Payable in instalments in accordance with clause 15.	$2,179,411.00
43	N/A	N/A	Active Open Space and Recreation	Payment of $212,000.00 for the construction of hard courts and lighting by Council within LS1 which is located elsewhere within the Catherine Fields (Part) Precinct.	Prior to the issue of a Subdivision Certificate for the creation of a Final Lot within Stage 9 of the Development.	$212,000.00
44	N/A	N/A	Administration	Payment towards the administration of this Deed of $170.41 per Final Lot, to a maximum of $297,523.00, for the entire Development.	Prior to the issue of a Subdivision Certificate for the creation of a Final Lot.	$297,523.00
45	N/A	N/A	Various	Payment of an amount determined by deducting the Contribution Value for all Development Contribution Items comprising Works and Monetary Contributions (other than Development Contribution Item No. 14) from the amount that would have otherwise been payable by the Developers in respect of the Development, under the Contributions Plan.	Payment of an amount per lot prior to the issuing of the Subdivision Certificate for each Final Lot created after the 1,600th Final Lot. The amount payable per lot will be determined by dividing the value of Development Contribution Item 45 (minus any early cash contributions towards Development	$4,089,430.00

Column 1 Item No.	Column 2 Relevant Stage	Column 3 Identifier on Staging Plan	Column 4 Public Purpose	Column 5 Nature / Extent	Column 6 Timing	Column 7 Contribution Value
					Contribution Item 45 made by the Developer before the issuing of the Subdivision Certificate for the 1,601th Final Lot) by the number '200'	
46	All	N/A	Active Open Space	Payment towards off-site district open space works and land acquisition of $4,348.00 per Final Lot for the 1,774th Final Lot to the 1,850th Final Lot inclusive.	An amount of $4,348 per Final Lot between Final Lot 1,776 and 1,850 (inclusive) on a per lot basis prior to the issue of a Subdivision Certificate for the creation of each of those Final Lots	$334,796.00
47	All	N/A	Active and Passive Open Space and Recreation	Payment towards the preparation of a Plan of Management for each Development Contribution Item comprising a Work for which 'Yes' is specified in Column 4 of the table in Schedule 2 corresponding to the Item.	Prior to the Developer issuing a Completion Notice under clause 20.1 in respect of the Development Contribution Item.	$66,666.00

Schedule 2

(Clause 1.1)

Design Approval Requirements

Column 1 Item No.	Column 2 Identifier on Staging Plan	Column 3 Design Approval Required?	Column 4 Management Plan Required?	Column 5 Maintenance Regime Required?	Column 6 Maintenance Period (if applicable)	Column 7 Vegetation Management Plan Required?
1	LP2	Yes	Yes	Yes	12 months	No
2	LP3	Yes	Yes	Yes	12 months	No
3	LP5	Yes	Yes	Yes	12 months	No
4	LP6	Yes	Yes	Yes	12 months	No
5	LP7	Yes	Yes	Yes	12 months	No
6	LS2	Yes	Yes	Yes	12 months	No

Column 1 Item No.	Column 2 Identifier on Staging Plan	Column 3 Design Approval Required?	Column 4 Management Plan Required?	Column 5 Maintenance Regime Required?	Column 6 Maintenance Period (if applicable)	Column 7 Vegetation Management Plan Required?
7	LR1	No	No	No	12 months	No
8	CC2	No	No	No	12 months	No
9	PB2	No	No	No	12 months	No
10	PB3	No	No	No	12 months	No
11	Shared Path along Water Management	No	No	No	12 months	No
12	Shared Path along Road	No	No	No	12 months	No
13	Shared Path along Moore's Prospect	No	No	No	12 months	No
14	R1, R2, R3, R4	No	Yes	Yes	5 years	No
14	TE1, TE2, TE3, TE4, TE5, TE6	Yes	Yes	Yes	5 years	Yes
15	B3	No	Yes	Yes	12 months	No
16	B4	No	Yes	Yes	12 months	No

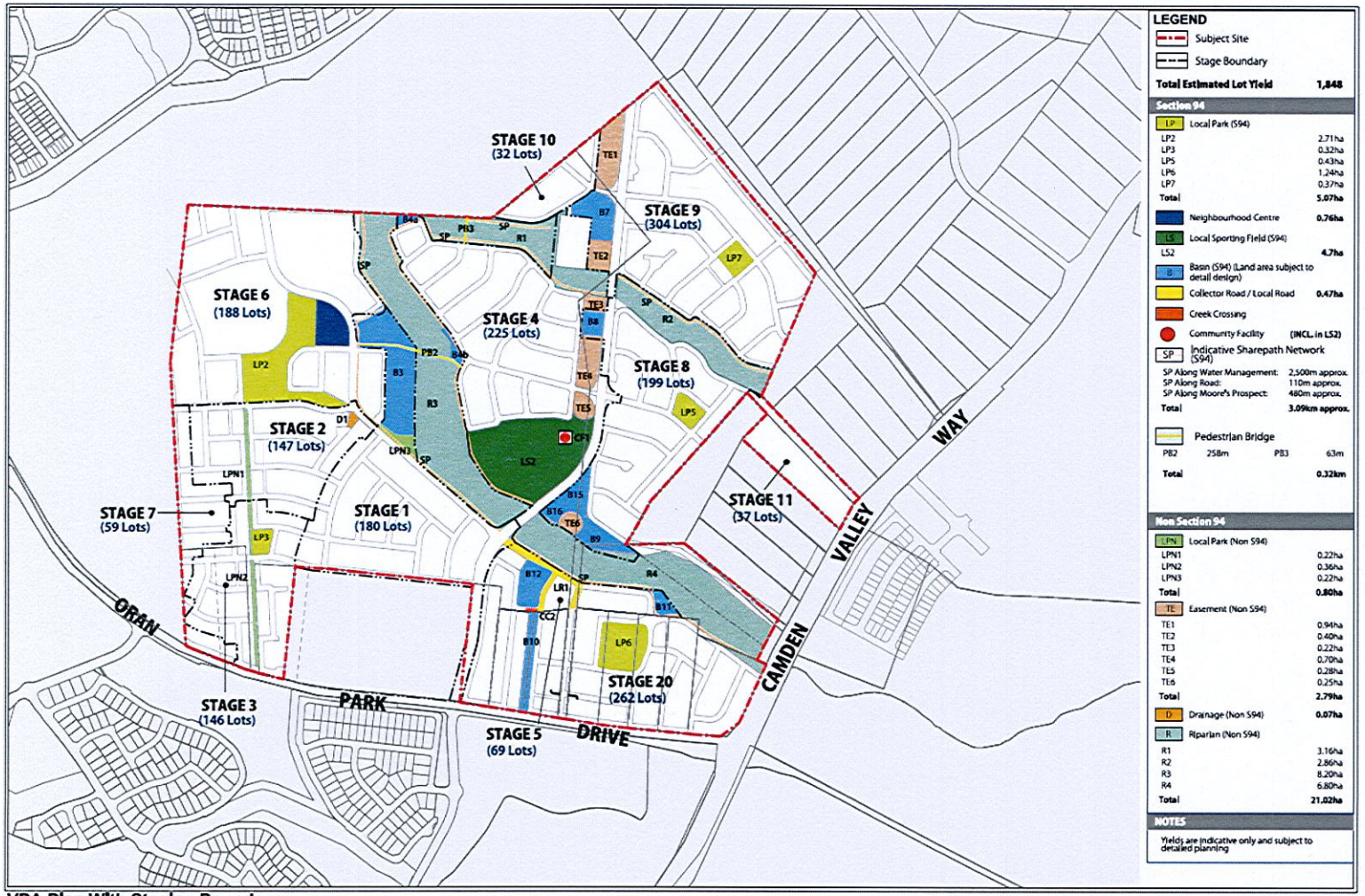
Column 1 Item No.	Column 2 Identifier on Staging Plan	Column 3 Design Approval Required?	Column 4 Management Plan Required?	Column 5 Maintenance Regime Required?	Column 6 Maintenance Period (if applicable)	Column 7 Vegetation Management Plan Required?
17	B7	No	Yes	Yes	12 months	No
18	B8	No	Yes	Yes	12 months	No
19	B9	No	Yes	Yes	12 months	No
20	B10	No	Yes	Yes	12 months	No
21	B11	No	Yes	Yes	12 months	No
22	B12	No	Yes	Yes	12 months	No
23	B15 & B16	No	Yes	Yes	12 months	No
24	N/A	No	No	No	12 months	No

Schedule 3

(Clause 1.1)

Staging Plan

The Staging Plan appears on the following page.



VPA Plan With Staging Boundary

CATHERINE PARK ESTATE

Schedule 4

(Clause 1.1)

Design Standards

DESIGN STANDARDS
for
URBAN INFRASTRUCTURE
24 SPORTSGROUND DESIGN

24 SPORTSGROUND DESIGN

24.1 Introduction

These design standards form part of any project brief issued for sportsground design or for any sportsground developed by the private sector for ongoing management by Sport and Recreation Services.

Consultants are reminded of the necessity to comply with -

- Australian Standards
- Other Design Standards for Urban Infrastructure
- WSUD guidelines
- ACT Sport and Recreation Services irrigation controller requirements
- Design Acceptance Approvals
- Plumbing Approvals
- ACTEWAGL water supply and electrical supply guidelines
- Consolidation and Handover procedures of DUS QC for Gifted Assets
- Consolidation and Handover procedures of Procurement Solutions for Capital Works projects

Should a basic departure from the Design Standard for Urban Infrastructure 24 Sportsground Design be necessary, prior approval shall be sought through Sport and Recreation Services.

It should be noted that where the standards outlined within this document exceed Australian Standards, the Design Standard for Urban Infrastructure 24 Sportsground Design shall prevail.

24.2 Related codes of practice and guidelines

24.2.1 Industry Standards

AS 1141 Methods for sampling and testing aggregates, Standards Australia.

AS 1289 Methods of testing soils for engineering purposes, Standards Australia.

AS 1428 Design for access and mobility, Standards Australia.

AS/NZS 1477 PVC Pipes and Fittings for Pressure Applications, Standards Australia.

AS 2698.1 Plastics Pipes and Fittings for Irrigation and Rural Applications – Polyethylene Micro-irrigation Pipe, Standards Australia.

AS 2698.3 Plastics Pipes and Fittings for Irrigation and Rural Applications – Mechanical Joint Fittings for use with Polyethylene Micro-Irrigation Pipes, Standards Australia.

AS/NZS 2845.1 Water Supply - Backflow prevention devices - Materials, design and performance requirements, Standards Australia.

AS.NZS 3500.1.2 National Plumbing and Drainage Code, Standards Australia.

AS/NZS 4130 Polyethylene (PE) Pipes for Pressure Applications, Standards Australia.

24.2.2 Policy and standards

Standard Specification for Urban Infrastructure Works, Urban Services, Canberra, 2002.

Water Sensitive Urban Design, Guidelines for sustainable development in Canberra, Urban Services, Canberra, Draft 2005.

Overview – Plumbing and Drainage, Planning and Land Management, available online: http://www.palm.act.gov.au/bepcon/ and follow link to plumbing

Water and sewerage standards, ACTEW Corporation, Canberra, 2000.

Design Standards for Urban Infrastructure, 01 Stormwater, Urban Services, Canberra.

Design Standards for Urban Infrastructure, 10 Parking Areas, Urban Services, Canberra.

Design Standards for Urban Infrastructure, 11 Fences Guardrails and Barriers, Urban Services, Canberra.

Design Standards for Urban Infrastructure, 12 Public Lighting, Urban Services, Canberra.

Design Standards for Urban Infrastructure, 13 Pedestrian and Cycle Facilities, Urban Services, Canberra.

Design Standards for Urban Infrastructure, 14 Urban Open Space, Urban Services, Canberra.

Design Standards for Urban Infrastructure, 15 Playgrounds and Playground Equipment, Urban Services, Canberra.

Design Standards for Urban Infrastructure, 18 Public Toilets, Urban Services, Canberra.

Design Standards for Urban Infrastructure, 21 Irrigation, Urban Services, Canberra.

Design Standards for Urban Infrastructure, 22 Landscape, Urban Services, Canberra.

Design Standards for Urban Infrastructure, 23 Plant List, Urban Services, Canberra.

Design Standards for Urban Infrastructure, 25 Urban Park and Open Space Signage, Urban Services, Canberra.

24.3 Definitions

Definitions of terms used in this document include the following -

24.3.1 Sportsground

The term sportsground refers to the total area provided at any site or complex for organised sport. Sportsgrounds usually comprise an irrigated playing surface and surrounds that may or may not be irrigated. Their size allows multiple options for field layout.

24.3.2 Field

The term field refers to the marked out area for one sport. A field can accommodate one game of any sport including Rugby, Football, Hockey, Australian Rules or Cricket depending on the marking.

24.3.3 Neighbourhood Oval

The term neighbourhood oval refers to a sportsground that is generally located adjacent to both a suburban primary school and the local shopping centre. They are usually one basic sport unit in size. Together the three land uses generate a focus of activity for the neighbourhood. Usage is for both senior and junior match play and training as well as use by schools. Informal use by local residents is also significant. Sporting clubs have adopted neighbourhood playing fields and pressures of use have resulted in the need to provide both a toilet block and training lights to AS standard for Football.

24.3.4 Community Recreation Irrigated Park (CRIP)

In suburbs where there is no District Playing Field, District Park or School Oval, a Community Recreation Irrigated Park will be provided. Generally 0.75 to 1.0 hectare, this space will provide an irrigated low maintenance play space to support informal physical activity and recreation activities. Where possible, will be connected to a non potable water source for irrigation purposes and utilise a drought tolerant grass species (e.g. couch). The construction of the irrigated area will be same as that used for a Neighbourhood Oval or District Playing Field.

As a guide a Community Recreation Irrigated Park would generally include the provision of a toilet block, community barbeque and picnic shelter. Other facilities that could also be considered include the provision of a children's playground, basketball half court, tennis wall and cricket nets. A variety of low maintenance, drought tolerant tree species should also be provided from an aesthetic perspective and to provide shade.

It should be noted that the irrigated grass area does not need to be uniform in its shape or design, but it should be large enough to accommodate a range of informal recreation pursuits and activities. The alignment of a CRIP is not a critical factor as they involve informal sporting use and recreational pursuits.

24.3.5 District Playing Fields

The term district playing field refers to sporting facilities that serve several suburbs and comprise a number of fields with at least one pavilion. They are often associated with a high school and have a total area of at least eight hectares. District playing fields are heavily used for senior and junior competition and training and commonly they become associated with one particular sporting code, whereby several games can be played concurrently at the one venue, for ease of administration and organisation of voluntary officials.

These facilities are also heavily used for night time training under lights and appropriate lighting and other safety requirements are needed.

24.3.6 Enclosed Oval

The term, enclosed oval, refers to sporting facilities that are totally fenced to enable the collection of admission fees and to provide security. Enclosed Ovals will have larger pavilions with double changed rooms and with a grandstand above. Both covered and uncovered seating for approximately 12oo spectators will be provided. They should have floodlighting to match play standard at a minimum level of 300lux. The Enclosed ovals may be leased for 10 or more years to a sporting code. They attract a high intensity of competition use and finals and grand finals are usually staged there. Training is not permitted on enclosed ovals because of the likelihood of excessive wear on the turf surface and to ensure a quality sports turf surface that can cater for the higher levels of competition sport.

24.3.7 Turf Wicket

The term turf wicket refers to a number of wickets (usually a block of four or five) that are located on a District Playing Field or an Enclosed Oval. These wickets must be located between football fields to avoid play on them during the winter. They are constructed with a special clay wicket soil and grassed with a specified. couch grass variety.

24.3.8 Concrete Wicket

The term concrete wicket refers to a single cricket wicket constructed from concrete and in some cases covered with a synthetic grass. These wickets are located on both Neighbourhood Ovals and at some District Playing Fields-(cricket wickets are not placed on a basic unit if it is to be an AFL field). They must be located between sports fields. They should be covered with a synthetic sports turf suitable for cricket upon completion-this should not be done until the concrete has cured for at least 14 days.

24.3.9 Cricket Practice Nets

The term cricket practice nets refers to areas dedicated to structures that are usually fenced areas that have several concrete or synthetic turf practice cricket wickets within them. These facilities are associated with cricket wickets.

24.4 Performance Statement

The performance requirements for sportsgrounds will be outlined in the Brief or Deed Agreement documentation.

The primary objective is to provide an irrigated grass sports field surface within a playing field arrangement that provides acceptable levels of access, safety, amenity and convenience for all users. This is achieved by addressing the following -

- provide the type of sportsground appropriate to ACTPLA planning hierarchy,
- provide north/south orientation,
- provide appropriately sized sports fields,
- provide buffer distances to adjacent development,
- provide an adequate level of safety relative to risk assessment,
- allow for runoff and rainfall events within acceptable time limits,
- provide acceptable and durable grass cover,
- provide playing surfaces that are of acceptable hardness with the ability to be decompacted to safe user levels,
- comply with WSUD guidelines,
- provide appropriate lighting for sportsgrounds to the required Australian Design Standard,
- provide irrigation to maintain appropriate sportsground playing surface conditions,
- provide ancillary facilities appropriate to the standard of playing field,
- provide car parking appropriate to the demand generation,
- provide convenient and safe access to sportsground facilities for vehicles, cyclists, pedestrians and disabled persons,
- provide appropriate access for emergency and service vehicles,
- provide for shade, shelter and amenity landscaping that is appropriate to the use areas, and
- provide appropriate access for maintenance vehicles and legitimate users, whilst preventing (through fencing and/or bollarding) access to unauthorised people who may cause vandalism.

24.5 Standards

24.5.1 Siting

Siting of sportsgrounds shall have appropriate regard for climate, geology, topography and the environment.

The site for sportsgrounds should be relatively level in order to reduce earthworks. Multi-level configurations are to be avoided. Playing fields shall be orientated north-south along the direction of play. Cross falls are preferable to longitudinal grades.

The standard orientation is between North and 15 degrees east of North. Certain sports may, with the approval of Sport and Recreation Services, be orientated between 20 degrees west of North and 35 degrees east of North.

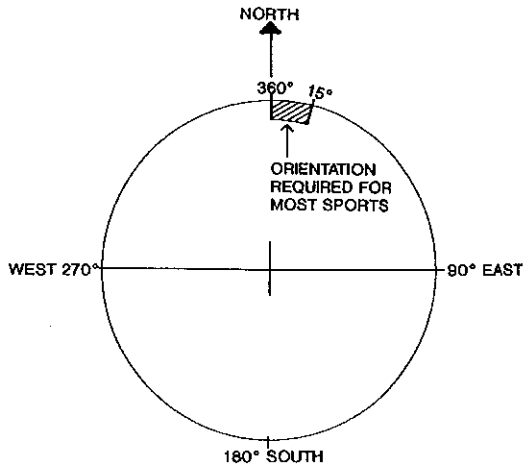


Figure 24.1 Orientation Diagram

Minimum offsets from playing fields shall be established to adjacent uses such as -

- behind goal posts, 30 metres to residential lease boundaries and 40 metres to roads,
- side boundaries, 20 metres to residential lease boundaries and 30 metres to roads.

Separation distances between adjacent fields shall be not less than 10metres. Minimum separation distance from sportsground to general obstructions (e.g. light pole, fence, manhole cover, sump) shall be 5 metres.

Goal posts should not be located directly adjacent to roads, car parks, water bodies and drainage channels etc. Tree planting at an appropriate distance behind goal posts at both ends of the playing field is desirable. Tree roots must not encroach onto the playing surface. Trees with aggressive root systems such as white poplars are unacceptable. Deciduous trees are preferable. Trees with red foliage should not be planted in line with cricket wicket ends.

As far as possible, evergreen tree canopy shadows shall not encroach upon the playing field between the hours of 9.00am and 3.00pm. Mature height listed in Design Standard for Urban Infrastructure 23 Plant List and winter solstice sun angle shall determine shadow extents.

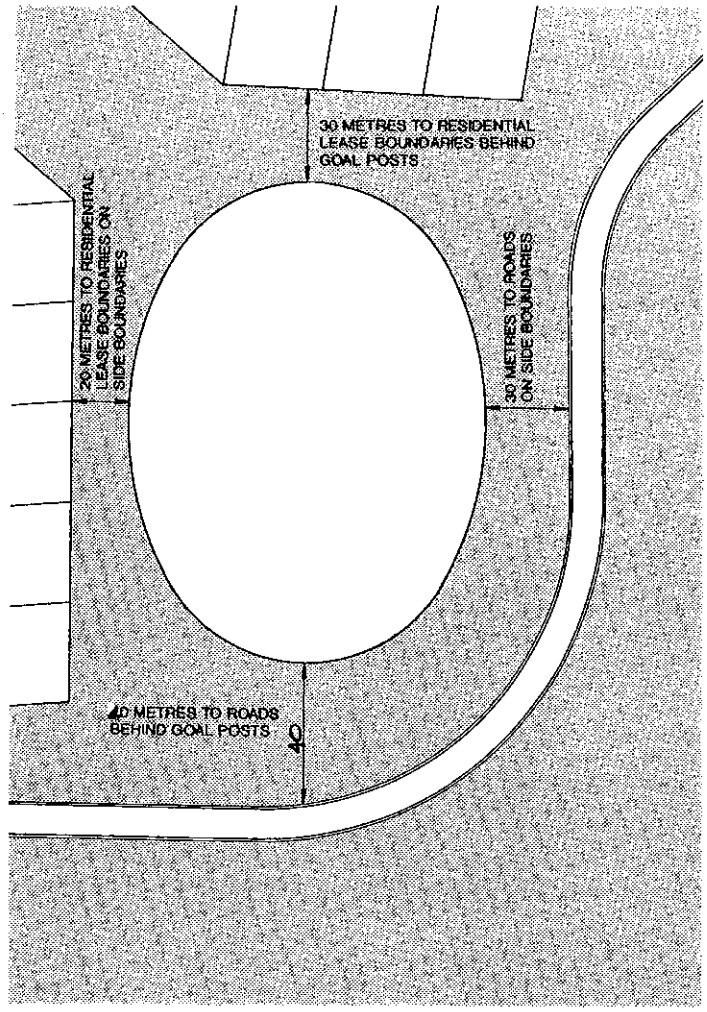


Figure 24.2 Separation Distances

Siting of playing fields within flood prone areas is allowable with approval from Sport and Recreation Services. Maximum inundation period is 1 hour. Siting of playing fields on areas of deep fill is allowable under some circumstances, only with appropriate consolidation and consultation with Sport and Recreation Services. Siting of playing fields on remediated refuse tips or garbage dumps is not recommended.

24.5.2 Dimensions

24.5.2.1 Neighbourhood Ovals

Neighbourhood ovals typically account for a total area of not less than 3.8 hectares. The sportsground area accounts for approximately 70% of the site area with the balance taken up with earthworks profiles, landscaped surrounds, setbacks from adjacent leases, roads and car parks.

There are three possible sportsground layouts, which provide design flexibility to suit almost any site. These layouts are -

1. Sports Combination Type 1A-this is the preferred layout and Sport and Recreations Services should be consulted prior to considering other options.
2. Sports Combination Type 1B

3. Sports Combination Type 2.

Common requirements of each sportsground layout for neighbourhood ovals include -

- continuation of the sportsground ground profile a minimum 5 metres beyond the marked extent of the sportsground,
- one North-South edge of the playing field shall allow for the marking of a rectangular sportsground 122 metres long.
- the extent of irrigation shall extend 6 metres beyond the sportsground marked extent,
- separation distances between adjacent sportsgrounds shall be not less than 10 metres.

Layout 1 is appropriate where a curved playing field boundary is desired. It allows for marking two Rugby or Soccer fields and an Australian Rules field. Figure 24.3

Layout 2 is appropriate where a more regular playing field boundary is desired. It allows for marking two Rugby or Soccer fields and an Australian Rules field and a cricket field. Figure 24.4

Layout 3 is appropriate where a fully rectangular layout conforms to the topography and the adjacent land uses. It allows for marking neither an Australian Rules field nor a Cricket field. Figure 24.5

NOTE: All sportsground designs must be approved in writing by Sport and Recreation Services, particularly the configuration to be used on each site.

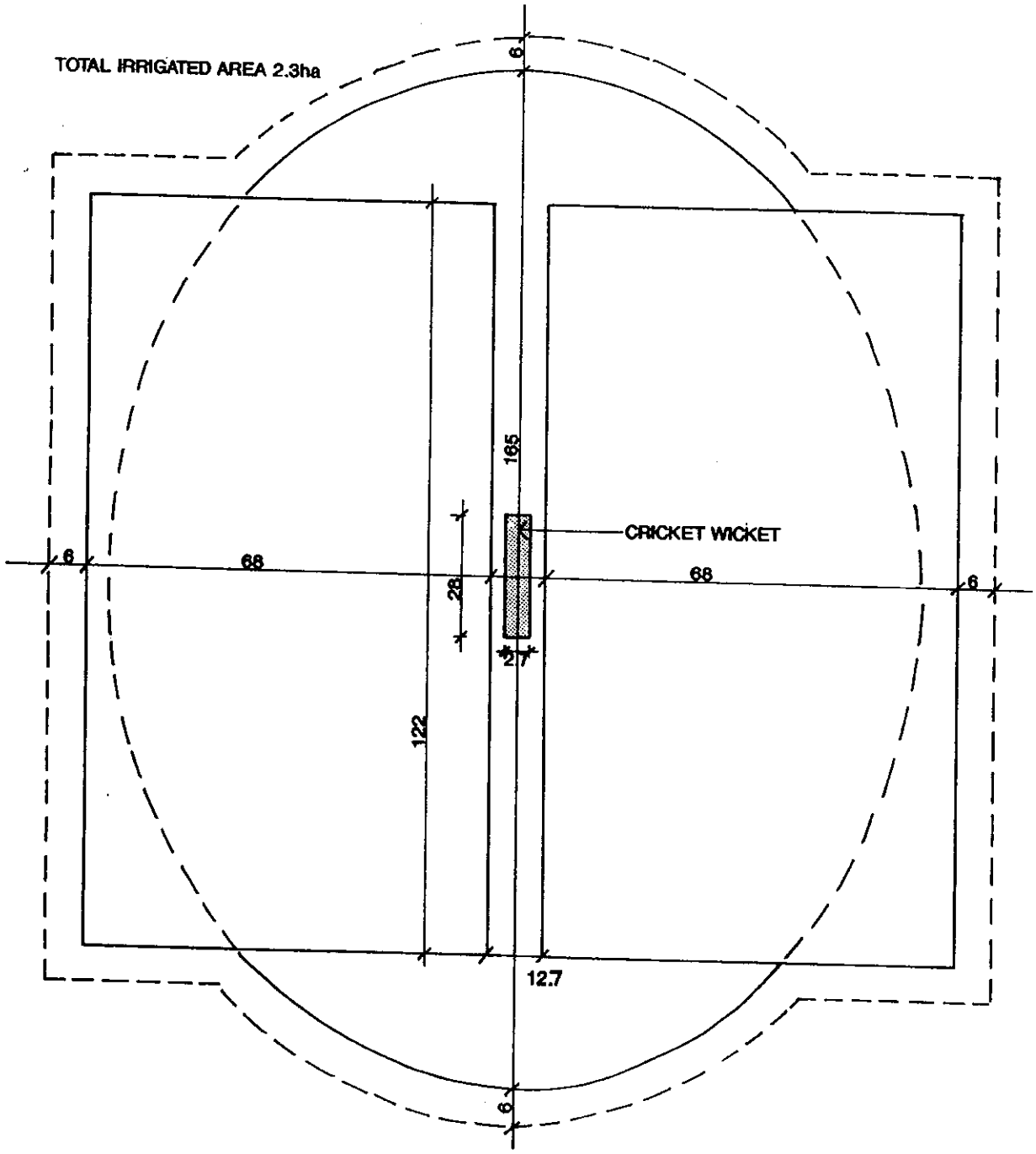
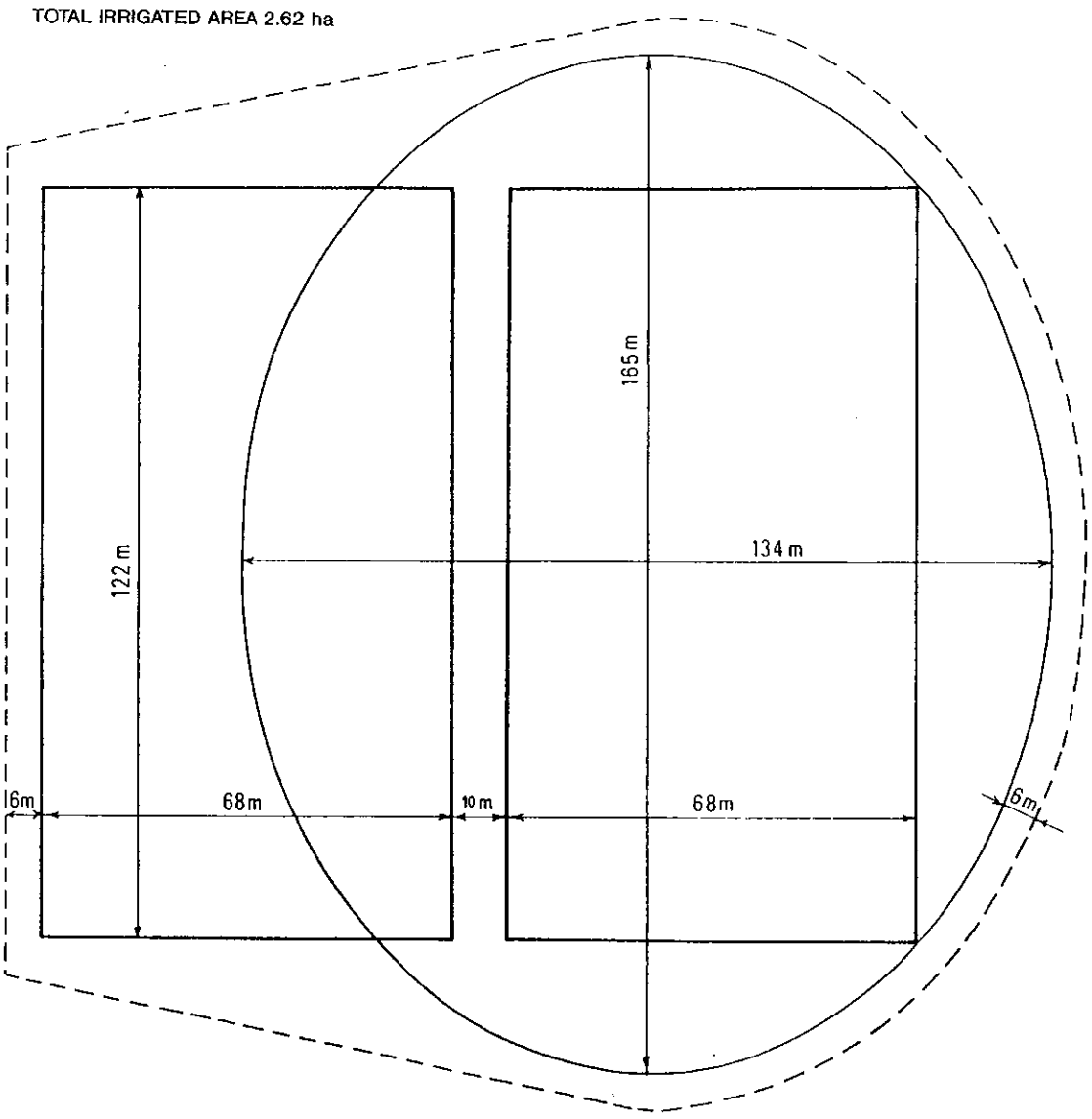
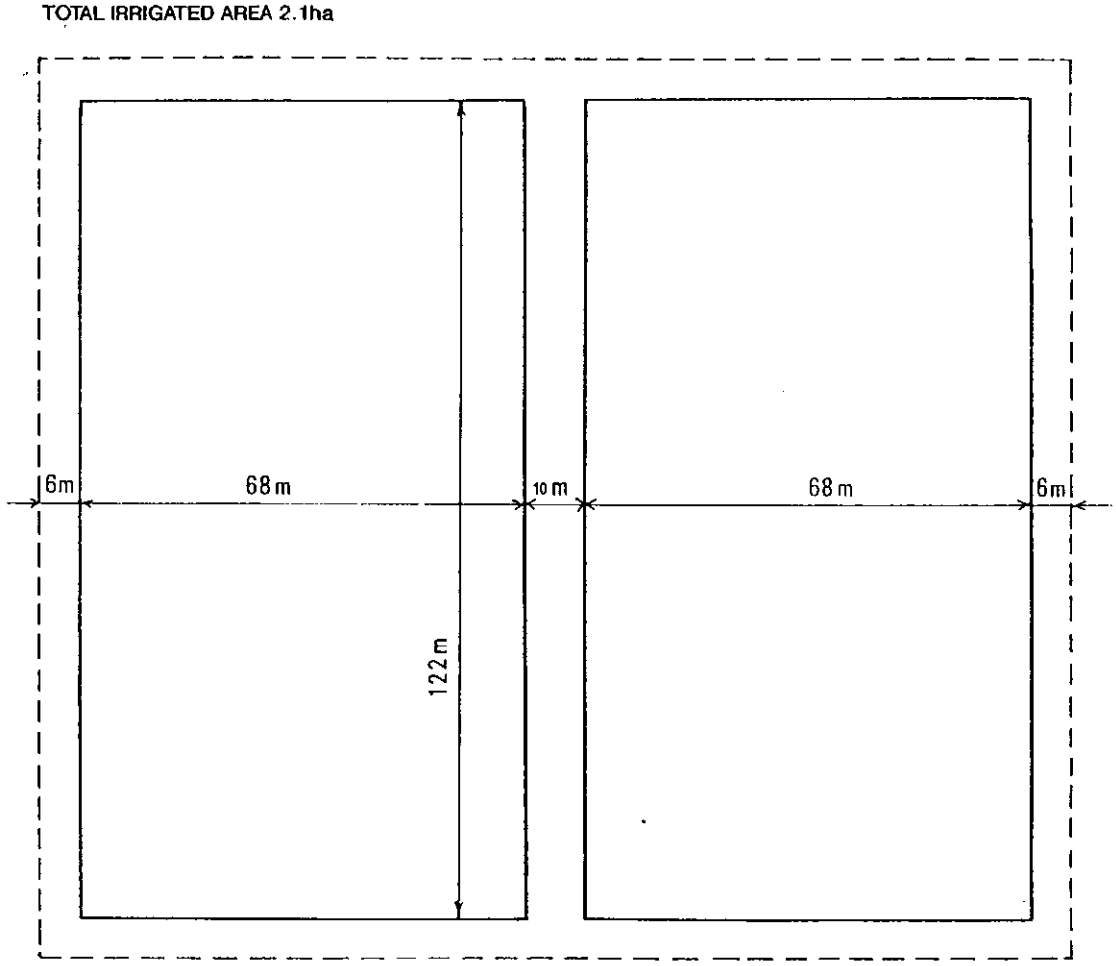


Figure 24.3 Sports Combination Type 1A



The retangular fields are combination fields which serve Soccer and the Rugby codes. By placing them to one side the combination may better suit a curved site boundary. The disadvantage is that a cricket pitch in the middle of the oval falls within a football field.

Figure 24.4 Sports Combination Type 1B



Fields are combination fields which serve Soccer and Rugby codes.

Figure 24.5 Sports Combination Type 2

24.5.2.2 District Playing Fields

District playing fields occupy large areas of land, 8 to 12 hectares is normal.

District playing fields comprise of multiples of the selected Sports Combination layout. Most district playing fields consist of 2 or more Sports Combination layouts. Sports Combination Type 1A is the basic design module. Use of any other Sports Combination Layout shall occur only with written approval of Sport and Recreation Services.

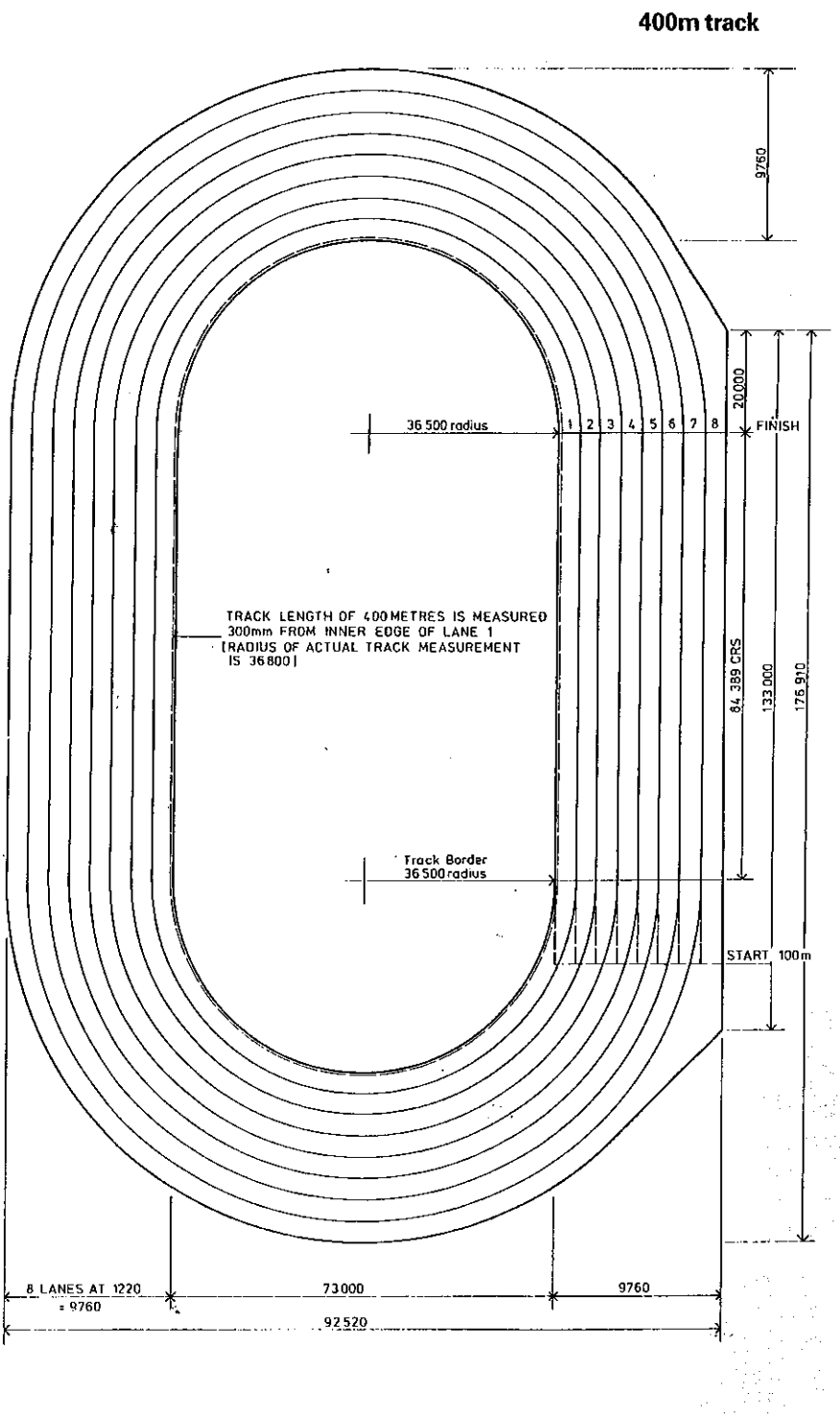


Figure 24.6 400m Athletics Track Layout

A modified District Playing Field layout shall be provided where a district playing field is required to incorporate a Little Athletics centre. A 400m Athletics Track and associated 100m sprint track shall

be provided on quality irrigated grass surface with longitudinal and cross fall gradients that permit effective conduct of junior or senior athletics. Details of the design shall be approved by Sport and Recreation Services. Detailed track design data can be sourced from The International Amateur Athletic Federation Official handbook.

Space for access, car parking, pavilion, earthworks profiles, landscaped surrounds and setbacks from adjacent leases and roads is in addition to the Sports Combination layouts.

Common requirements of each sportsground layout for district playing fields include,

- continuation of the sportsground ground profile a minimum 5 metres beyond the marked extent of the sportsground,
- the area of irrigation shall extend 6 metres beyond the sportsground marked extent and further around pavilions and other areas as specified in the Brief or Deed Agreement documentation,
- separation distances between adjacent sportsgrounds shall be not less than 10 metres.

The imposition of a District Playing Field into a sites' topography may generate large changes in level and excessive cut and fill. It may be more appropriate to design the levels for individual sportsgrounds within the playing field, with consequent lesser changes in level between sports fields. In this case the overall dimensions of the playing field will increase due to the 5 metres continuation of the sportsground ground profile and the extent of earthworks at the level change.

24.5.3 Neighbourhood Ovals and District Playing Fields using Sportsground Topsoil

24.5.3.1 General

Neighbourhood ovals and district playing fields rely on surface drainage with a limited, but nonetheless very important amount of natural infiltration through the sportsground topsoil to the subsoil. Correct preparation of the subgrade and playing surface final grading is the most important design component affecting the performance of a sportsground. Less than satisfactory subgrade design is frequently attributed to long-term problems with drainage and sportsground performance. Remedial practices such as topdressing and other surface management practices are ineffectual in addressing poorly designed and constructed subgrades.

Several configurations for the subgrade are possible and each has advantages for particular sites. The sportsground may have one continuous fall or a longitudinal ridgeline or be domed.

The playing surface design concept is a fall of 1 in 70, with no slope longer than 70 metres. The maximum slope length of 70 metres is not negotiable.

This means that for the playing surface the maximum run to a water collection point is 70 metres. Depending on site conditions, the slope may be varied to a maximum of 1 in 50 once it is off the sportsground. Slopes of greater than 1 in 70 may be used to speed up the removal of water that has reached the edge of the sportsground provided the safety of the players and spectators is not compromised. These steeper slopes shall occur beyond the 5 metres edge of the sportsground.

24.5.3.2 Subgrade

The slope of the subgrade shall be continuous with no depressions or minor ridges. The subgrade shall be consolidated to no more than 95%MMDD and the use of rollers and heavy machinery is not encouraged. This subgrade MUST drain, therefore it MUST NOT be over compacted to achieve a stable and true bed for the subsequent addition of sportsground topsoil. Some differential settlement of the subgrade may occur and cause depressions and ponding at a later date. This is more preferable

than a base that will not drain and badly affects the playing fields performance. Depressions can be top dressed out of the playing field surface.

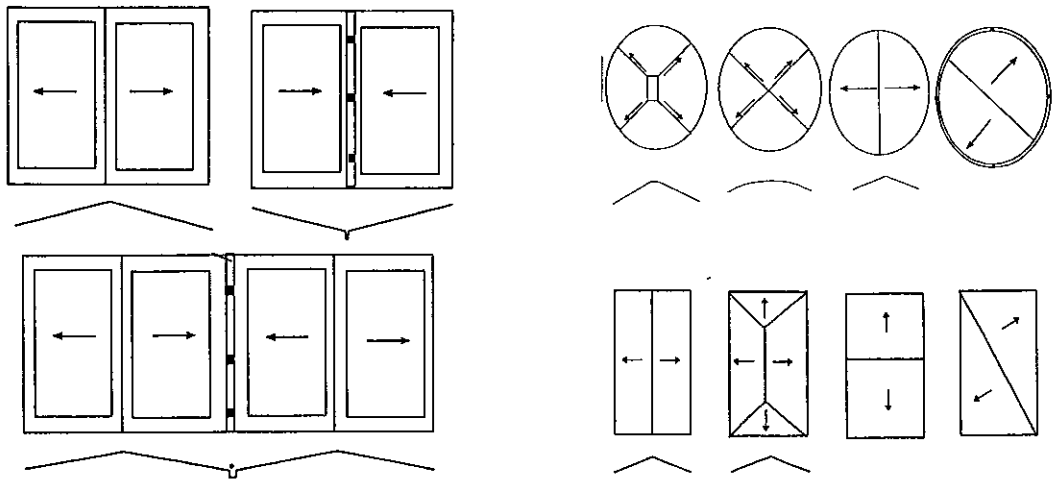


Figure 24.7 Subgrade Configuration Options

Once the subgrade levels are achieved, the subgrade shall be ripped to 350mm and lightly harrowed to break up large clods. Ripping and harrowing of the consolidated subgrade is necessary to ensure that the base will drain. If there have been areas where the base has been over compacted or glazed by the use of heavy machinery, these shall be broken up to allow drainage down through the profile to occur.

The subgrade SHALL NOT be worked when it is wet. This is of paramount importance and shall be written into the specifications and supervised to ensure compliance. Large machines such as large bulldozers and large scrapers shall not be used and this shall be included in the specification. It shall also be strictly supervised because if used it will compact the base and this has long term effects on drainage.

The limits on the size of the machines to be used shall be clearly stated in the tender documents and all tenderers should have this point drawn to their attention so the use of smaller machines can be appropriately included.

Ripping does not adversely affect the initial consolidation if done uniformly over the whole surface. Any minor inconsistencies in the resultant subgrade surface can be adjusted within the sportsground topsoil depth.

Once the subgrade has been ripped, gypsum shall be added at the rate of 500g per square metre– this applies to all subgrades.

Irrigation shall be installed after the subgrade has been ripped. The irrigation shall not be installed until the subgrade has been ripped as this seriously inhibits the proper ripping of the whole subgrade. This process may make it a little more difficult for the irrigation trenching however this sequence of works shall not be compromised.

24.5.3.3 Sportsground Topsoil

Neighbourhood ovals and district playing fields shall be finished with sportsground topsoil as defined below. Sportsground topsoil depth on neighbourhood ovals and district playing fields shall be **250mm**.

Testing procedures shall be those outlined in Section 24.5.3.4A and should comply with laboratory Testing Procedures at Appendix 1 (page 46-56).

24.5.3.4 Sportsground Topsoil Specification

The sportsground topsoil for the playing fields shall be a sandy loam and the following procedures shall be followed to procure the correct soil.

Use the following Particle Size Distribution as a starting point. Once a soil meets this specification, or comes close to it, it shall be tested to meet the remaining criteria.

Fraction Size Name	**Sportsground Guidelines specification**		
	Diameter of Sieve (mm)	**Allowable Range % Retained on Sieve**	
Gravel	2.00	≤ 3%	No more than 10% including 3% fine gravel
Very Coarse	1.00	≤ 7% to 10%	
Coarse	0.50	At least 60% particles in this range	A Minimum of >60% in these combined sand fractions
Medium	0.25		
Fine	0.15	20% Maximum	
Very Fine	0.05	5% Maximum	Combined Fractions No More than 10%
Silt	0.002	5% Maximum Allowable	
Clay	<0.002	3% Maximum Allowable	

*** Gravel plus Very Coarse should not exceed 10% total.**

The analysis shall be carried out using USA Department of Agriculture (USDA) sieves using the wet sieve analysis method.

Compacted Hydraulic Conductivity

The sportsground soil **shall** conform to the following hydraulic conductivity specifications:

Use the drop method outlined in McIntyre and Jakobsen (1998). The compacted hydraulic conductivity of the soil shall exceed:

150mm per hour at 16 drops; and

5mm per hour at 32 drops.

Bulk Density

The bulk density of the soil, before the addition of any sphagnum peatmoss or cocoa fibre shall not exceed 1.58g/cm^2 at 16 drops. This test is carried out as part of the drop test for hydraulic conductivity.

Water Holding Capacity

The water holding capacity of the soil, measured at 1 metre suction, as described in McIntyre and Jakobsen (1998), **shall** be equal to or exceed 14% by weight, when Cool Season grass is being used, and 12% by weight when Couch grass is being used.

Note. **Most soils that meet the compacted hydraulic conductivity criteria will not have a water holding capacity, at 1 metre suction, of 14%.**

Addition of Sphagnum Peatmoss or Cocoa Fibre

If a soil is presented that meets all of the above criteria, but has a water holding capacity below the prescribed level (12% or 14%) this soil is acceptable if the prescribed water holding capacity is reached by the addition of either Sphagnum peatmoss or cocoa fibre. The amount of sphagnum peat or cocoa fibre needed to increase the water holding capacity shall not exceed 2.5% by volume.

Note. **Under no circumstances should the water holding capacity be achieved by adding more silt and clay.**

Total Dissolved Salts

Total dissolved salts shall not exceed 100ppm. in a 1:5 soil: distilled water suspension

pH

The pH range shall be between 6.0 and 7.0 (in 1:5) soil to deionised water, and if outside this range it should be amended before delivery to site.

Other selection Criteria (Blake GR 1980)

Parameter	Recommended Value
Gradation Index	Ideally 4-5; acceptable range 3-6. Lower levels indicate a higher potential for surface instability
Fineness of Modulus (Fm)	1.7 to 2.5
Uniformity Coefficient (CU)	CU=D_{60}/D_{10}, where are an acceptable value is 2 to 4. A higher value indicates less particle uniformity. Optimum value is 2 to 3. A value < 2 is less likely to pack tightly but may indicate an unstable surface. Conversely a value >4 will have a tendency to pack tightly.

Silt:Clay ratio	Silt contents>2.5 times that of the clay fraction are rejected entirely if alternative soil sources can be found. Aim for silt/clay ratio of 2.0 or lower gives an even greater safety factor.

The Fineness of Modulus (Fm) and Uniformity Coefficient (Cu) are determined from a graph of the concentration of particles versus size. The grain size graph is a useful tool in comparing sands and also determining the Fm and Cu. Grain size graphs are used to design and select materials for drain systems. The Cu is a numeric estimate of how a sand is graded. The term graded relates to where the concentrations of sand particles are located.

Sand with all the particles in two size ranges would be termed narrowly graded and would have a low Cu value. Sand with near equal proportions in all the fractions would be termed widely graded sand and would have a high Cu value. The cu is a dimensionless number or in other words it has no units. For turf applications, the Cu values we are looking for range from 1.8 to 4.0.

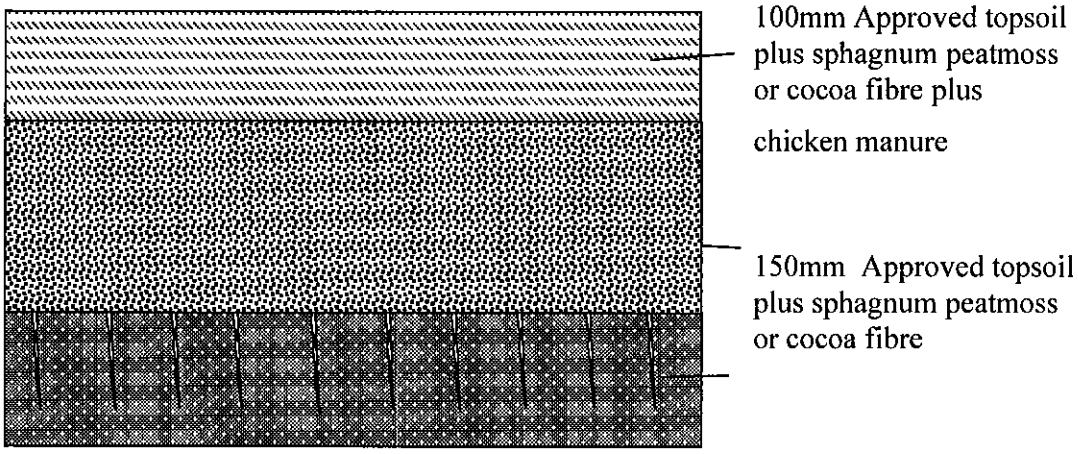
Widely graded materials usually offer firm turf surfaces and will be less prone to developing divots and ruts. Football pitches are firmer with higher Cu materials. The goal is to balance physical stability with the desired drainage characteristics. The materials with higher Cu values also have a more tortuous path for water to move through and will have lower infiltration rates or permeability. Usually the water retention is greater with sands that have a higher Cu.

Addition of Chicken Manure to the top 100mm of Topsoil

Once a suitable topsoil has been selected, and any addition of sphagnum peatmoss or cocoa fibre have been included to increase the water holding capacity to the approved level, composted chicken manure should be added to the topsoil to be used in the top 100mm of the profile. The chicken manure should be incorporated into the topsoil prior to placement and under no circumstances should in be incorporated using rotary hoeing. The preferred method is to lay the 150mm of topsoil and then apply the second layer of 100mm with the chicken manure pre-blended.

This material should be composted so there is no residual ammonia present. The total added material should not exceed 5% by volume. A suitable material is "Broiler Chicken Manure" which is a mixture of wood shavings and chicken manure from under caged birds.

This material should be well composted and dry. It should have no pieces greater than 6mm in size. It should be totally blended by drop mixing at the soil yard and approved before delivery to the site.



Cross section of the final profile

24. 5.3.4A COLLECTION OF SANDY LOAM SAMPLES FOR LABORATORY TESTING

Samples being collected to be sent for laboratory testing should be done in the following way:

- Take samples from the stockpile following AS 1289.1.1. 2-3kg is needed to carry out all of the appropriate tests.
- Double bag the samples in strong plastic bags and, attach clear labels to the samples. It is also good practice to place a label inside the bag as well.

24. 5.3.4B LABORATORY PROCEDURES FOR TESTING SPORTSGROUND SOIL

There are many different methods used for the measurement of hydraulic conductivity in soils, and these different methods can give different answers.

The test required for the testing of Sportsground Soils is the *Drop Test* as developed by Dr Bent Jakobsen for the ACT Government. This test determines the Compacted Hydraulic Conductivity and Bulk Density at several different compaction levels. The determination of the Water Holding Capacity at one metre suction (approximates field capacity) is also done in conjunction with this test.

These tests developed by Dr Jakobsen are simple and effective. The results of these tests can be used in the meaningful assessment of soils and sands for sports turf. This method requires no expensive laboratory equipment, and has proved to be highly repeatable.

Note

It is very important to ensure that the sample is at field capacity when the soil is placed in the tubes prior to the test. Failure to ensure this will result in the wrong result. It is also very important to ensure that the tube is dropped from the correct height every time and that it falls vertically. If the tube falls on an angle rather than flat on the bottom of the tube, it can de-compact the sample.

Treatment of Topsoil Samples on Arrival at the Laboratory.

It is **imperative** that soil samples are prepared properly when they arrive at the laboratory prior to testing. Because of the small sample size used in the following tests, it is crucial that the soil is homogeneous and uniformly moist when prepared for testing. Thus the special procedure for preparation of the soil sample before testing, as described below must be strictly followed.

2-3 kilos of soil usually arrives in (sometimes more) in a bag or container. Weigh the bag and its contents and record the weight. Pass the contents of the bag through a 6mm sieve and collect on a sheet of plastic. If there are any large pebbles that do not pass through the sieve, collect and weigh them. If they represent less than 0.5% of the total sample, they may be disregarded, even though 0% is specified. However if they represent more than 0.5% this must be reflected in the mechanical analysis figures.

If there are any lumps of soil, these should be broken up by hand and passed through the sieve – do not use force that would create dust in this process.

Mix the whole sample on the plastic sheet by lifting the sides and rolling the sample until there is a uniform mix. This is necessary because the moisture content can vary within the sample when it is taken from different parts of the stockpile. It is imperative to obtain a sample with a uniform moisture content. Do not just take a sample out of a bag and use this for the test.

Take about a 1Kg sample of this mixed material and place it into a 2 litre (approx) plastic container with a tight fitting lid. Take two samples from the plastic container to determine the moisture content of the soil in the container, and one to place on the Suction Plate. (Sections 1 and 2, Laboratory Procedures for Testing Sportsground Soil), and replace the lid immediately

Once the water content of soil in the container and the water content of the soil from the suction plate (field capacity) are determined, it is calculated how much water must be added to bring the remaining soil in the container up to field capacity. This amount is measured out in a measuring cylinder and spread carefully and slowly over the soil surface in the container. Leave the soil in the closed container to stand overnight, then gently mix it by rolling the closed container in all directions. The soil in the container is then ready to be used for the Saturated Hydraulic Conductivity and Bulk Density test (Sections 3, Laboratory Procedures for Testing Sportsground Soil).

These Laboratory procedures are extremely important and must only be carried out by Laboratories approved by the ACT Government.

Approved Laboratories

Ground Science Pty. Ltd.

Factory 11, 820 Brock Street

Thomas Town Vic 3074

Phone 03 9464 4617 Fax 03 9464 4618

Email ernie.gmehling@optusnet.com.au Website www.groundscience.com.au

Sydney Environmental & Soil Laboratory Pty. Ltd.

16 Chilvers Road

Thornleigh NSW 2120

PO Box 357 Pennant Hills NSW 1715

Phone 02 9980 6554 Fax 02 9484 2427

Email info@sesl.com.au Website www.sesl.com.au

24.5.3.5 Procuring the Sportsground Topsoil

The situation where Contractors tendering for the construction are required to source the topsoil has proved to be a major problem over the past twenty years. Typically when Contractors are tendering they approach soil yards with the soil specifications and are assured that they can supply for a particular price. Once the contract is awarded, often to the contractor with the cheapest soil, it is discovered that the soil supplier cannot supply the soil that meets the specification.

To avoid this occurring two possible approaches are;

A Separate Contract is Let for the Sportsground Topsoil

Let a separate contract to procure the sportsground topsoil, guaranteeing its quality and availability.

or,

Sportsground Soil Suppliers Nominated

The following procedures shall be used for selection of nominated suppliers:

- Call for Expressions of Interest for the supply of the sportsground topsoil using the specifications outlined above.
- The sportsground soil suppliers shall submit samples of the proposed sportsground soil to one of the two following specified laboratories (Ground Science, 56 Mercedes Drive Thomas Town Vic, Phone 03 9464 4617 Sydney Environmental and Soil Laboratory Pty Ltd. PO Box 357 Pennant Hills NSW 1715. Phone 02 9980 6554). Other laboratories may be used with written approval of Sport and Recreation Services.
- These laboratory procedures are complex and these two laboratories are the only two accredited to do the tests. This will ensure that the laboratory procedures are comparable when assessing the sportsground soil.
- The sportsground soil suppliers shall demonstrate that the sportsground topsoil offered for use in any mixture is from a large reliable deposit and there shall be at least ten samples from different parts of this deposit supplied and tested.
- Any manufactured soil shall meet all of the specifications outlined above.

If there is more than one sportsground soil supplier with sufficient sportsground soil that meets the specification, both may be nominated as potential suppliers.

Relationship Between Sportsground Soil Supplier and the Contractor.

There are two options for the supply of the sportsground topsoil to the Contractor for the facility.

Option 1 - The ACT Government Purchase the Sportsground Topsoil

To ensure that the sportsground topsoil is sourced at a value for money price the sportsground topsoil shall be purchased by the ACT Government (either Sport and Recreation Services directly or another agency on Sport and Recreation Services behalf), who will become the supplier to the Contractor at the purchase price of the sportsground topsoil (or some such arrangement that complies with the procurement rules).

Option 2 - Sportsground Topsoil is Tested and Suppliers are Nominated

The second option is for the soil supplier(s) to be nominated by Sport and Recreation Services as the only source of the sportsground topsoil and the Contractor must use the nominated supplier(s). This leaves the Contractor to negotiate a price for the sportsground topsoil with the supplier(s).

24.5.3.6 Supply of the Sportsground Topsoil to the Job

The supply of sportsground topsoil to the construction site shall be strictly monitored. These procedures shall be followed:

- The soil supplier must prepare the sportsground topsoil in 500m^3 stockpiles;
- Each stockpile must be tested using the Australian Standard AS 1289.1.2.1 for testing a stockpile. Samples shall be taken by the Superintendent (someone other than the Contractor or the soil supplier);
- The samples shall be tested by the nominated laboratory to ensure that the sportsground topsoil conforms to the specification;
- The sportsground topsoil from that stockpile may then be delivered to the site. **Soil that has not passed the tests shall not be delivered onto the site under any circumstances;**
- Sampling of the sportsground topsoil in-situ shall also be carried out to ensure that it has met the specifications.

The process of testing and approving every 500m^3 stockpile is essential to ensure adequate quality control. In the past this has not always been adhered to and has led to problems in the future with parts of a sportsground under performing. The Superintendent shall employ a "Clerk of Works" to supervise the delivery of sportsground topsoil to the site and its compliance with the specifications.

24.5.3.7 Playing Surface Construction

After the addition of a uniform depth of sportsground topsoil, a final grading of 1 in 70, with maximum runs of 70 metres, shall be achieved. This facilitates the speedy collection and removal of surface water during and after rain.

Design grades, off the playing surface, as steep as 1 in 50 may, with approval, be acceptable where site conditions dictate.

Surface slope shall be parallel to the subsoil slope. The sportsground topsoil layer shall be of uniform depth.

PLACING TOPSOIL

The Consultant shall specify the following elements in the construction specification which shall be in the form of Technical Exception Clauses to the Standard Specification for Urban infrastructure Works (the "Specification").

The topsoil shall be placed over a subgrade prepared as follows:

- An initially prepared surface parallel to the proposed finished surface compacted to 90% of the Modified Maximum Dry Density and free of weeds.
- Following acceptance of the compliant tolerance survey (specify grid interval and level and straightness tolerance as Technical Exception Clauses of the Specification if other than specified in Section 3 of the Specification) by the Superintendent, the surface to be ripped to a depth of between 150 to 200 mm normal to the direction of the slope and lightly harrowed to break up large clods and Gypsum (specify rate) applied.
- The irrigation to be installed in the prepared surface.

The supplied topsoil must be spread over the prepared subgrade in a manner which meets the following criteria:

- The topsoil must be of a constant depth and have an even slope meeting the tolerances nominated in the construction Technical Exception Clauses of the Specification. The Consultant shall specify the tolerances in terms of design level, thickness and straightness.
- The topsoil must meet the characteristics of the supplied topsoil at all times during placing and at the completion of placing.
- The topsoil shall be placed in two layers, the unamended soil forming the initial layer and the amended soil forming the top layer.
- The soil must be placed in a manner which avoids repetitive passing over, and thus over-compacting, soil already placed.
- The dry bulk density of the placed topsoil must be in the range of 1.45 to 1.55 t/m^3 at all times during the placing process. The topsoil MUST NOT be over-compacted at any stage during the placement process as this has the potential to alter the characteristics of the blended soil and any amendments. ALL REWORKING OF OVER-COMPACTED PLACED MATERIAL IS STRICLY PROHIBITED AND WILL NOT, UNDER ANY CIRCUMSTANCES, BE ACCEPTED BY THE SUPERINTENDENT OR TaMS SPORT AND RECREATION SERVICES. The density of the placed soils must be continually checked using a nuclear surface moisture-density gauge calibrated for the moisture content of the topsoil material being placed.
  The Consultant must specify in the construction Technical Exception Clauses of the Specification that any soils placed in compacted state exceeding the specified density tolerances will be rejected and required to be removed and replaced with a conforming soil and any incorporated amendments supplied by the Soil Supplier. The cost of removal, supply of new materials and their placement shall be specified as all being at the construction Contractor's expense.
- The construction Technical Exception Clauses must also specify the following contractual requirements to be met by the Contractor:

- Nomination of the equipment proposed to be used by the Contractor to install the topsoil to achieve the requirements of the construction Technical Exception Clauses of the Specification.
- The provision of a Method of Work statement outlining the processes to be adopted by the Contractor to achieve the required quality of the installation using the nominated equipment.
  - Quality Assurance measures to be implemented contained within a Project Management Plan (PMP).
- HOLD and WITNESS points to be used to control the quality of the placement.
- The provision of a test strip measuring 10m x 100m demonstrating in the presence of the Superintendent the use of the nominated Method of Work procedures achieves all the requirements of the Technical Exception Clauses to the Specification. The installation and Quality Assurance testing of the materials in the test strip will constitute a HOLD POINT. A satisfactory disposition of the Hold Point will be: conformance to the Technical Exception Clauses of the Specification and acceptance by the Superintendent and TaMS Sports and Recreational Services. Should the test strip meet the specification requirements it may be incorporated into the final surface, however the test strip must be identified with stakes and recorded in x and y coordinates.
- The supplied topsoil shall not be placed if the moisture content exceeds the Water Holding Capacity of the material. The Contractor must supply details within its Method of Work statement of how it plans to achieve the required density and other tolerances of the material in place with a varying range of moisture content within the material.
- The Contractor must allow adequate time in its construction program to achieve a conforming product.
- Extensions of time due to non conforming product and time to achieve a conforming product will not be granted.
- Materials contaminated by spillage of petroleum products for construction equipment will be rejected and must be replaced at the contractor's expense
- The Principal will only supply and deliver to the site adequate material to achieve a density in place of 1.45 to 1.55 t/m^3 plus an 8% allowance (measured by volume) for construction tolerances. It will be the Contractor's responsibility to check and verify the volume/tonnage of material supplied and advise the Superintendent of the adequacy of the material to meet its contractual obligations. The Contractor shall, as part of its PQP, nominate the methods to be used to monitor the volume/tonnage of material as it is placed.
- Insitu bulk density by nuclear surface-moisture density gauge, hydraulic conductivity and the rate of testing of the installed material are to be specified as part of the specification requirements.

Notwithstanding the requirements of the Technical Exception Clauses of the Specification, the Consultant shall assist ACT Procurement Solutions and TaMS Sports and Recreational Services in the preparation of a Procurement Plan for the project.

The Procurement Plan must include as part of the Tender Assessment Criteria the following:

- There must be a pre-tender meeting to inform the Tenderers of the specification requirements for the placing of the topsoil, the information to be supplied with the Tender to assist in the assessment of the Tender.

- The Tenderer in its Tender must be able to adequately demonstration that the requirements of the construction specification can be met.
- The Tenderer shall provide examples where the proposed construction equipment and methodologies proposed for this project have been successfully used in past projects to achieve similar results to those specified in the construction specification using similar topsoils and the nominated amendments.
- The Tenderer shall provide referees to the nominated past projects and their contact details.
- The program for the procurement of the project must consider the optimum time for the planting of the turf stolons or other turf forms.

24.5.4 "Premier" playing fields with subsurface drainage and sportsground sand

24.5.4.1 General

This construction design is to be used only when specifically requested by Sport and Recreation Services.
At all other times the specification for topsoil at 24.5.3.4 is to be used.

This method of construction uses the technology of high draining, non compacting sand growing medium over a gravel layer with sub-soil drains. This structure, although expensive to construct, allows the surface to drain at a rate in excess of 100mm per hour, whilst still allowing excellent grass growth.

The construction of these types of playing fields shall be carried out to a very high degree of engineering expertise, as each layer shall have a tolerance of about 5mm. These very high standards of design, sportsground sand and gravel selection and construction precision shall be followed. Deviation from the prescribed standard will not achieve the desired sportsground surface. Under no circumstances shall there be compromises made on the quality of the sportsground sand. If the sportsground sand is too fine the drainage rate is drastically reduced and if it is too coarse, the top loses traction and becomes droughty in the summer. There is no compromise between this design and a conventional soil profile – it is either one or the other.

"Premier" playing fields with subsurface drainage and sportsground sand can be used when other grounds with conventional soil profiles would be unplayable in wet conditions.

24.5.4.2 Subgrade

Premier grounds are designed on a shaped impervious subgrade into which a system of subsoil drains is located. Examples of the range of impervious subgrade patterns include -

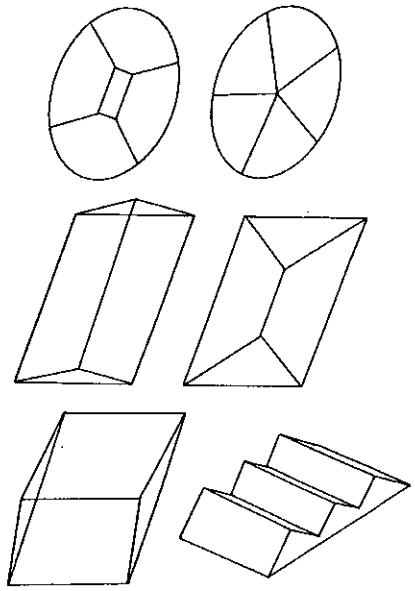


Figure 24.8 Impervious Subgrade Patterns

The subgrade shall be compacted to form an impermeable base, with subsoil drains located in trenches cut a minimum of 200mmm deep and 200-300mmm wide, depending on the pipe size in the trench. The pipes shall be surrounded on all sides by a minimum of 50mm of 3-5mm gravel. The overall slope of the subgrade shall be 1 in 100. There shall be a minimum slope on all pipes of 1:100.

The figure below illustrates in section the relationship between subgrade, subsoil drains, gravel drainage layer and the sportsground sand.

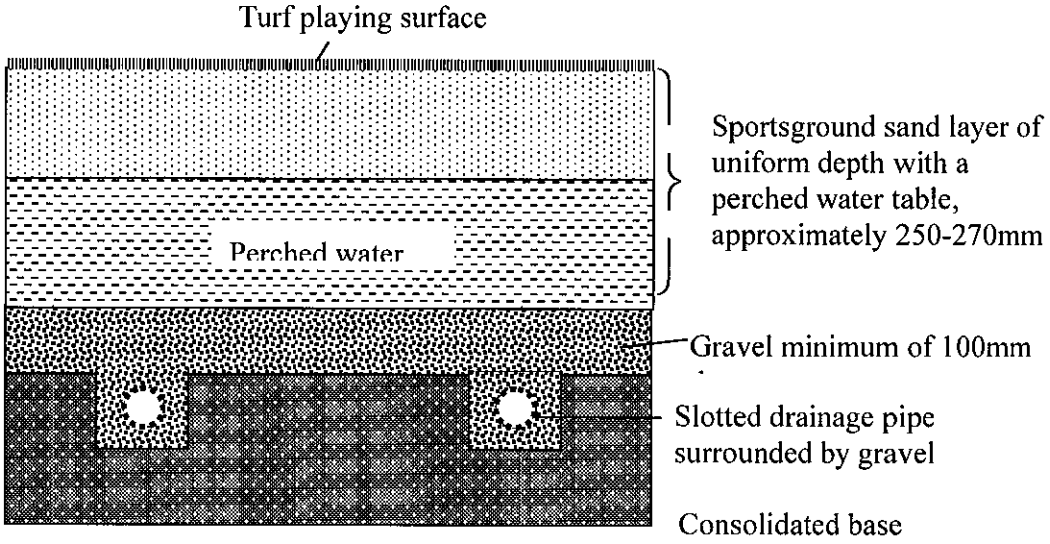


Figure 24.9 "Premier" Playing Field Section

24.5.4.3 Subsoil Drainage

Positive subsoil drainage is achieved through highly permeable sportsground sand with water being delivered to subsoil drainage pipes via a gravel drainage layer laid on an impermeable subgrade. The water is moved from the field by a system of lateral subsoil drainage pipes located at a maximum 7 metre spacing to stormwater sumps located at least 5 metres beyond the sportsground.

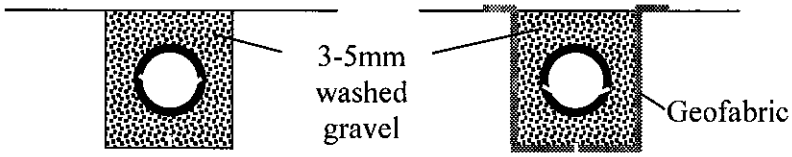
The subsoil drainage pipe shall be 100mm diameter corrugated high-density polythene tubing as specified in Clause 3.06.1 of the Standard Specification for Urban Infrastructure Works, 2002. The subsoil drainage pipe shall be laid on minimum 50mm of washed 3-5mm gravel.

The configuration of the subsoil drainage pipes is usually best served by a herringbone design, with laterals spaced no further apart than 7metres. The lateral subsoil drainage pipes shall be minimum 100mm diameter corrugated drainage pipe, (smooth slotted drainage pipe can be used, but this is more expensive). To accommodate a rainfall event of 100mm/hour, no 100mm corrugated drainage pipe lateral shall be longer than 37 metres.

The collector pipes into which the laterals feed shall be solvent welded uPVC stormwater drainage pipe. Cross-sectional diameter sizes of these collector pipes shall be designed to accept water at the rate of 100mm per hour, down stream pipe diameter shall increase as more laterals feed into them. It should be noted that one hectare of surface generates 1,000,000 litres (10,000m^2 x 100mm) of water per hour.

There shall be no socks on the drainage pipes, and no geofabric covering the pipes.

Geofabric can be used on the bottom and the sides of the trench.



A drainage layer of 3-5mm diameter sharp, washed gravel shall be placed between the subgrade and the sportsground sand. The depth of the gravel can vary, but shall have a minimum depth of 100mm. The top of the gravel layer shall be parallel to the finished surface.

24.5.4.4 Sportsground Sand

The "Premier" playing field growing medium shall be highly permeable uniform sand with only small amounts of fines (sportsground sand).

The top layer shall be a uniform depth of sportsground sand. The actual depth must be calculated from the moisture release curve of the sportsground sand and the suction of the gravel. Experience has shown that this will be between 250-270mm. It is therefore essential to determine which sportsground sand and gravel are to be used for the project before final levels are determined for the top of the profile. This depth will determine the volume of sportsground sand to be used.

Peat moss or coco peat shall be added to the top 100mm of the sportsground sand to increase the water holding capacity to approximately 15% at the surface as determined by the moisture release curve. The amount of peat moss or coco peat shall be determined by the laboratory test results.

The peat moss or coco peat amendment must be thoroughly mixed through the sportsground sand off site, and added as a separate layer to the top of the profile.

24.5.4.5 Sportsground Sand Selection Criteria

It should be noted that these specifications follow the USGA specifications, but are much tighter in what they allow. The depth of the sportsground sand layer shall be determined by first selecting the sand, matching it with an appropriate gravel (as per the USGA), then testing its suction.

Sportsground Sand Specification and Supply

The sportsground sand used shall be selected using the following specifications:

Mechanical analysis

The following wet sieve mechanical analysis shall be used to select the sportsground sand but this is the least important of all the selection criteria. If the material supplied is slightly outside these very tight parameters but meet all of the other criteria, there may be a case to accept the material based on cost and availability, dependent on expert advice.

Accepting a material outside this specification shall not be done lightly.

USDA Sieves	% Retained by weight	
> 2.00mm	0	
1.0-2.0mm	0-10	
0.5-1.0mm	0-20	
0.25-0.5	55-90 *	
0.1-0.25mm	< 20 ⎫	Maximum combined
< 0.1mm	0-10 ⎬	proportion of these
<0.002mm (clay)	0-4 ⎭	fractions shall not exceed 25%

* If sportsground sand has more than 90% in this range it shall have proven stability.

Compacted hydraulic conductivity

Compacted hydraulic conductivity at 16 drops shall exceed 700mm per hr

Bulk density

Bulk density at 16 drops shall not exceed 1.58

Acid soluble material

There shall be less than 5% of any material that will be dissolved in hydrochloric acid.

24.5.4.6 Moisture Release Curve of the Sportsground Sand

A Moisture Release Curve shall be made for the selected sportsground sand using the method developed by Dr Bent Jakobsen Chapter 19 McIntyre and Jakobsen (1998). This curve shall indicate the air entry point, the depth of the perched water table and the air filled porosity of the sand as well as the moisture content at the top of the profile.

24.5.4.7 Contract Specification for the Sportsground Sand

Once the sportsground sand has been selected based on the above selection criteria, the actual mechanical analysis, hydraulic conductivity and bulk density of this sportsground sand shall then become the contract specification with the following allowances:

- The sportsground sand shall not differ from the selected and approved sample by more than 5% in the 0.25-0.5mm range; the value for the 0.105-0.25 range shall always be equal to, or lower than, the selected sample and the value for the 0.5-1mm range shall not rise by more than 3%, but may fall below that of the sportsground sand selected.
- The compacted hydraulic conductivity of the sportsground sand at 16 drops shall always exceed 700mm/hr.
- The bulk density of the sportsground sand shall not exceed 1.58 at 16 drops.

Stockpiling and testing of the stockpiles before delivery

The sportsground sand shall be stockpiled before delivery in stockpiles of 500 cubic metres. Each of these stockpiles shall be tested by an independent laboratory, using the sampling techniques set out in AS 1289.1.2.1, 1998.

All mechanical analyses shall be carried out using wet sieve analysis and all other tests shall use the methodology set out in the Chapter 19 McIntyre and Jakobsen (1998).

The sportsground sand shall meet the contract specification as outlined above.

24.5.4.8 Gravel

The gravel used for the drainage layer and to surround the sub-soil drainage pipes shall be a sharp washed crushed rock.

24.5.4.9 Gravel Selection Criteria

USGA Bridging and Uniformity Factors

The gravel shall be selected **after** the sportsground sand has been selected, as it shall have a relationship to this sportsground sand. The gravel shall meet the USGA Bridging and Uniformity Factors, which are:

Bridging Factor	$D_{15\ (gravel)} \leq 5 \times D_{85\ (sand)}$
Uniformity Factor	$D_{90\ (gravel)} / D_{15\ (gravel)} \leq 2.5$

Mechanical Analysis

The following specification shall be used as a guide to select gravel that could meet the above criteria

Recommended gravel specification

Aust Standard Sieve Sizes in mm	% Passing by weight
9.5	100
6.7	75-100
4.75	20-55
2.36	0-15
1.18	0-5
0.6	0-2
0.3	0-2
0.15	0-2
0.075	0-2

The gravel must be washed.

Stockpiling and testing of the stockpiles before delivery

The gravel shall be stockpiled before delivery in stockpiles of 500 cubic metres. Each of these stockpiles shall be tested by an independent laboratory using the sampling techniques set out in AS 1141.3.1, 1996.

24.5.4.10 Determination of the Capillary Suction of the Gravel

Once suitable compatible gravel has been selected, its capillary suction shall be determined. The methodology to be used is that developed by Dr Bent Jakobsen in Chapter 19 McIntyre and Jakobsen (1998). This data is to be used in conjunction with the moisture release curve of the sand, and shall determine the depth of the profile.

24.5.4.11 Determination of the Depth of the Profile

The depth of the profile shall be determined by using the data from the sportsground sand moisture release curve, together with the capillary suction of the gravel. The value for the suction of the gravel (in mm) shall be subtracted from the depth of the perched water table and there shall be approximately 100mm of root zone available above the top of this new, perched water table. The soil moisture content at the top of the sportsground sand profile shall be close to 15% and if this does not occur there shall be a need to add peat moss or some other approved organic amendment to the top 100mm of the sportsground sand profile to ensure a manageable soil moisture content for the root zone in the first year.

These calculations shall determine the depth of the sportsground sand layer.

Organic amendments

As stated above, there is usually a need to add an organic amendment to the top 100mm of the profile for most sportsground sands to increase the water holding capacity in the top of the profile to about 15% at equilibrium, to make the top of the profile manageable. This amendment does not impede drainage.

The amount of peat moss or other approved organic amendment required shall be determined by the shape of the moisture release curve and by the moisture content of the sportsground sand at the top of the profile.

The total amount of peat moss used shall not exceed 1.5% organic matter by weight, and shall only be incorporated into the top 100mm of the profile.

Type of organic amendment

A high-grade sphagnum peatmoss or coco peat shall be used. Chicken manure is not an acceptable equivalent. This material shall have dissolved salts less than 10ppm.

The total organic matter content, determined by loss following ignition at 700^{0}C for four hours, shall exceed 95%.

pH Adjustment

When the sphagnum peatmoss or other organic amendment is added to the top 100mm of the profile the pH of this mixture shall be adjusted by the use of agricultural lime so as to achieve a pH for the mixture in the range of 6.3-6.8.

24.5.5 Stormwater Drainage adjacent to the Sportsground

The minimum slope required to remove water from the sportsground is 1 in 70 with a maximum run of 70 metres. Beyond the 5-metre edge to the sportsground, the slope may increase to 1 in 50 and the distance to a floodway or sump shall not exceed 50 metres.

In many situations, and particularly where the sportsground abuts a cut batter, a piped stormwater system that utilises grated sumps would normally be required in order to achieve the 1 in 50 / 50 metre run criteria.

The top of the sump shall be set to ensure that with settlement of the topsoil, fall to the sump is maintained.

A typical longitudinal section through a swale is illustrated below.

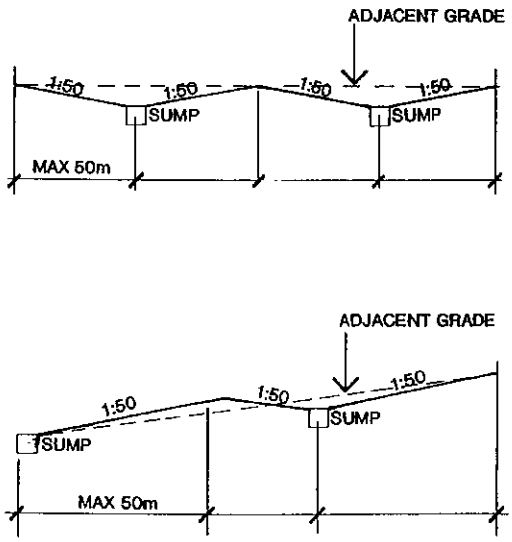


Figure 24.10 Swale Sections

24.5.5.1 Mowable Drains

When water is to be collected around the perimeter of a field or in other cut-off situations, and this water is collected in grated sumps the cross section of the drains must be such that they are easily mown with large mowing machinery.

24.5.5.2 Mowable Drains and Swales.

Mowable drains or swales are cheap, effective and easy to maintain. They are essentially surface drains that collect water and transfer it to underground pipes, usually through grated sumps, then to other stormwater systems, dams or creeks.

The grass cover in the bottom of the mowable drain is usually the same as the surrounding surface and is mown with the same mowing equipment. A swale shall be constructed so that it can be mown by the large mowers that mow the adjacent surface. Changes of grade shall be designed to the requirements of specified mowing equipment. Mowing scalping shall be rectified by regrading and regrassing. Short run or steeper swales or swales that require a different mowing regime, technique or machinery shall be avoided.

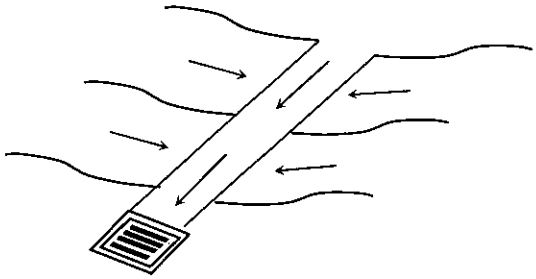


Figure 24.11 A typical mowable swale with water running into a grated sump.

Typical locations for mowable drains and swales for playing fields are around the perimeter of and in between sportsgrounds. These drains should be placed on the edges of playing fields, at changes of levels, and other locations to prevent surface water from flowing onto areas where it is not wanted.

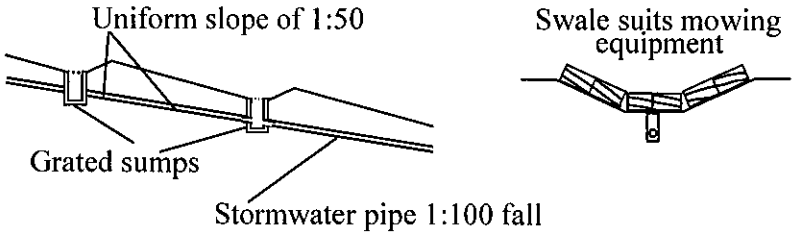


Figure. 24.12 Longitudinal section through a mowable drain, and a cross section showing how the swale should suit the mowing equipment.

The base of the mowable drains and swales **shall** have a uniform slope that ideally should be a minimum of 1:50. This is essential to allow the rapid removal of surface water. If there are even small depressions in the bottom of the swale water will lie there, machines will bog or cause indentations, grass will grow long, rubbish will accumulate and it will become un-maintainable and unserviceable. The length of the slopes running into the grated sumps shall not be more than 20m,

otherwise the tops of the sumps will become too far below the surrounding area. Sumps may be spaced about 40m apart if the slope goes towards them in both directions.

An open concrete invert, about 400-600mm wide placed in the middle of a mowable drain works well and ensures an even slope on the bottom of the drain which in turn ensures the rapid delivery of water to sumps. It also gives those constructing it a reference line from which to grade the sides of the swale evenly.

A concrete drain does not suit all locations but where it can be used it is preferable to a grassed swale.

The water collected in these mowable drains (swales) shall be disposed of through sumps to solid stormwater pipes to an existing stormwater outlet.

24.5.6 Stormwater Approvals

For the purposes of Design Acceptance approvals, playing field stormwater drainage shall be treated in the same way as stormwater systems within private leases. Sport and Recreation Services shall be responsible for the ongoing maintenance of the system both above and below ground. Maintenance may be undertaken either by ACTEWAGL or a private contractor.

Department of Urban Services Asset Acceptance will accept Design Acceptance submissions for approval.

Design Standard for Urban Infrastructure 01 Stormwater shall apply to stormwater design.

Grated Sumps shall be used as the inlet structure for playing fields. Refer Design Standard for Urban Infrastructure 01 Stormwater Standard Drawing ST-0013 for details.

The stormwater system shall be designed to accommodate a discharge rate of 50mm/hr over the sportsground.

The stormwater system shall protect adjoining leases from overland flow from playing fields. Playing field designs shall incorporate overland flow paths that provide 1 in 100 AEP protection to adjoining leases in the event of a blockage to the grated sumps or stormwater system pipes.

24.5.7 Irrigation

All new playing fields in Canberra shall include fully automatic irrigation systems. The requirements for design and operation of irrigation systems shall comply with Design Standard for Urban Infrastructure 21 Irrigation.

The following points shall be addressed in the irrigation design,

- No irrigation mains shall cross a sportsground.
- Sportsground irrigation stations shall run from perimeter ring mains.
- Sprinkler stations shall be aligned with the direction of play.
- A sprinkler station shall be configured for the heaviest wear area at the centre of the sportsground.
- All valves shall be located not less than 5m from the marked extent of sportsgrounds.
- A Computer Irrigation Management System (COMTROL) shall be installed.

Where a turf wicket occurs on a playing field, the wicket table shall be free of sprinkler heads and other underground service lines. The wicket table shall be watered on a separate station controlled

by a separate irrigation controller to allow the curator of the wicket to water separately to the remainder of the sports field. Quick coupling valves shall be provided to allow hand watering in addition to the automatic sprinklers.

24.5.8 Turf –Grass Species

Turf Species-grass mixtures to be used.

The grass mixture species and ratios for all enclosed ovals and district playing fields turf shall be as follows.

Grass Species	**Percentage by weight**
Kentucky Blue Grass	24%
(approved cultivar)	
Fine Leaf Perennial Ryegrass	76%
(approved cultivar)	

The grass mixture species and ratios for neighbourhood oval turf shall be as follows.

Grass Species	**Percentage by weight**
Kentucky Blue Grass	24%
(approved cultivar)	
Tall Fescue	76%
(approved cultivar)	

* The above tables are to demonstrate the required turf types. Seeding is not to be used for establishment of all new sportgrounds (including CRIP's) with turfing using maxi-rolls to be the method of establishment.

Couch grass may be specified with Legend and Conquest cultivars being the preferred varieties. Other varieties need to be approved by Sport and Recreation Services.

No variation from these turf blends shall be permitted without written approval from Sport and Recreation Services. Sport and Recreation Services shall provide details of the approved cultivars in the Brief or Deed Agreement documentation.

Mowing during Consolidation shall maintain the grass height at 38 to 40mm for cools season turf blends and 25mm or shorter for couch cultivars. Grass shall be mown to reflect a "field in full usage". Mowing frequency shall be twice a week during the October to March growing season and once a week at other times of the year.

24.5.9 Landscaping

Tree planting shall be arranged to provide shelter and shade. Tree planting between the car park area and the sports field shall be designed to allow an uninterrupted view of the sports field from the car park. Tree planting shall provide summer shade for cars.

Limited bench seats shall be provided for spectators on the exterior of pavilions at district playing fields. Consideration shall be given to a limited number of bench seats strategically located around the playing fields. Seating provision details shall be determined with Sport and Recreation Services

during the design development. At neighbourhood ovals the provision of some limited seating for spectators shall be determined in conjunction with Sport and Recreation Services. The incorporation of playground equipment and barbecue facilities with appropriate seating near the pavilion site shall be considered for district playing fields. Provision shall be as specified in Brief or Deed Agreement documentation.

Pavilions and viewing areas shall be sited on the western side of the playing field to avoid spectators looking into the afternoon sun.

No evergreen tree shall be planted within 20 metres of the northern edge of the sports field. This is to prevent the potential problems of winter shading effects and moisture retention after rain on the performance of the grass within the sports field. Trees that sucker or have aggressive rooting habits shall not be planted closer than 40 metres from the sports field.

Trees, seating and other landscape elements shall be located no closer than 5m to allow for unimpeded access for maintenance and mowing equipment. Landscape elements that require spatial layout of less than 5m (e.g. bins, BBQ, tables etc) shall be connected with non-mowable ground surfacing (e.g. granite gravel or hard paving).

24.5.10 Cricket Wickets

The provision of cricket facilities shall be determined by Sport and Recreation Services and outlined in the Brief or Deed Agreement documentation for each playing field.

24.5.10.1 Concrete Wickets

The standard concrete cricket wicket detail is illustrated at Figure 24.13

24.5.10.2 Turf Wickets

The design for turf cricket wickets shall conform to the methodology and standards outlined in *Cricket Wickets – Science v Fiction,* McIntyre and McIntyre (2001).

Number of Wickets

The wicket table to be installed into most sportsgrounds shall be for four or five wickets, or as agreed with Sport and Recreation Services and shall be included in the Brief or Deed Documents.

Location of Wicket Table

The wicket table shall be located as close to the centre of the playing field in relation to the east/west and north/south axies of the field as possible.

Concrete cricket wicket

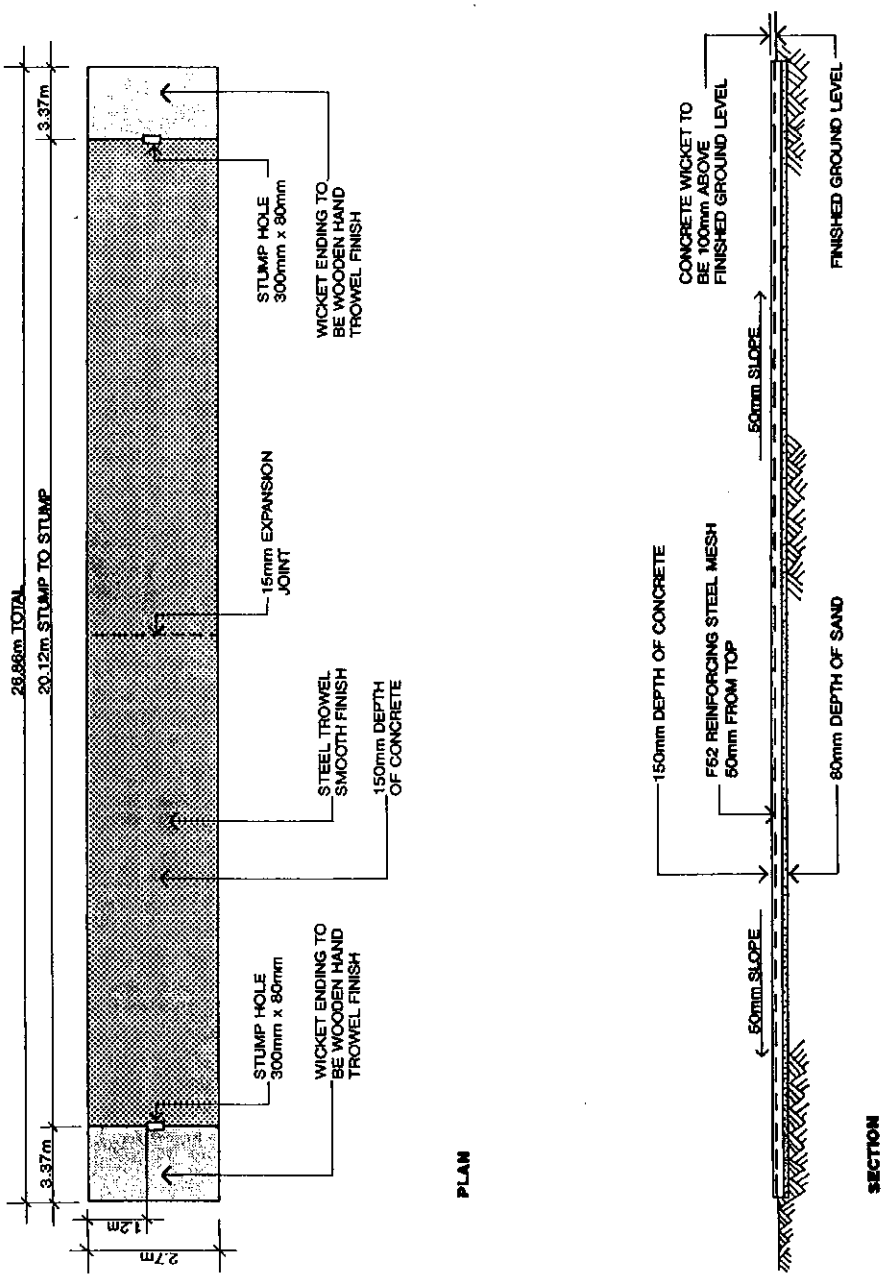


Figure 24.13 Standard Concrete Cricket Wicket Detail

Dimensions and Surface Slopes of Wicket Table

The wicket table shall be of the following dimensions,

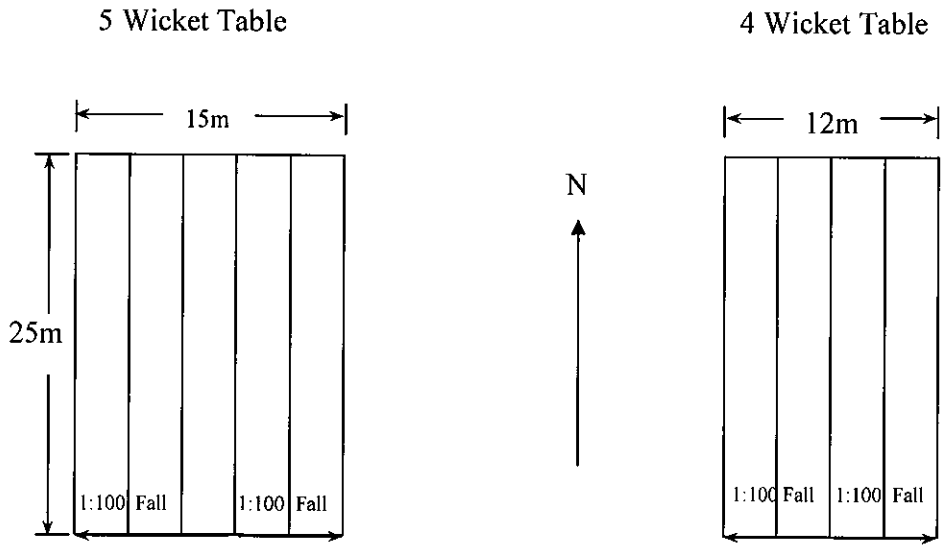


Figure 24.14 The wicket table will consist of either four or five x 3m wide wickets running in a north/south direction.

There shall be a fall from the centre to the outside of the table of 1:100. There shall be a fall across the wicket table from the centre to the outside of 1:100 on the four wicket table and from across three and two wickets respectively on the five wicket table. There is no fall on the wickets in a north/south direction.

Drain to link with swale drain or stormwater pipe

Install a 150mm solvent welded uPVC stormwater drainage pipe from the middle of the of the wicket table to be linked into a swale or stormwater drainage pipe on the edge of the playing field.

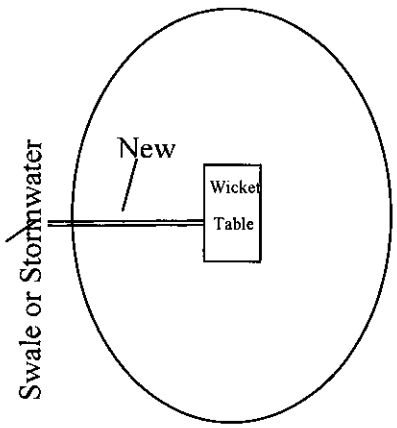


Figure 24.15 Shows a drain that shall run from the centre of the wicket table, connecting into a swale or stormwater pipe

The drain shall be in a straight line from the wicket to the perimeter of the playing field. The trench shall have the following profile:

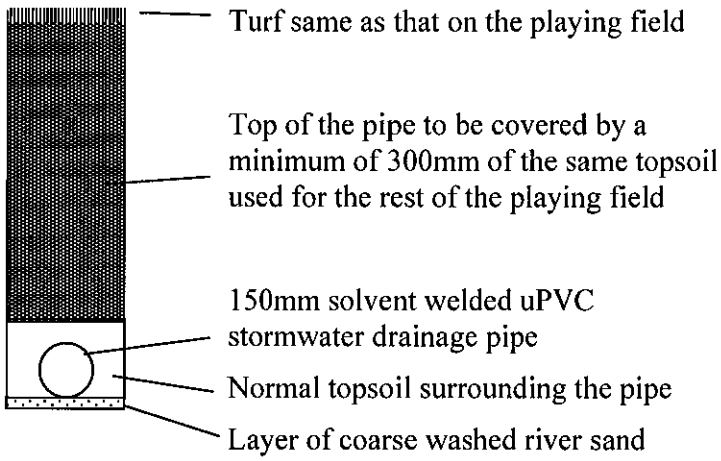


Figure 24.16 Cross section of the drain that runs from the wicket table to the swale or stormwater pipe on the edge of the playing field.

The drain shall be a minimum of 450mm deep and shall have a layer of coarse washed river sand in the base to ensure that the bottom of the trench is smooth and with an even grade. A 150mm smooth stormwater drainage pipe shall be used and this shall be covered with topsoil the same as that used on the rest of the playing field. The pipe should have a uniform minimum fall of 1:100 from the wicket.

The completed trench shall be turfed with a turf of the same grass mixture to the rest of the playing field, or sown with the same grass mixture.

Sump at Eastern/Western Side of the Wicket Table

A sump with an artificial turf cover shall be constructed about one metre to the east of the centre of the eastern side of the wicket table so the wicket manager can discharge excess water from the covers into this sump.

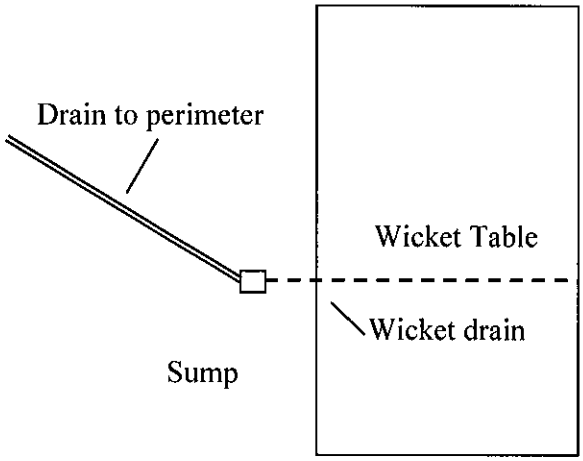


Figure 24.17 Sump to be located on the side of the wicket table to connect the wicket drainage to the stormwater pipe.

The sump will collect all of the water from under the wicket and discharge it into the drainage pipe that runs to the perimeter of the oval.

The sump lid will be covered by 150mm of topsoil. This is to prevent damage to turf maintenance equipment in the future.

Base and Sub-surface Drain

The base shall slope from the northern and southern ends of the wicket table to the centre where a 100mm diameter sub-soil drain shall be cut into the base. The base shall be consolidated to ensure a firm base for the wicket and there shall be no wet spots. If a wet spot occurs it shall be dug out, dry material placed in the hole, re-compacted and covered with geofabric before the sand layer is placed.

Great care must be taken during the excavation of the wicket hole to ensure that no sub-soil is spread over the existing ground surface. If the wicket is being built after the oval has been completed and grassed then boards from the perimeter to the wicket shall be used for any trucks and machines to drive on. Only small trucks shall be used to take soil off the site and to bring the sand and wicket soil onto the field. No materials shall be stockpiled on the playing surface. Great care shall be taken not to contaminate the drainage sand or the wicket soil with other materials.

A sub-soil drain is to be cut into the centre of the base in an east west direction. The drainpipe shall be a 100mm corrugated pipe with a fall of 1:100. The pipe shall be surrounded by a minimum of 50mm of clean coarse washed river sand.

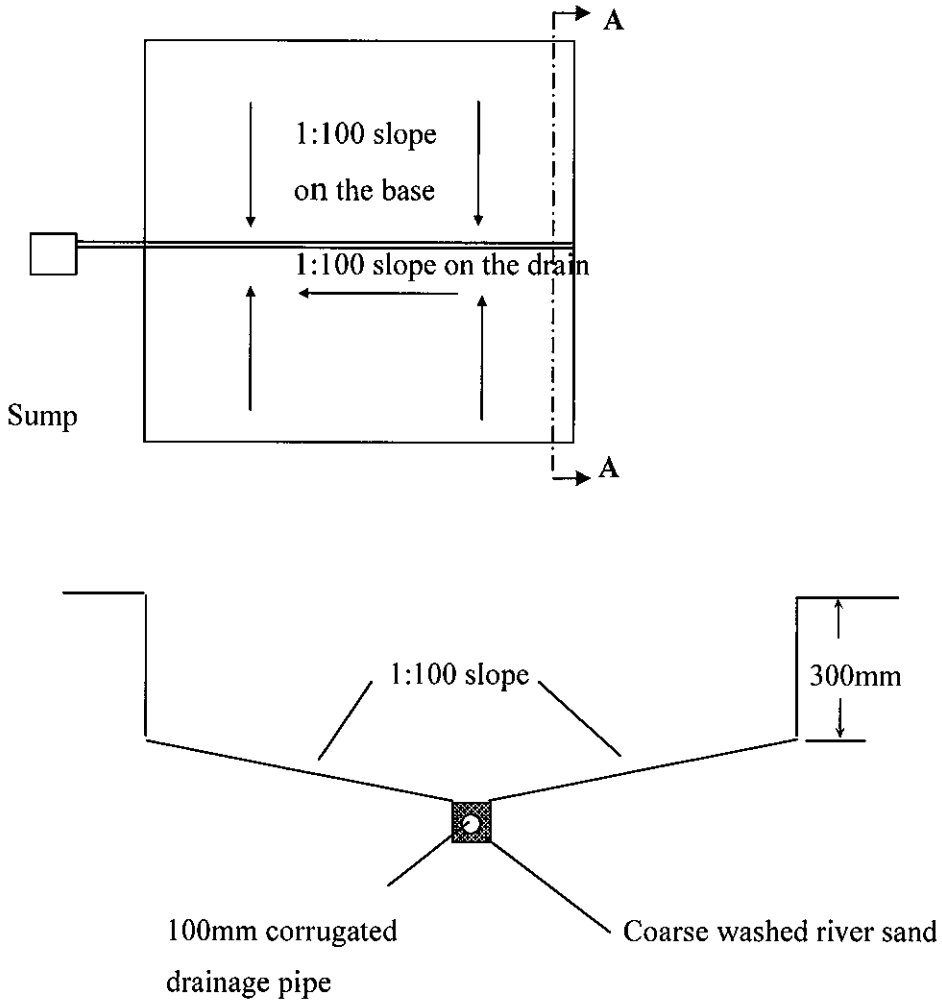
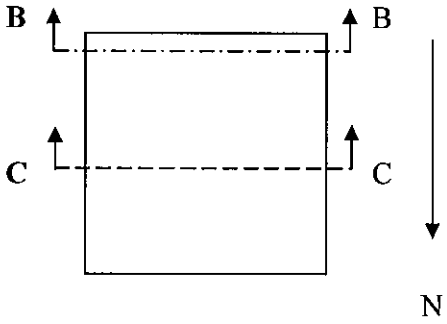


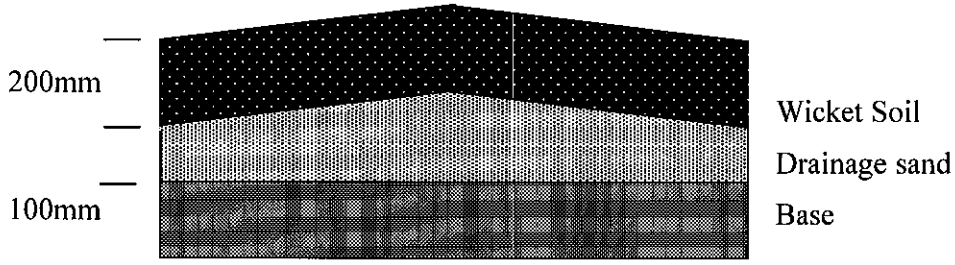
Figure 24.18 Shows the location of the central drain, and the slope on the base of 1:100 to the centre. Section AA shows the depth of the excavation and the base.

The coarse washed river sand that surrounds the corrugated drainage pipe shall meet the following specifications.

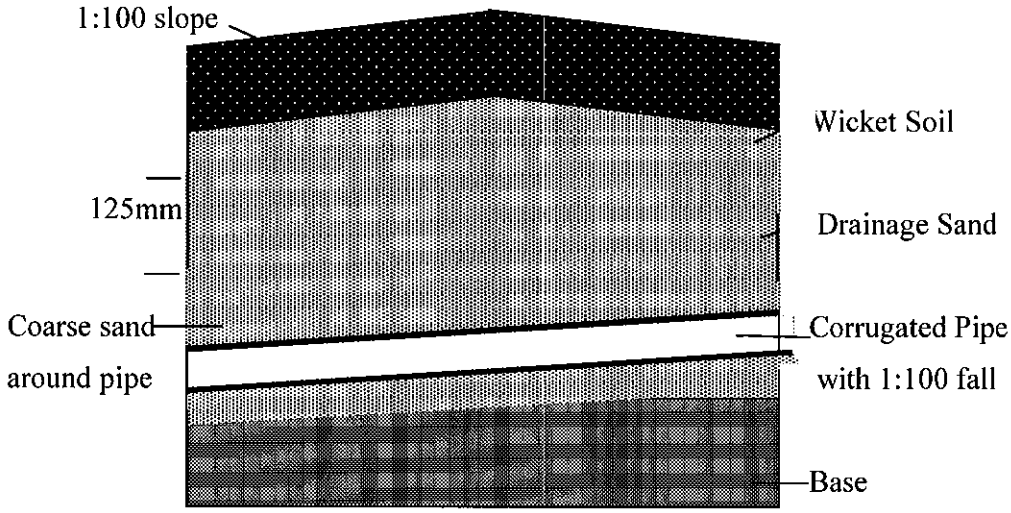
USDA Sieves	% Retained by weight
2.8-4.0mm	0-20
2.0-2.8mm	0-20
0.5-2.0mm	55-100
0.1-0.5mm	0-10
<0.1mm	0

Wicket Profile





Section BB



Section CC

Figure 24.19 Shows the cross sections through the profile at the southern end of the table and through the centre drain.

Sand Drainage Layer

There shall be a sand drainage layer of a minimum of 100mm in depth placed over the base. The surface of the sand shall be parallel to the finished surface of the wicket.

The sand in the drainage layer shall meet the following specifications:

USDA Sieves	% Retained by weight
> 2.00mm	0
1.0-2.0mm	0-10
0.25-1.0mm	70-90
0.1-0.25mm	< 20
< 0.1mm	0-10
<0.002mm(clay)	0-4

The sand shall be clean and have only very low amounts of silt and clay. It should have a significant majority of its particles between 0.25 and 1.0mm, preferably with most in the 0.25-0.5mm range.

Cricket Wicket Soil

There shall be a uniform 200mm layer of wicket soil placed above the sand drainage layer in at least two layers.

There shall be a 1:100 slope on the surface of the wicket soil sloping from the centre to the outside of the table as shown in Figure 24.19.

The wicket soil shall have the following characteristics. The clay content shall be between 50% and 70% to provide a sufficiently hard pitch. A higher clay content may cause excessive cracking or cracks that are too wide. There shall be less than 10% of coarse sand as it can cause ball damage if present in excess.

The crushing strength of the soil should be between 0.8 and 1.6MPa, and the clay must have enough cohesion to withstand ball impact hundreds of times. A clay with a low crushing strength may turn into dust after lengthy periods of continued impact.

Organic matter improves structural stability and hydraulic conductivity however any more than 5% will produce a soft pitch and poor ball bounce.

Cracking is essential for good grass growth, however if cracks become too wide ball bounce becomes erratic and if cracks are too far apart grass growth will be poor or uneven. The cracking is measured on 100mm diameter petri dishes. Upon drying the soil should break into pieces, two to five pieces per dish is preferable. Excessive cracking will produce a crumbly wicket.

Shrinkage from field capacity to air dry measured on small prepared cores shall be no more than 15% (0.15), preferably 10% (0.10). If the shrinkage is within this range the soil will crack properly and will also have good strength and cohesion.

Wicket Soil Specifications

The wicket soil shall meet the following specifications when tested in the laboratory using the testing methodology outlined in Chapter 14 of McIntyre and McIntyre (2001).

Mechanical Analysis

Mechanical analysis shall be carried out using wet sieve analysis and the clay content measured using a hydrometer.

Specification for particle size distribution for a cracking clay soil suitable for cricket wickets.

Fraction	Particle sizes	% by Weight
Clay	< 0.002mm	50-70
Silt	0.002-0.02mm	5-20
Fine Sand	0.02-0.25mm	10-30
Medium Sand	0.25-1.0mm	0-10
Coarse Sand	1.0-2.0mm	1-2

Shrinkage	0.08 - 0.15
Crushing Strength	0.8 - 1.6 MPa
Cracking	2 - 14 pieces
pH	6.0 - 7.5 in H_2O or 5.0 - 6.5 in $CaCl_2$
Total Dissolved Salts	<200ppm
Organic Matter	<5%

The above specifications shall be met by having the soil tested in either of the following laboratories that have the appropriate equipment and proven ability to carry out these tests. Other laboratories may be considered for the conduct of these tests with the written approval of Sport and Recreation Services.

Ground Science, 56 Mercedes Drive Thomas Town Vic, Phone 03 9464 4617

Sydney Environmental and Soil Laboratory Pty Ltd. PO Box 357 Pennant Hills NSW 1715. Phone 02 9980 6554

Cricket Wicket Order of Construction

Construction of Sump

The construction of the sump on the side of the wicket and the installation of the drain to the perimeter sump shall be completed first.

Excavation for the wicket

The hole shall be excavated and the sub-soil drain installed and connected to the sump as quickly as possible to guard against the possibility of damage by rain.

Sand Drainage Layer

The sand drainage layer shall be installed as quickly as possible to ensure that the hole does not fill up with water if there is rain. Care shall be taken that the final levels of the sand layer are parallel to the proposed final surface levels.

Placement of the Wicket Soil

The wicket soil shall be placed carefully so as to ensure the integrity of the sand layer. The wicket soil shall be placed in at least two layers using dry soil that has been crushed to 10-15mm diameter pieces. Each layer shall be lightly compacted. The use of a small tracked machine such as a Bobcat shall be used for this purpose.

Completion of Wicket Surface

The final levels shall be obtained using a laser level and the soil lightly compacted as dry material using the tracks of the Bobcat. The final levels of the finished surface shall be between 30-40mm above the final levels, to allow for levels to settle once rolling commences

Under no circumstances shall the wicket be rolled at this stage.

Consolidation and Turfing

The finished wicket shall be thoroughly watered and allowed to stand for about one month to allow for natural consolidation.

The wicket shall be allowed to dry out then final levels checked and any depressions top dressed out with wicket soil.

The surface shall be lightly watered prior to the laying of the turf. Washed Legend (or other approved cultivar) Couch turf shall then be carefully laid making sure that there are no footmarks left on the surface. Once the turf is laid, the whole wicket shall be thoroughly watered using the irrigation system

The surface of the turf shall be kept moist to ensure that it does not dry out. As the turf produces roots, the frequency of watering shall be reduced to allow for deep rooting to occur.

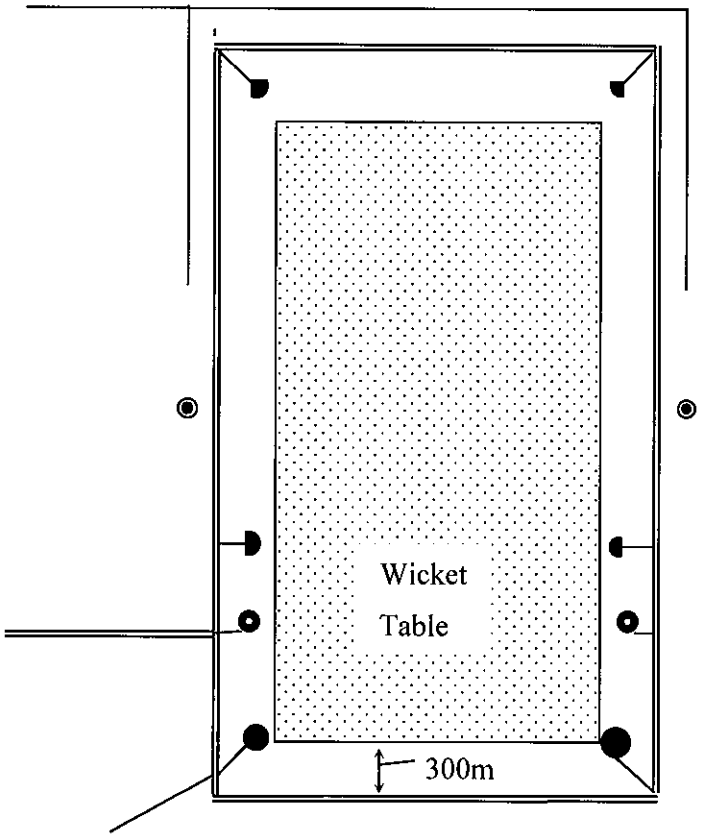
Once the roots have developed to at least 150mm depth, **and only then**, shall the wicket be rolled. The first rolling shall be with a light roller so as to allow mowing equipment to be used without causing depressions in the surface of the wicket.

A heavy roller shall not be used until the wicket is being prepared for use. At this point it shall be necessary to top dress out small depressions with fine wicket soil.

Installation of Wicket Irrigation

After the wicket is complete the perimeter irrigation shall be installed. Care shall be taken for the wicket ring-main to be installed far enough away from the edge of the wicket so as not to jeopardise the integrity of the edge of the wicket table. This trench shall be 300-400mm out from the finished wicket table.

Irrigation Layout



50mm ring main

Legend

Quarter circle gear driven sprinkler

Half circle gear driven sprinkler

Sprinklers shall have a 15m throw for a five wicket table, and a 13metre throw for a four wicket table

QCV with valve under head

QCV on a live line

Figure 24.20 Wicket Irrigation Layout

The layout is basically the same for a four or five wicket table, the only difference being the nozzle size.

Ring Main

The wicket shall be watered from a 50mm ring main that is connected to the playing field irrigation system. This main shall be about 300mm from the edge of the wicket table to ensure that the trench for the pipe does not affect the edge of the wicket.

Care shall be taken, with the installation of this main, not to interfere with the drainage of the wicket.

Sprinklers

The sprinklers shall be gear driven with stainless steel turrets and rubber caps. These sprinklers shall throw 13m at 344kpa on a four-wicket table and 15m on a five-wicket table.

The contractor shall supply a full circle Hunter I21 sprinkler on an stand to a design approved by Sport and Recreation Services which shall be attached to a 25mm hose with a bayonet fitting to connect to a quick coupling valve.

Quick Coupling Valves (QCVs) with Valves under the Head

There shall be two QCVs installed with valves under head, one on either side of the wicket table. These QCVs shall be capable of taking a bayonet to supply a 25mm hose and shall operate at 344kpa.

QCVs on a Live Line

There shall be two QCVs (similar to above) without valves under the head, one on either side of the wicket table. These QCVs shall be 'live' and served by a dedicated line from a point in the metre pit before the master valve to enable the wicket to be watered if the rest of the irrigation for the field has been turned off.

Wiring

Each sprinkler and QCV with valve under head shall be separately wired back to a dedicated 12-station controller. Each sprinkler and QCV shall be able to be operated independently.

Controller and Location of Controller

The controller shall be a 12 station electronic controller and the type is to be approved by Sport and Recreation Services.

The locked controller box shall be located in a position where the cricket wicket users can have access without being able to have access to the irrigation for the rest of the field. Sport and Recreation Services shall determine the location of this controller.

24.5.11 Pavilions

Where pavilions are required by the Brief or Deed Agreement documentation the following points shall be addressed in the design,

- The siting of the pavilion shall consider shelter from the wind and sun and shall be co-located with the car park. Pavilions shall have a good address to the sportsgrounds, preferably mid way along the sideline and perpendicular to the centre line of the sportsground. The front of the pavilion shall be not less than 20 metres from the sportsground edge.
- A 4 metre wide paved vehicle access strip shall be provided around the perimeter of the pavilion and shall link to the car park.
- Provision shall be made for the storage of goal posts and other large equipment during non-use periods. Equipment storage in a fenced compound or in lockable racks adjacent to the pavilion shall be considered.

- Where space allows, it is preferable to use excess fill to construct viewing banks rather than elevate the sportsground. Slopes of viewing banks shall be no steeper than 1 in 6 and the bank shall tie in with the existing landform to create a unified and pleasing landscape effect. Long straight lengths of mounding that are out of scale with the surrounding landscape are not acceptable. The effect of mounding on the views of adjacent leases shall be considered.
- The inclusion of a canteen shall be considered. Canteen location shall provide a good view of sportsgrounds.

24.5.12 Car parks

Where car parks are required by the Brief or Deed Agreement documentation the following points shall be addressed in the design,

- The layout and physical geometry of a car park shall be designed in accordance with AS 2890.
- The number of car park spaces provided shall be in accordance with the ACT Parking and Vehicular Access Guidelines unless stipulated otherwise.
- The car park layout shall be designed to be sympathetic to the landform and surrounding landscape.
- Off street car parking shall be provided at the rate of not less than 20 car parks for neighbourhood playing fields and not less than 60 car parks for each 2 BSU equivalent for district playing fields.
- Off street car parking for Enclosed Ovals shall be provided in accordance with the ACT Parking and Vehicular Access Guidelines.
- The provision for car parking shall allow for the use of shared facilities (e.g. schools) in close proximity to the playing field.
- Car parking facilities shall be elevated above the sportsground. This provides the opportunity to view the sportsground from within the car.
- Bollards shall be used around car parks and vehicular access to prevent unauthorised vehicle access. Bollards shall be designed with non-maintainable surfaces adjacent (e.g. granite gravel, concrete, asphalt).
- Fencing, bollards and gates provision shall be determined by Sport and Recreation Services and included in Brief or Deed Agreement documentation.
- Ambulance access to playing fields shall be provided through a dedicated entry point from the car park through locked ranger gates. Ambulance access routes shall provide smooth travel from sportsground to adjacent urban road system. Ambulance access routes shall not jump kerbs, follow steep inclines and declines or cross open concrete inverts or mowable swales.

24.5.13 Lighting

Where lighting is required by the Brief or Deed Agreement documentation the following points shall be addressed in the design,

- compliance with appropriate Australian Standards
- compliance with Design Standard for Urban Infrastructure 12 Public Lighting
- siting of light standards to comply with separation distances from sportsgrounds

- siting of light standards to enable free movement of specified mowing equipment

24.5.14 Water sensitive urban design

Sportsground design projects shall incorporate the principles of WSUD. Design Acceptance approvals shall be subject to the satisfactory inclusion of appropriate WSUD measures. The measures to be incorporated will depend on both the nature and the location of the works involved and Brief or Deed Agreement documentation. Options for water supply shall be specified in the Brief or Deed Agreement documentation. Collected and reused water may be an approved water supply for sportsground irrigation. Sport and Recreation Services shall approve details of the collection and reuse water system for sportsground irrigation. Systems that rely on pumps shall be avoided.

Design Acceptance approval submissions for sportsgrounds shall include details of water sensitive urban design measures, including:

- targets and criteria applicable to the proposed development,
- WSUD measures proposed for the development, including location and design details
- description of assessments – the details of the tools used to assess the performance of the selected WSUD measures, including a summary of inputs and adopted parameters, and
- a statement confirming that the applicable targets and criteria will be met by the proposed measures.

24.5.15 Signage

Where signage is required by the Brief or Deed Agreement documentation the signage shall comply with Design Standards for Urban Infrastructure, 25 Urban Park and Open Space Signage, Urban Services, Canberra.

APPENDIX I

LABORATORY PROCEDURES FOR TESTING SPORTSGROUND SOIL

METHODOLOGY FOR DETERMINING SOIL HYDRAULIC CONDUCTIVITY

*If the soil testing does not follow these procedures it should be deemed to be invalid.

Introduction

In this document the *Drop Test* has been referred to several situations as a measure of saturated hydraulic conductivity. There are many different methods used for the measurement of hydraulic conductivity in soils, and these different methods can give different answer.

Dr Jakobsen has developed a very simple and effective test for saturated hydraulic conductivity which can be used in the meaningful assessment of soils and sands for sports turf and horticulture. This method requires no expensive laboratory equipment, and has proved to be highly repeatable.

Many of the traditional methods for determining hydraulic conductivity involve dropping a hammer or some sort of weight onto the soil sample, which is held in a steel container. There is one major problem with this method of applying compaction, and that is the friction loss of the impact with the soil which is very close to the edge of the container.

This causes a deceleration of the energy being applied close to the edge. This means that the soil close to the edge of the container is not compacted to the same density as that soil near the centre of the container. When water flows down this column, it passes through the less dense edges of the soil in the container more quickly than the adjacent soil.

There is also a variation in the compaction, or bulk density of the sample, from the top to the bottom. It also means that the compaction needed by the hammer or dropping weight method has to be high to achieve good compaction of the whole sample.

If the whole container, including the soil inside it, (Handreck and Black, 1984) is dropped onto a flat hard surface, then much less energy has to be applied to achieve the same compaction of the sample. The soil and the edge of the container decelerate at the same rate, so there is a minimum of edge effect in this method, and the soil compacts more uniformly through the whole sample than the drop hammer method.

The apparatus used for this procedure is ordinary laboratory equipment, including a drying oven, suction plate, vernier callipers, distilled water, and a balance. There is no complex machine required to apply compaction, and there is no special apparatus required to keep a constant head of water for special stainless steel tubes.

A four-litre ice-cream container, or large beaker, is ideal to place the tubes of soil in for wetting up from the bottom.

25mm diameter PVC water pipe can be used for the tubes. Cut into 150mm lengths, ensuring that the ends are cut off exactly at right angles and the edges smoothed so they are even. Each tube has a piece of gauze glued to the bottom to prevent soil from falling out, while still allowing water to freely flow through it.

Note

It is critically important to ensure that the sample is at field capacity when the soil is placed in the tubes prior to the test. Failure to ensure this will result in the wrong result. It is also very important also to ensure that the tube is dropped from the correct height every time and that it falls vertically. If the tube falls on an angle rather than flat on the bottom of the tube, it can de-compact the sample.

With practice and care, the method is very reliable and staff can be trained to carry it out with a high degree of reputability.

The methods have been written in the format of an Australian Standard and are as follows:

1. METHOD FOR DETERMINING SOIL WATER CONTENT

General

Before any soil is used for testing, the whole sample received must be made homogeneous.

Pre treatment of soil samples before physical testing can affect the results, in particular for hydraulic conductivity, but also to a lesser degree for compaction and water holding capacity. Thus, the screening and mixing of samples, as needed to obtain representative sub samples for different tests, must be carried out with a minimum impact on the soil. Otherwise the pre treatment may easily incur effects on the soil that will not occur in the field operations.

Many soils are destabilised and slake easily after being worked while wet, and after drying the soil may regain its former stability. If such a soil is stored moist in a stockpile to be used for an irrigated turf area then drying of the soil is unlikely to occur in the field, and it should be avoided in the laboratory prior to testing.

Dry and lumpy clay soil should be moistened first, so it crumbles easily and can be passed through the screen with a minimum of effort. Crushing dry lumps with a hammer will produce a lot of dust, which is not characteristic of the soil in nature.

Dry soil or gravel is difficult to sample representatively, because fine particles fall to the bottom between larger ones. Moistening the sample to a water content just below its field capacity will make all dust cling to larger particles. Such a sample can be mixed well and representative sub samples taken out. If the water content is below the lower plastic limit, mixing will not destabilise the soil and cause it to slake.

If the soil is dry then add water to what is judged to be near field capacity, e.g. for a gravel 1-1.5%, a sand ~5-8%, a pug soil ~20-30%. Give clay soil time to absorb the water so no muddy lumps are formed during screening and mixing.

Scope

This standard follows the procedures outlined in Australian Standard 1289.1 and 1289.2.1.1

Apparatus

a. A drying oven

b. A heat-resistant and corrosion-resistant container

c. Analytical balance

d. 12mm screen

e. Desiccator containing anhydrous silica gel

Procedure

Crush any big lumps by hand so that the soil can be passed through a 12mm screen.

Mix the sample well and store in a plastic storage container(a) with an airtight lid.

1. Weigh a clean and dry container(b) in grams, to 2 decimal places, **T**.
2. Take a representative sub-sample of soil from the storage container(a) and place in the drying container(b).
   Weigh container(b) with wet soil, **TSW**.
3. Place sample in drying oven at 105^{O}C for at least 12 hours, or until its weight becomes constant.
4. Allow sample to cool in a desiccator for 10-20 minutes and weigh again, **TS**.

Calculations

Calculate the gravimetric water content from:

$$W\% = \frac{TSW - TS}{TS - T} \qquad (1)$$

The relation between the gravimetric water content and the volumetric water content of a soil at a given bulk density is:

$$\text{water vol.\%} = w\% \times \text{bulk density } (g/cm^3) \qquad (2)$$

For tests made on wet soil, but where the amount of dry soil must be known, e.g. hydraulic conductivity, a conversion factor, C, may be useful:

$$C = \frac{TS - T}{TSW - T} \qquad (3)$$

Now use:

$$\text{Dry soil, g} = C \times \text{Wet soil, g} \qquad (4)$$

If the moist soil is kept in a closed plastic container, then the measured water content and the value of C may be valid for a week or more.

2. PROCEDURE FOR PREPARING SAMPLES TO BE AT FIELD CAPACITY FOR TESTING (Canberra Landscape Guidelines 1993)

Scope

This standard sets out a method for the laboratory determination of the field capacity of a soil.

Apparatus

a. Ceramic suction plate, adjusted to 1m suction (–10kPa).*

b. Plastic rings, approximately 30mm high and 50mm in diameter.

c. Heat-resistant and corrosion resistant containers.

d. Vernier callipers.

e. Analytical balance.

f. Drying oven complying with AS 1289.0.

g. Wash bottle.

Procedure

1. Wet the suction plate and make sure there are no air bubbles in the drain tubes.
2. Place the empty plastic rings on the suction plate and fill the rings with soil. Pack the soil samples to ensure good contact with the suction plate.

Wet the samples thoroughly using a wash bottle.

Cover the suction plate and leave the samples to drain for at least 16 hours.

3. Weigh the empty drying containers, Tg.

   Using vernier callipers measure the depth of soil, Hmm.

   Transfer the samples from the rings to the heat-resistant containers and record the wet weight, TSWg.

   Record the dry weight, TSg after drying at 105°C for at least 12 hours.

Calculations

Soil bulk density (Db):

$$Db = \frac{TS - T}{\text{volume}} \quad g/cm^3 \qquad (1)$$

Gravimetric water content (w):

$$W = \frac{TSW - TS \times 100}{TS - T} \quad \% \qquad (2)$$

*Notes: 1. Flexible tubing is used to join the suction plate to a water reservoir. The porous plate is saturated with water, and air removed from the cavity behind the plate and from the flexible tubing. By adjusting the free water surface in the reservoir to 1m below the upper plate surface, 1m suction is achieved. This system is usually referred to as a hanging water column.

This description is taken from Loveday, (1974):

2. For sand materials the suction is set at 30cm

3. PROCEDURE FOR THE DETERMINATION OF SATURATED HYDRAULIC CONDUCTIVITY IN SOILS AND SANDS

General

The saturated hydraulic conductivity, **K**, of a soil refers to the movement of water through the soil profile when it is saturated (completely filled with water). It is the coefficient, **K**, in Darcy's equation:

$$\text{Rate of Flow} = K \frac{dh}{dx} \quad mm/hr \qquad (1)$$

where **(dh/dx)** is the driving force, i.e. change in water pressure with distance.

In the following test **K** (saturated) is measured under conditions of a falling head of water, **H**. At the time when the surface of the ponded water reaches the soil surface, it falls at a rate equal to **K**.

The samples used for testing are compacted to a range of soil densities, which are expected to cover the range occurring in the field after several years of use. A very light level of compaction is applied as well, because some soils will slump during wetting and then become very slow draining.

Scope

This standard sets out a method for laboratory determination of the hydraulic conductivity of a soil.

Apparatus

The following apparatus is required:

a. A drying oven

b. 6 Plastic tubes, 150mm long, 30mm diameter, with nylon gauze fitted on one end. The gauze should allow free drainage of water, but not of soil.

c. Plunger, comprised of a plastic tube with a rubber stopper on one end and fitting neatly inside the plastic tubes.

d. Analytical balance.

e. Vernier callipers.

f. Large plastic container, deeper than 150mm to fit the 6 plastic tubes.

g. Free draining surface.

h. Heat resistant container.

i. Hard flat surface eg. steel base of retort stand.

j. Stop watch.

k. Wash bottle.

Procedure

Sample preparation

1. The soil should have a water content near to Field Capacity prior to testing, i.e. the water content held against a suction of 10kPa or 1m hanging water column or 0.3m for sands

2. Mix the moist soil sample well to make sure that the moisture content is uniform and no wet lumps exist. Keep the soil in a closed container to avoid water loss during the test. Take out a sample for determination of the exact water content (See method 1).

3. Prior to filling each tube with the moist soil, place the tube on the balance and tare the balance.

4. Fill the tube with soil. Whilst filling stand the tube on a flat surface to ensure that the soil does not bulge out at the bottom.

   Compact the soil in the first tube by dropping it once from a height of 150mm onto a hard, flat surface. Ensure the tube is kept upright and is not allowed to fall over.

   Lightly firm the soil surface down to the same level of compaction as the rest of the soil in the tube using a plunger. Do not use excessive force.

5. Weigh the tube immediately after filling and compaction to prevent weight loss due to evaporation. Record the weight of wet soil in the tube, **SW**.

   Using vernier callipers, measure and record the distance from the rim of the tube to the compacted soil surface, **h**.

6. Repeat steps 4 to 6 on the remaining tubes, applying increasing levels of soil compaction for each tube by doubling the number of times, **N**, the tubes are dropped, i.e. 2, 4, 8, 16 and 32.

   Record the values of **SW**, **h** and **N** for each sample.

7. Place the tubes in the plastic container, and slowly fill this container with water until the level approaches the outside rim of the tubes. Allow the water to rise up through the soil to displace most of the soil air.

   Only fill the tubes from the top after the water surface inside them is close to the rim, or at least the soil surface is under water. This should be done carefully with a wash bottle so as to minimise disturbance of the soil surface.

Testing procedure

1. Lift the tubes out of the plastic container and place them on a free draining surface.

   For fast draining sands lift one tube at a time and use a stopwatch to record the time, **t**, for the water to fall from the rim of the tube to the soil surface. For a coarse sand this time may be as little as 5 seconds.

   For slow draining samples, when **t** is likely to exceed 10-20 minutes, it becomes difficult and too time consuming to get the exact time when water disappears from the soil surface. In these instances lift all the samples out and record their starting time. Measure the distance from the rim to the water surface at intervals (eg. 10, 20 and 30 minutes; these intervals should be varied according to the rate of drainage): **h1**, **t1**; **h2**, **t2**; **h3**, **t3**; etc.

   Take three readings or more of each sample.

2. When each sample is fully drained, measure with vernier callipers the distance from the rim to the soil surface, **h**, again as the soil may have slumped after wetting.

Calculations

The conductivity, **K**, and the bulk density, **Db**, for the soil of each tube is calculated by use of equations (2), (3) and (4).

The measurements were made under a decreasing head of water, **H1=150 - h1**, **H2=150 - h2**, **H3=150 - h3**, where **h1**, **h3** is the distance from the rim to the water surface and 150 is the tube height, all in mm.

The decreasing head causes a decreasing rate of flow, which is compensated for in the equation for calculation of the hydraulic conductivity (**K**):

$$K = \frac{l}{t} \times \ln [H_1/H_2] \quad \text{mm/hr} \qquad (2)$$

where $l = 150 - h$, height of soil column in mm; and **t** is the time in hours between the measurements, **H1** and **H2**. Repeat the calculation with **H2** and **H3** and the corresponding value of t.

The weight of dry soil, **S**, in a tube is calculated by :

$$S = SW \div \frac{1.0 + W\%}{100} \text{ g.} \qquad (3)$$

The bulk density is:

$$Db = \frac{S}{0.1 \times l \times A} \qquad (4)$$

where **l** is the height of soil in mm (150 - **h**), and **A** is the cross sectional area of the tube (7.07cm^2 for a 30mm diameter tube).

If no additional compaction test is made, then the sample compacted by 16 drops of 150mm is used as a standard level of compaction for irrigated turf, and 8 drops for shrub beds and non-traffic areas. Generally 32 drops is adopted for sand profiles in sportsgrounds.

All values of **K** for tubes of compaction by 16 drops and less, should be more than 5mm/hr.

PARTICLE SIZE DISTRIBUTION HYDROMETER AND WET SIEVE ANALYSIS

1.0 GENERAL

The particle size distribution is measured by a wet sieve analysis for particles larger than 0.053mm, and by hydrometer measurements for particles smaller than 0.053mm diameter.

Oven dried soil is used for the analysis. The soil should be allowed to cool for 10-20 minutes before weighing out a sample. If the soil is allowed to stand for longer it may absorb moisture from the air. This is especially true for clay soils, and the amount of dry soil weighed out could, in such cases, be too small.

A sample size of about 60-70g dry matter is used for clay soils.

Soils with a high content of fine sand and silt may clog the finer sieves and only pass through these very slowly, which can cause erroneous results. For such soils the amount of particles up to 0.106mm can be more reliably measured with the hydrometer.

The sample used for the hydrometer test is then used for the sieve analysis to get the distribution of larger particles.

2.0 SCOPE

This standard sets out a method for the laboratory determination of the particle size analysis of a soil. For most areas tap water contains too much calcium and distilled water must be for use in the hydrometer test.

3.0 REFERENCED DOCUMENTS

The following document is referred to in this standard:

AS1289 Methods of testing soil for engineering purposes.

4.0 APPARATUS

The following apparatus is required:

(a) Hydrometer

(b) Set of sieves - with hole diameters of 2.8mm, 2.0mm, 1.0mm, 0.5mm, 0.25mm, 0.106mm and 0.053mm (these sieves are those used by the USDA).

(c) Drying oven complying with AS 1289.0

(d) Plastic container with a nominal capacity of 2 litres

(e) Desiccator containing anhydrous silica gel

(f) Calgon (water softener), 5% solution

(g) Piston

(h) Mechanical stirrer

(i) Two 1 litre glass measuring cylinders

(j) Spray bottle

(k) Thermometer

(l) Plunger

(m) Stop watch

(n) Analytical balance with accuracy as per Table 1 AS1289 2.1.1

(o) Heat-resistant and corrosion-resistant container

(p) Distilled water

5.0 CALIBRATION

(a) Refer to AS 1289 3.6.3 for calibration of the hydrometer.

6.0 PROCEDURE

6.1 SAMPLE PREPARATION

(a) Take a sample of soil that is estimated to give the amount of dry matter needed in the test and place in a drying container. Oven dry the soil for at least 12 hours.

(b) Cool the sample for 10-20 minutes in a desiccator with silica gel. Weigh all of the dried sample in a plastic container (S), in grams to 2 decimal places. All the soil from the drying container should be used.

(c) Add 100ml of Calgon (5% solution), stir well to wet the sample thoroughly and allow the soil to soak overnight. Pounding with a piston for dispersion of aggregates may be also required.

(e) Disperse the sample, using a mechanical stirrer, for at least 30 minutes

(d) Add water to make the sample up to 600ml.

6.2 TESTING PROCEDURE

6.3 HYDROMETER MEASUREMENTS

(a) Transfer the sample to a large glass cylinder by using a spray bottle to get <u>all</u> the soil into the cylinder. Fill the cylinder up to 1000ml. Be careful not to use more than 400mls of water to wash the soil into the cylinder.

(b) Add 100ml of Calgon solution into another 1000ml glass cylinder and add water to make up to 1000ml. This is used for a **blank** reading, to make a correction for the effect of the Calgon on the hydrometer reading.

(c) Stir the sample thoroughly with a plunger for at least 30 seconds.

Start stopwatch when the stirring finishes.

After 30 seconds lower the hydrometer into the suspension and take a reading <u>R</u>, at 1mminute.

(d) Stir the sample again and take a hydrometer reading after 30 seconds; knowing that the reading will be somewhat higher than the first makes it easier to place the hydrometer at the right depth.

(e) Take a hydrometer reading after 1, 2 and 10 minutes standing; one after 2 to 5 hours; and a reading next day, after 12 to 16 hours standing.

Note the exact time of standing since last stirring, T, when each hydrometer reading is taken.

Take a blank reading in the Calgon/water solutions, B, at the same time as readings of the soil sample.

6.4 SIEVE ANALYSIS

(a) Place the nest of sieves in the sink with the finest sieves at the bottom.

(b) Transfer the soil sample to the nest of sieves by using a spray bottle or a fine jet on a hose from the water tap to ensure all the soil is transferred.

Turn on tap water and wash soil through sieves.

(c) Watch that the outflow from the bottom sieve is running freely. If it is blocked, turn the water off and shake sieves, to make the soil move on the bottom sieve.

(d) When the sample has been washed through, pull the sieves apart, washing the soil on each sieve to make sure all the smaller particles have passed through on to the finer sieve below.

(e) Stack the sieves with the finest in the bottom, wipe off excessive water and dry in an oven for 2 to 3 hours.

(f) When the sample is dry remove the sieves from the oven and allow to cool. Shake the stack of sieves thoroughly. Record the mass of material retained on each sieve ($m_{2.8}$, $m_{2.0}$, $m_{1.0}$,..... $m_{0.053}$).

7.0 CALCULATIONS

7.1 SIEVE ANALYSIS

(a) Add the weights from all sieves together:

$$m = m_{2.8} + m_{2} + m_{1} + m_{0.5} + m_{0.25} + m_{0.106} + m_{0.053}, \text{ g}$$

(b) Calculate the weight of particles smaller than 0.053mm, lost in the drain:

$$m_{<0.053} = S - m, \text{ g}$$

(c) Calculate the different size fractions as a percentage of the total sample:

Example: Percentage retained on a 2.8mm sieve

$$= \frac{m_{2.8}}{S} \times 100, \%$$

7.2 HYDROMETER MEASUREMENTS

(a) Use a computer programme to find the maximum particle diameter included in each hydrometer reading, as depending on the reading value, R, the time elapsed, T(minutes), and the temperature.

(b) Find concentration of soil in suspension, **C**, at each reading, by subtraction of the blank reading:

$$C = R - B, \text{ g/litre}$$

As the amount of soil used is not exactly 100.0g in a one litre suspension, then convert the values of concentrations to percentage of soil sample by dividing the concentration by grams of soil, S, and multiplying by 100.

Use computer programme for interpolation of the percentages of the soil sample smaller than 53μm, 20μm and 2μm.

(c) When taking a hydrometer reading the resulting particle diameter is found by calculation. To get the percentage values for 2, 20, 53 and 106μm, interpolations are needed.

The cumulative percentage, P, smaller than a given particle diameter, D, can be described by the function:

$$P\% = 100 \times \left(1 - \exp\left(-K \times D^{N}\right)\right),$$

Where the parameters K and N are determined from two pairs of percentage – diameter values. Extrapolations outside the range of measured values are best avoided.

Using the values, $P_1 = \frac{P_1\%}{100}$ smaller than the diameter D_1 and $P_2 = \frac{P_2\%}{100}$ smaller than the diameter D_2,

we get: $$N = \frac{\left[\ln\left(-\ln(1-P_1)\right) - \ln\left(-\ln(1-P_2)\right)\right]}{\left[\ln(D_1) - \ln(D_2)\right]}$$

and, $$K = \exp\left[\ln\left(-\ln(1-P_1)\right) - N \times \ln(D_1)\right]$$

*****

Hole diameter, (mm)	**Soil fraction retained**	**Maximum to be retained on sieve, (g)**
2.80	gravel	150
2.00	fine gravel	150
1.00	very coarse sand	100
0.50	coarse sand	70
0.25	medium sand	45
0.106	fine sand	20
0.053	very fine sand	10
Material passing through silt and clay		

Table 19.1. The diameter of the pores of the sieves used, and the soil fraction retained; as well as the recommended maximum mass of material to be retained on each sieve at the completion of sieving:

References:

Handreck, K. and Black, N. 1994. ***Growing Media for Ornamental Plants and Turf.*** New South Wales University Press Kensington Aust.

Department Urban Services, ACT Government 1993. ***Canberra Landscape Guidelines, Soil Testing Procedure LG B22.*** *Canberra.*

Standards Australia 1999; ***Methods of Testing Soils for Engineering Purposes, Australian Standard 1289.***

24.6 Further reading

Belconnen's Urban Parks, Sportsgrounds and Lake Ginninderra Plan of Management, Canberra Urban Sport and Recreation Services, Canberra, 1990.

Inner Canberra's Urban Parks and Sportsgrounds Plan of Management, Canberra Urban Sport and Recreation Services, Canberra, 2000.

Irrigation Policy, Department of Territory and Municipal Services-Sport and Recreation Services, available online

http://www.tams.act.gov.au/__data/assets/pdf_file/0012/40035/21_Irrigation_Edition_1_Revision_1.pdf

"Drainage for Sportsturf and Horticulture". Horticultural Engineering Consultancy Canberra 162pp McIntyre, Keith., and Jakobsen, Bent. 1998.

"Problem Solving in Golf courses, Sportsgrounds, the Landscape, and racecourses" Horticultural Engineering Consultancy Canberra 429pp McIntyre, Keith. 2004

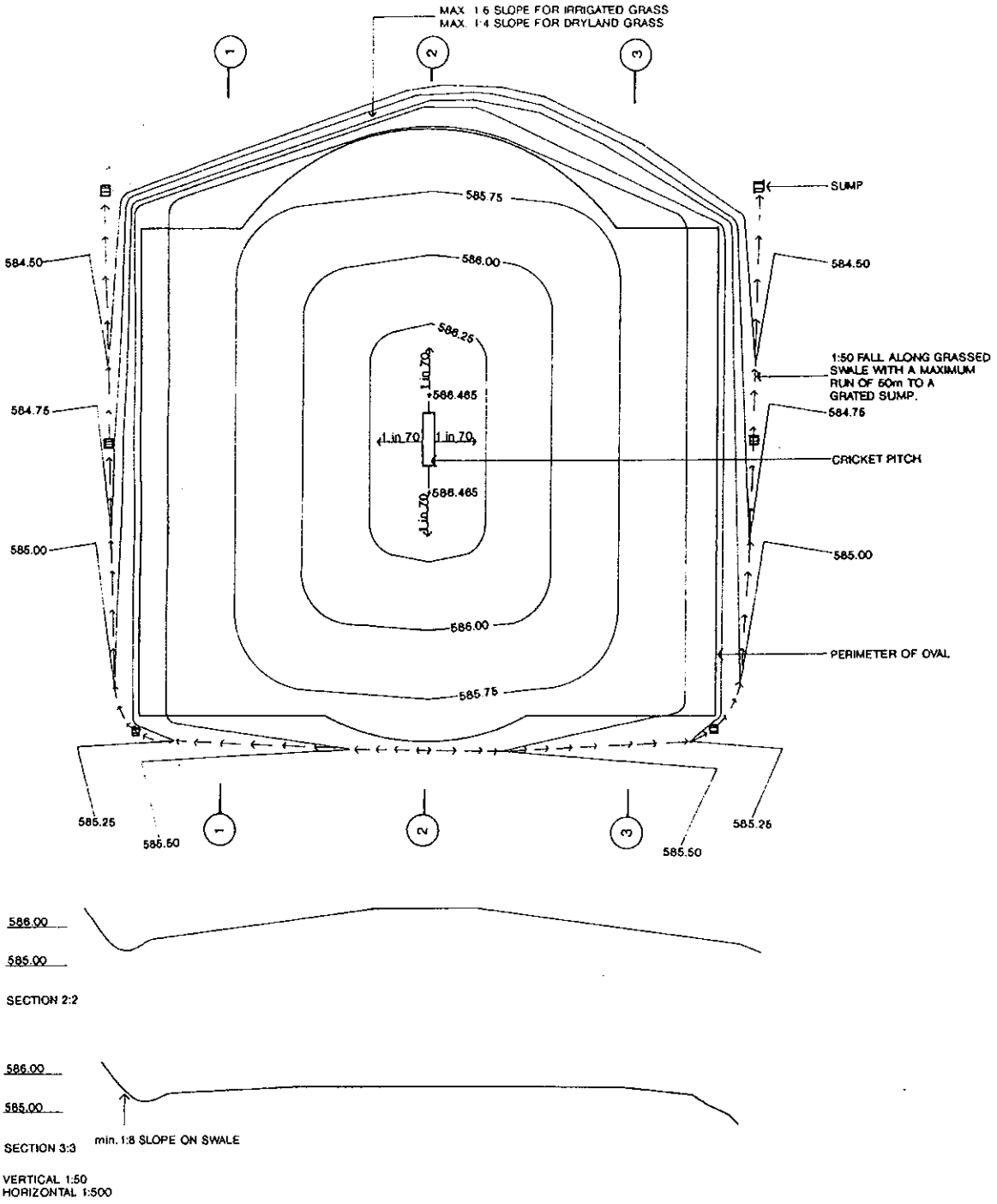
"Cricket Wickets - science v fiction". Horticultural Engineering Consultancy Canberra 282pp McIntyre, Keith, and McIntyre, Don 2001.

Tuggeranong's Urban Parks and Sportsgrounds Plan of Management, Canberra Urban Sport and Recreation Services, Canberra, 2000.

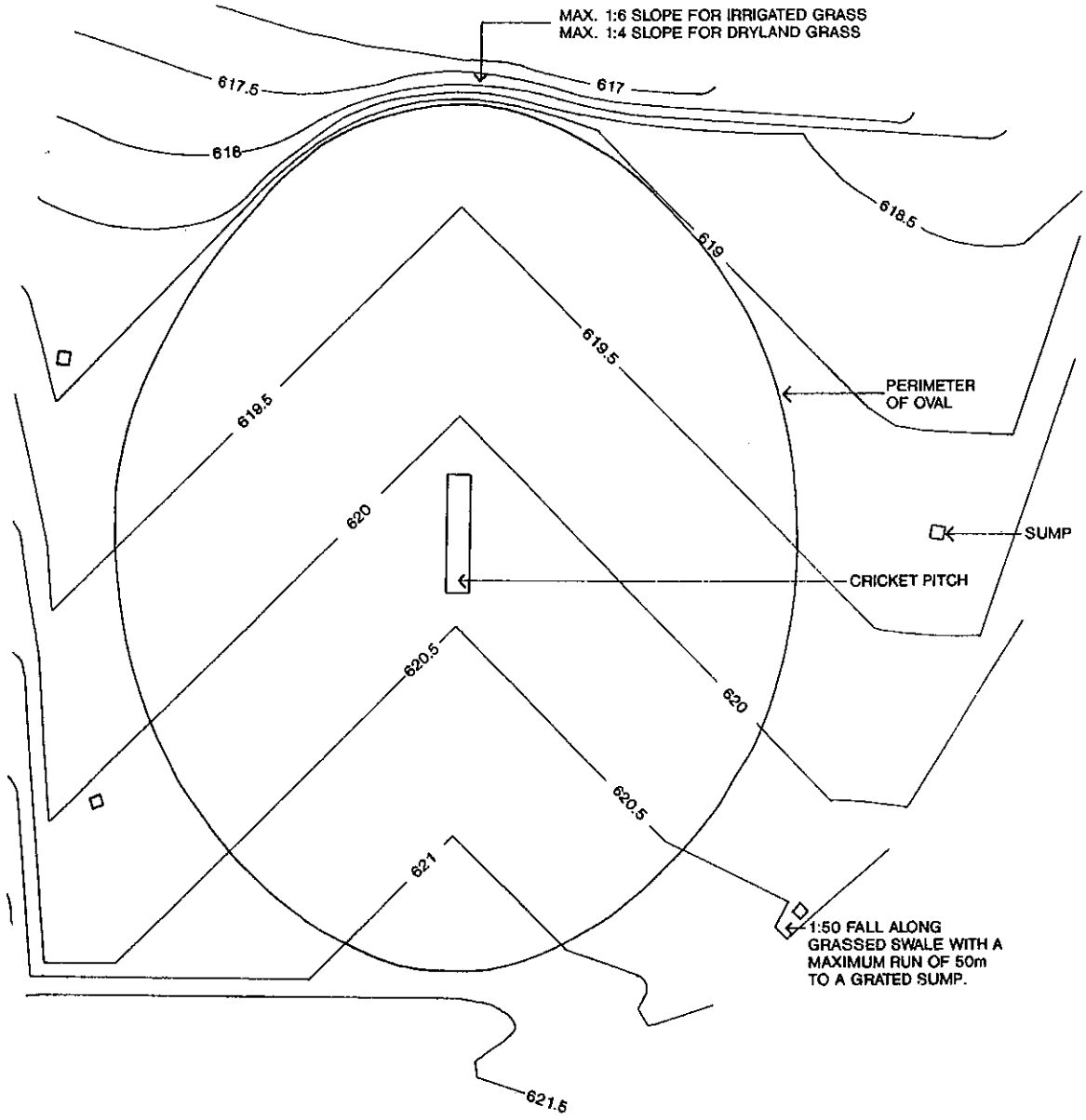
Woden and Weston Creek's Urban Parks and Sportsgrounds Plan of Management, Canberra Urban Sport and Recreation Services, Canberra, 1998.

Standard drawings

Indicative grading plan - domed formation



Indicative grading plan - two way crossfall



A

Execution

Executed as a Deed

Dated:

Executed on behalf of the Council in accordance with the Power of Attorney granted on the 23 February 2016

General Manager

Witness

Executed on behalf of Hixson Pty Limited in accordance with s127(1) of the Corporations Act (Cth) 2001

LOC THOMAS (DIRECTOR)

Name/Position

J.H. MOMSEN DIRECTOR

Name/Position

Catherine Park Planning Agreement

Camden Council

Hixson Pty Limited

Dandaloo Pty Limited

Edgewater Homes Pty Limited

Executed on behalf of Dandaloo Pty Limited in accordance with s127(1) of the Corporations Act (Cth) 2001

LEE THOMAS (DIRECTOR)

Name/Position

J.A. MOMSEN

Name/Position

Executed on behalf of Edgewater Homes Pty Limited in accordance with s127(1) of the Corporations Act (Cth) 2001

DIRECTOR

Name/Position

ROBERT EVAN BOWEN

SECRETARY

Name/Position

ANTONY JAMES BLACKSHAW

Appendix

(Clause 53)

Environmental Planning and Assessment Regulation 2000

(Clause 25E)

Explanatory Note

Draft Planning Agreement

Under s93F of the *Environmental Planning and Assessment Act 1979*

Parties

Camden Council ABN 31 117 341 764 of 37 John Street, Camden, NSW 2570 (**Council**)

Hixson Pty Limited ABN 85 156 636 770 of PO Box 42, Narellan, NSW 2567 (**Developer**)

Dandaloo Pty Limited ABN 77 002 338 543 of PO Box 42, Narellan NSW 2567 (**Developer**)

Edgewater Homes Pty Limited ABN 36 141 446 102 of 395 Ferntree Gully Road, Mount Waverley, VIC 3149 (**Developer**)

Description of the Land to which the Draft Planning Agreement Applies

The Draft Planning Agreement applies to the Land located within Lot 27 in DP 213330, Lot 293 in DP 708154, Lots 2 and 5 in DP 1173813, and Lots 10 to 17 inclusive and Lots 24 to 26 inclusive in DP 31996, and any part of that land comprised in a lot created by a Subdivision of that land, being land shown bounded by a red dashed line on the Staging Plan in Schedule 3.

Catherine Park Planning Agreement

Camden Council

Hixson Pty Limited

Dandaloo Pty Limited

Edgewater Homes Pty Limited

Description of Proposed Development

The development of the Land for urban purposes generally in accordance with the Staging Plan involving the subdivision of the Land into a maximum of 1,850 Final Lots, establishment of transport, utilities and stormwater management networks, provision of open space, recreation area embellishment, riparian corridor and transmission easement restoration and embellishment, and associated site works.

Summary of Objectives, Nature and Effect of the Draft Planning Agreement

Objectives of Draft Planning Agreement

The Draft Planning Agreement requires the Developer to provide Development Contributions to the Council in connection with the carrying out of the Development.

The object of the Draft Planning Agreement is to facilitate the provision of monetary contributions, the carrying out of works and the dedication of land by the Developer to the Council.

Nature of Draft Planning Agreement

The Draft Planning Agreement is a planning agreement under s93F of the *Environmental Planning and Assessment Act 1979* (Act). The Draft Planning Agreement is a voluntary agreement under which Development Contributions (as defined in clause 1.1 of the Draft Planning Agreement) are made by the Developer for various public purposes (as defined in s93F(3) of the Act).

Effect of the Draft Planning Agreement

The Draft Planning Agreement:

- relates to the carrying out by the Developer of Development on the Land,
- excludes the application of S94, S94A of the Act to the Development, but does not exclude S94EF,
- requires the carrying out of work, dedication of land and payment of monetary contributions,
- is to be registered on the title of the Land,
- imposes restrictions on the Developer transferring the Land or part of the Land or assigning an interest under the agreement,
- provides two dispute resolution methods for a Dispute under the agreement, being expert determination and mediation,
- provides that the agreement is governed by the law of New South Wales, and
- provides that the *A New Tax System (Goods and Services Tax) Act 1999* (Cth) applies to the agreement.

Assessment of the Merits of the Draft Planning Agreement

The Planning Purposes Served by the Draft Planning Agreement

The Draft Planning Agreement:

- promotes and co-ordinates the orderly and economic use and development of the Land to which the agreement applies,
- provides and co-ordinates community services and facilities in connection with the Development, and
- provides increased opportunity for public involvement and participation in environmental planning and assessment of the Development.

How the Draft Planning Agreement Promotes the Public Interest

The Draft Planning Agreement promotes the public interest by promoting the objects of the Act as set out in s5(a)(ii), (iv), (v) and 5(c) of the Act.

For Planning Authorities:

Development Corporations - How the Draft Planning Agreement Promotes its Statutory Responsibilities

N/A

Other Public Authorities – How the Draft Planning Agreement Promotes the Objects (if any) of the Act under which it is Constituted

N/A

Councils – How the Draft Planning Agreement Promotes the Elements of the Council's Charter

The Draft Planning Agreement promotes the following two elements of the Council's Charter under s8(1) of the *Local Government Act 1993*:

- To provide directly or on behalf of other levels of government, after due consultation, adequate, equitable and appropriate services and facilities for the community and to ensure that those services and facilities are managed efficiently and effectively.
- To properly manage, develop, protect, restore, enhance and conserve the environment of the area for which it is responsible, in a manner that is consistent with and promotes the principles of ecologically sustainable development.

These elements of the Council's charter are promoted through the provision or improvement of various public facilities, the need for which is created by the Development, including roads, roundabouts, bridges/crossings, a cycleway network, water management infrastructure, the embellishment of riparian land and open space, the dedication of land, and the payment of monetary contributions to the Council.

All Planning Authorities – Whether the Draft Planning Agreement Conforms with the Authority's Capital Works Program

No. However, the Draft Planning Agreement facilitates the completion of all of the works required by the Catherine Park development in a more timely and efficient fashion than if Council was required to deliver those works via the Catherine

Fields (Part) Precinct Section 94 Contributions Plan and via Council's Works Program.

All Planning Authorities – Whether the Draft Planning Agreement specifies that certain requirements must be complied with before a construction certificate, occupation certificate or subdivision certificate is issued

This Draft Planning Agreement contains the requirements that must be complied with before subdivision certificates are issued in respect of Development.