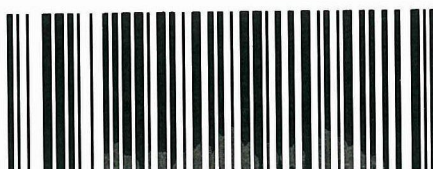
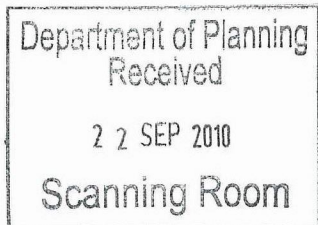


20 September 2010.



PCU014823

Mr Anthony Witherdin
Department of Planning
23-33 Bridge Street
SYDNEY NSW 2000



MERITON
MAKING LUXURY APARTMENTS
AFFORDABLE

MERITON TOWER
Level 11, 528 Kent Street
Sydney NSW 2000
Telephone: (02) 9287 2888
Facsimile: (02) 9287 2777
general@meriton.com.au

Dear Mr Witherdin

**STATEMENT OF ENVIRONMENTAL EFFECTS: SECTION 75W APPLICATION TO MAJOR PROJECT
MP NO. 08_0258 – EARLY WORKS PACKAGE – 61 MOBBS LANE, EPPING**

INTRODUCTION

Pursuant to Section 75W (1) (a) of the Environmental Planning and Assessment Act 1979, a 'modification of approval' is sought to vary Condition No. A2 pertaining to Major Project MP No. 08_0258 – Early Works Package, as approved on the 14 July 2010. The modification seeks to simplify stormwater, and improve the useability of open space.

THE SITE

Site Context

The subject is located at 61 Mobbs Lane, Epping in the Parramatta local government area. The site is 89,190 sqm in extent and is situated approximately 1.4km from both Epping and Eastwood rail stations. The site has close to 500m frontage to Mobbs Lane which is accessed via Midson Road to the east, and Marsden Road to the west.

The site is bounded to the south by Mobbs Lane, to the east by single houses fronting Edenlee Street, to the north by a branch of Ryde Horticultural TAFE, to the northwest by rear yards of single houses and some dual occupancies, and to the west by Mobbs Lane Reserve open space bushland. Stage 2 of this Project comprises three sites, Sites 1, 2 and 3. The site is located approximately 5k from Macquarie Shopping Centre and approximately 3k from Eastwood Shopping Centre where a full range of goods and services are available to the community.

The site is legally comprised of several allotments described as Lots 1 & 2 DP732070, Lot 2 DP582172, Lots 1 & 2 DP129023 and Lot 1 DP57089. Currently the site is under demolition.

Approvals Background

On 1 August 2006, State Environmental Planning Policy (Major Projects) 2005 (Amendment No.6) was gazetted which amended the Major Projects SEPP by listing the site as a State Significant Site in Schedule 3. This effectively rezoned the site and established design parameters.

On 22 August 2008, the Minister approved a Concept Plan (MP 05-0086) for residential development, landscaped open space, and associated facilities. In June 2009, an Environmental Assessment Report for Epping Park – Early Works Package (MP 08_0258) was submitted to the Minister of Planning for approval. On the 14th July 2010 the Early Works Package was approved, for the following works;

- *Demolition of existing structures and tree removal;*
- *Construction of final landforms and landscaping of the public and private domains;*
- *Internal and external road works;*
- *Services, utilities and stormwater management works;*
- *A child care facility and private communal resident facilities; and*
- *Consolidation of existing lots and subdivision into a community title allotment and Torrens title lot for the proposed child care centre.*

PROPOSED AMENDMENTS

The proposed amendment reorganises the stormwater management on the site. Principally, the proposed amendment replaces the swales and “rain gardens” with kerb/gutters and underground piping for stormwater to travel into the bio-detention basins in the open space area.

The bio-retention basins have also been reshaped and made larger, so water collected during rain events does not remain in the basin for a long period of time.

To make way for the redesigned basins the tennis court has been relocated to the central recreational area and the swimming pool deleted.

Annexure A contains the Engineering Plans, and revised concept landscape plan showing the relocation of the tennis courts.

JUSTIFICATION FOR THE MINOR CHANGES

Deletion of the Swales and Rain Gardens

Swales and rain gardens while being theoretically sound have in our experience proved problematic for the following reasons:

- They tend to fail in terms of long term maintenance when left to a Community Association to manage as no one takes responsibility for their upkeep.
- The maintenance of swales and rain gardens are costly. Community / Strata Body Corporates will be unwilling to pay for such items to be continually maintained.
- Martens Consulting Engineers have been engaged to review the issue of stormwater management and a copy of their report entitled, “Concept Stormwater Quality Assessment: Proposed Development – Mobbs Lane, Epping, NSW, July 2010. It concludes that the strategy proposed is more suitable for the development and is able to meet the Parramatta Councils Development Control Plan (2005) – Water Management, (refer to Annexure B).

Deletion of Wetlands and Replacement with two Bio-Detention Ponds

Deletion of the wetland basin is justified for the following reasons:

- The future maintenance of the wetlands by a Community / Strata Body Corporate will be excessive in terms of cost and maintenance may be compromised.

- In times of flood or when full, the wetlands is potentially a dangerous land use. A water pond located in close proximity to the Childcare Facility and the publicly accessible open space area may prove to be a liability.
- The wetland retention basin will result in water being held for long periods of time, which will increase mosquito problems. The proposed basins will have water retained for only a short period of time that can also be used as open space.
- The space would be better used to function as a combined detention basin and turfed playing field. To not do so would miss an opportunity to provide a valuable space to future residents.

It is therefore recommended that the 'wetland basin' be redesigned in order to function as a combined detention pond facility and communal open space area. This option would address the concerns raised above and provide valuable community recreation space.

Modification of the Central Resident Facility

- Relocation of the tennis court will remove any associated impacts upon existing adjoining residents.
- The key concern pertaining to the provision of the Central Resident Facility is the fact that a full time lifeguard would have to be employed for the size of pool proposed in the Central Residential Facility and would result in cost and liability issues. The central pool has therefore been deleted.
- A viable alternative is the provision of an indoor swimming pool, gymnasium and associated facilities within each phase of the development, such an option has been approved in Buildings 4 and 5.
- The tennis court will be relocated from adjoining the Child Care Center to the location of the 'Central Resident Facility' which will be more accessible to the entire development.

RECOMMENDATIONS

It is recommended that Condition A2 be amended to delete the following plans:

Drawing No.	Revision	Name of Plan	Date
Architectural Drawings prepared by PTW Architects			
A18011	-	Gym Floor Plan	23/04/09
A18012	-	Elevations & Sections	23/04/09
A18013	-	South Perspective	23/04/09
A18014	-	Shadow Studies	23/04/09
Engineering Plans prepared by Worley Parsons			
7587-PA-03	D	General Layout Plan	27/04/09
7587-PA-04	D	General Layout Plan 2	27/04/09
7587-PA-12	D	Typical Road Section	27/04/09
7587-PA-14	D	Overall Stormwater Plan	28/04/09
Landscape Plans prepared by ASPECT studios			
EW-PA 13	01	Central Residents Facility	22/04/09

Drawing No.	Revision	Name of Plan	Date
EW-PA 14	01	Child Care + Detention basin	22/04/09
EW-PA 15	01	Child Care + Sections+Planting	22/04/09
EW-PA 18	01	Street Section 01	22/04/09
EW-PA 19	01	Street Section 02	22/04/09

It is recommended that the following plans be inserted into Condition A2:

Drawing No.	Revision	Name of Plan	Date
Engineering Plans prepared by AT & L			
SKC01, Project No. 10-26	P3	Internal Works, Overall Roadworks Plan	09/08/10
DA01, Project No. 10-26	P1	Internal Works Typical Cross Sections	14/09/10
DA02, Project No. 10-26	P1	Internal Works General Arrangement Plan Sheet 1 of 2	14/09/10
DA03, Project No. 10-26	P1	Internal Works General Arrangement Plan Sheet 2 of 2	14/09/10
DA04, Project No.10-26	P1	Internal Works Stormwater Catchment Plan	14/09/10
Landscape Plans prepared by Sturt Associates			
SK1019-01		Landscape Plan	30/07/10

The above plans are enclosed in Annexure 1.

Further, that the following Clause be inserted as A2 (b) to read as follows:

"In the event of any inconsistency between the Landscape Plans prepared by ASPECT studios and the Landscape Plan prepared by Sturt Associates, the Sturt Associate drawing is to take precedence in so far as it pertains to the bio-detention ponds, relocation of tennis court, the deletion of the Central Resident Facility, deletion of swales and rain gardens (that is cross sections now include kerb and gutters to both sides of road)."

CONCLUSION

The proposed changes are minor refinements which will enhance the long term functionality and maintenance of the site. For the above reasons, the development as modified is considered to be substantially the same development as originally granted development in Early Works Package (MP 08_0258 on the 14th July 2010. Therefore the Ministers support in this regard is cordially requested.

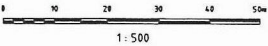
Yours faithfully

MERITON APARTMENTS PTY LIMITED



WALTER GORDON

Manager Planning and Development



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Scales	1:500 @ A0		
		Drawn	DATE

		Designed	MM
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Flight Datum	AHD	Checked
Grid	MCA	Approved

File: SK001 OVERALL LAYOUT PLAN.dwg

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MERITON APPARTMENTS
PTY LTD

Civil Engineers and Project Managers



Suite 702, 6A Glen Street
Missions Point NSW 2061
ABN 96 130 882 405
Tel: 02 8920 2466
Fax: 02 9922 5102
www.atl.net.au
info@atl.net.au

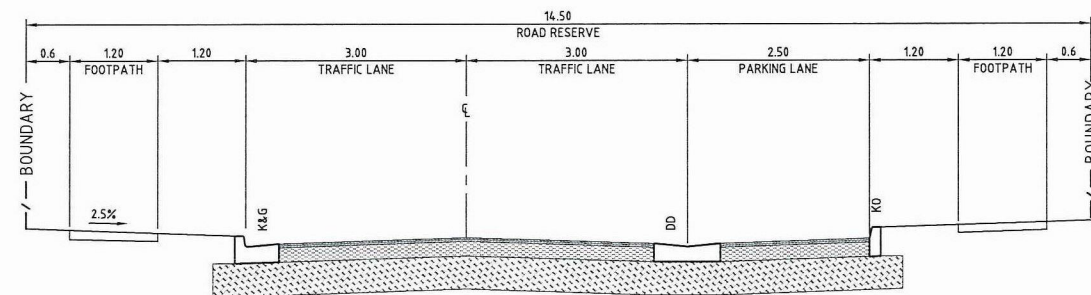
Project

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61 MOBBS LANE
EPPING

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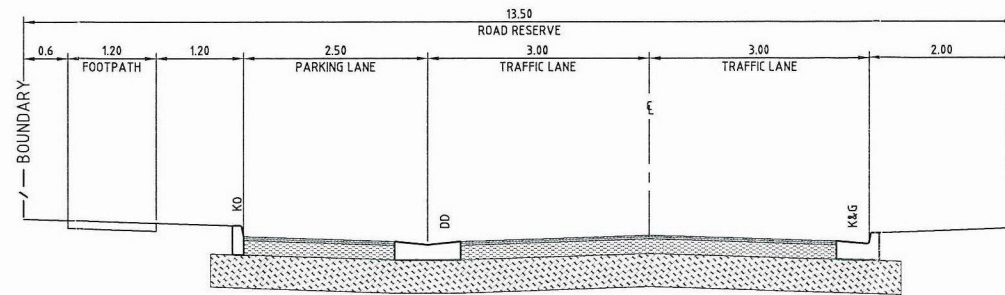
INTERNAL WORKS
OVERALL ROADWORKS
PLAN

Drawing No. SKC01	Project No. 10-26	Issue P3
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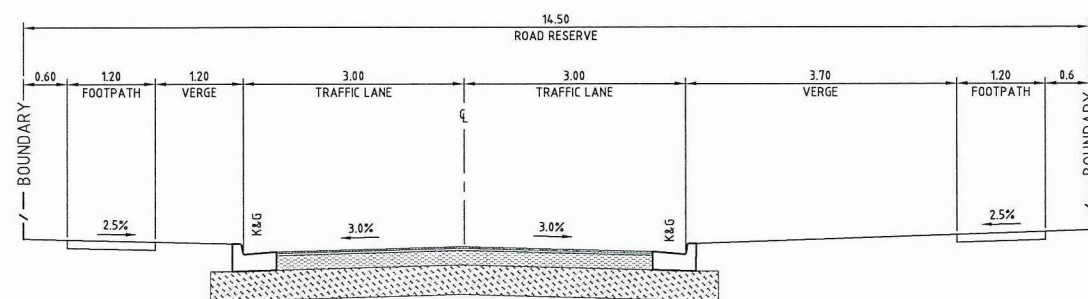
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SECTION 3
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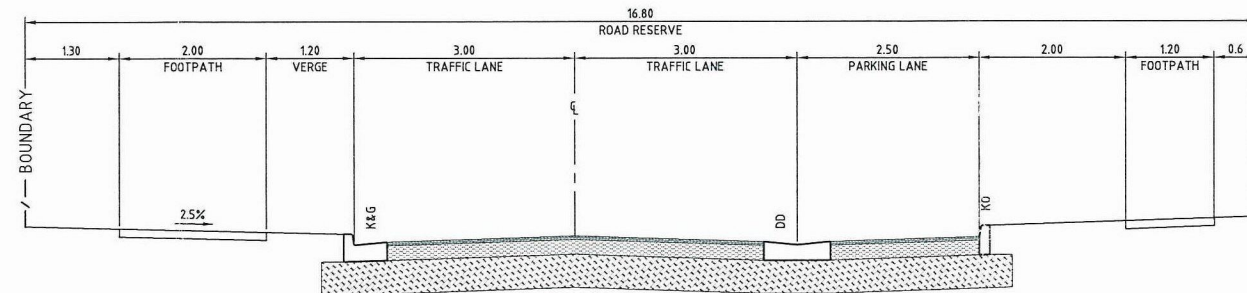
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SECTION 6
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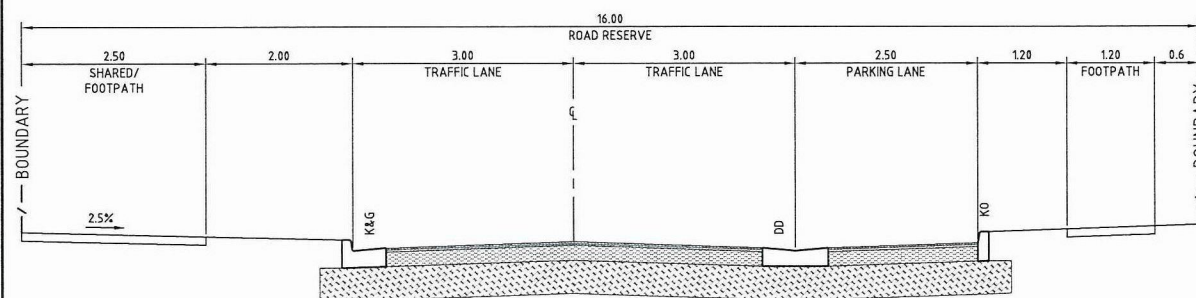
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SECTION 2
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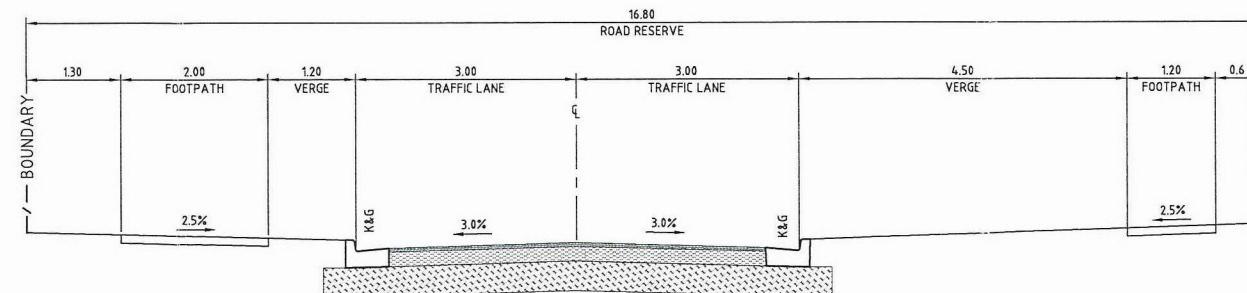
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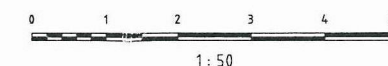
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SECTION 1
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TYPICAL SECTION ROAD 03
WITHOUT PARKING BAY

SECTION 4
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Issue	Description	Date

Key Plan	
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Grid		Approved

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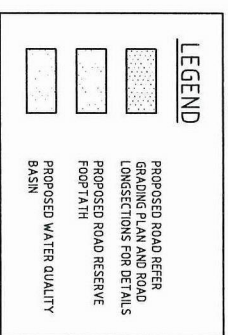
MERITON APARTMENTS
PTY LTD

Civil Engineers and Project Managers
AT&L
Suite 702, 6A Glen Street
Mills Point NSW 2061
ABN 96 130 882 405
Tel: 02 8920 2466
Fax: 02 9922 5102
www.atl.net.au
info@atl.net.au

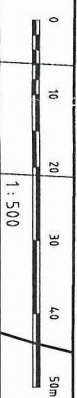
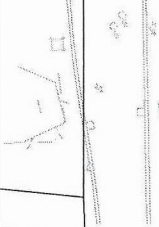
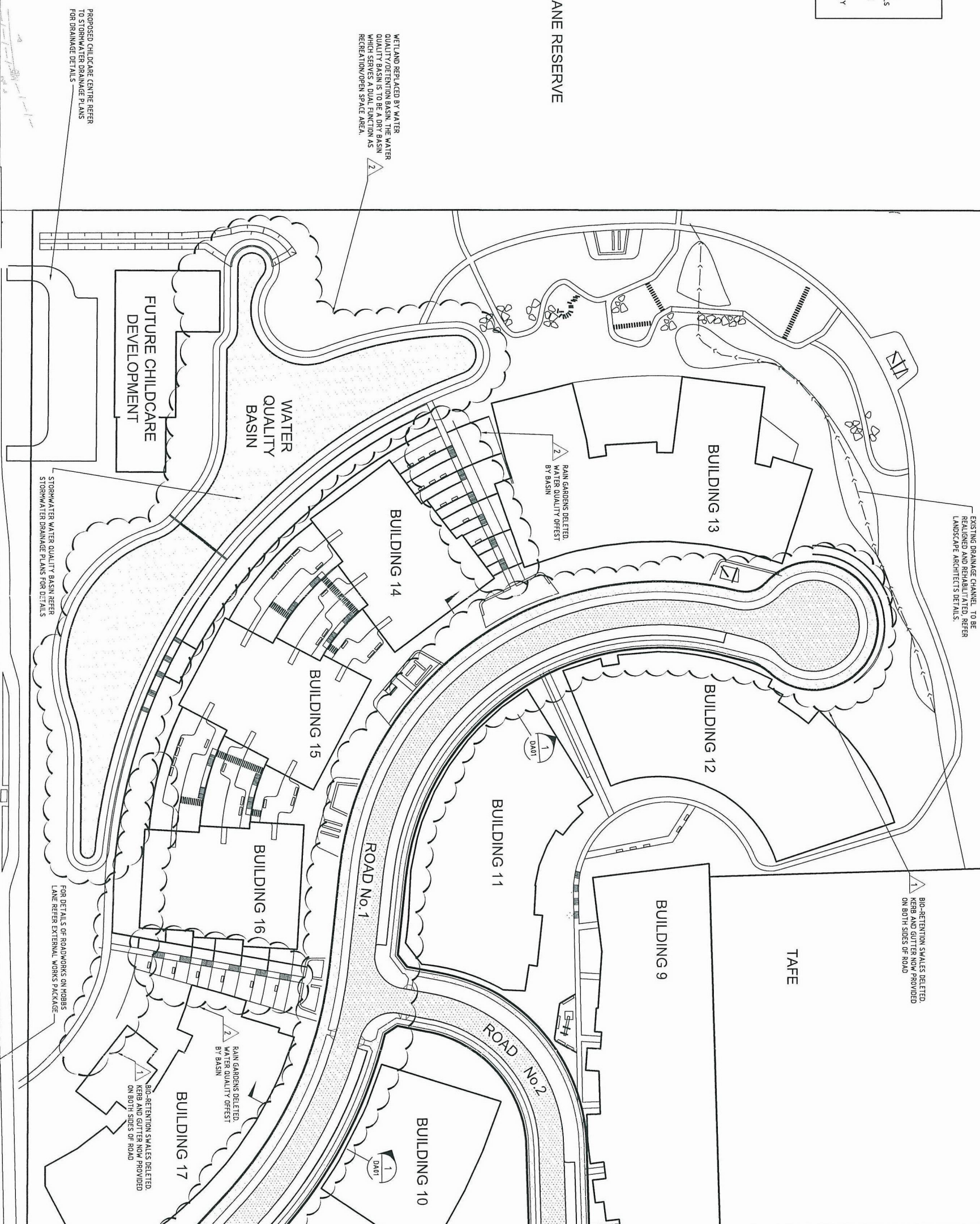
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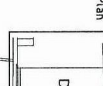
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MOBBS LANE RESERVE



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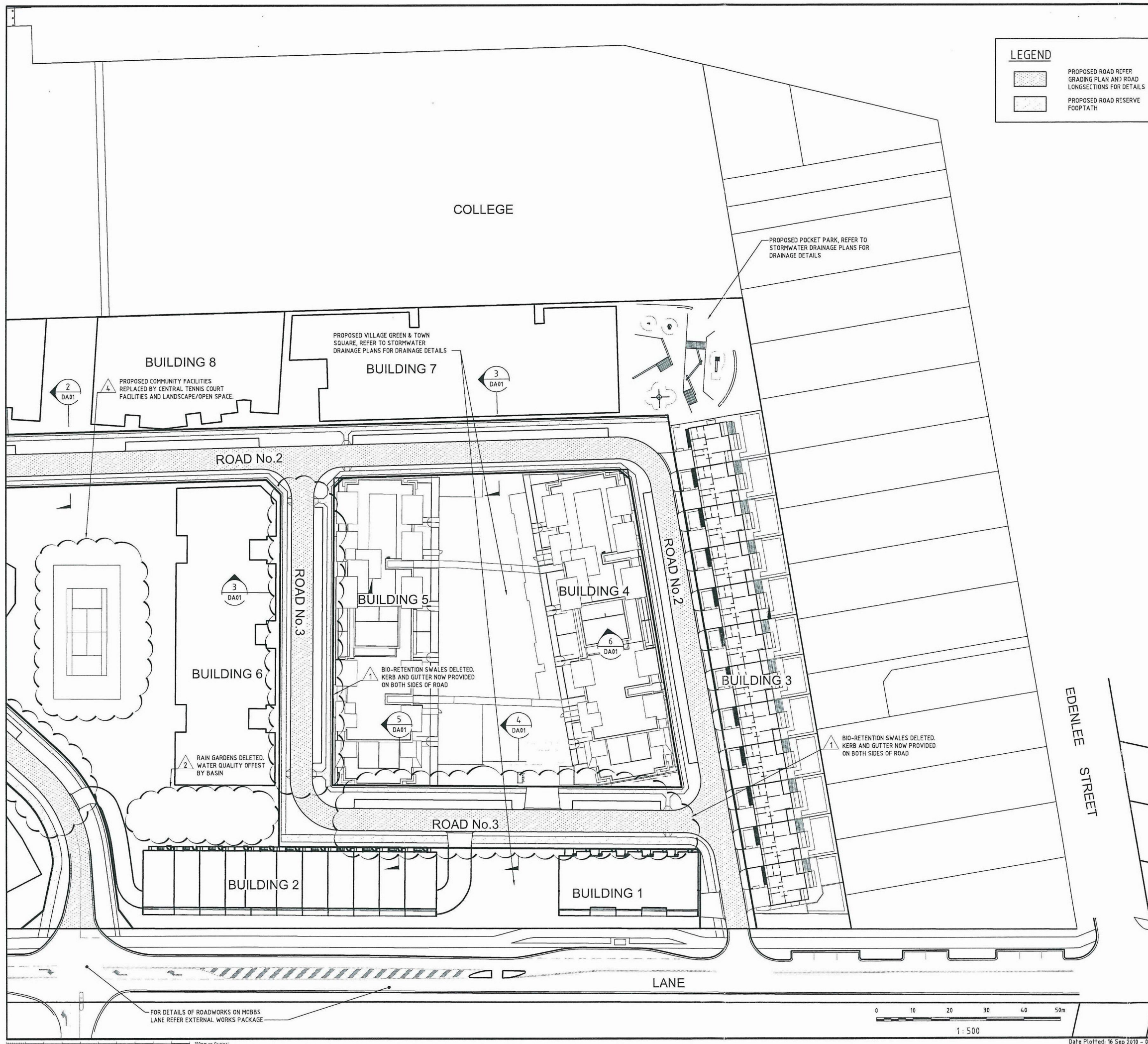
MERITON APARTMENTS
PTY LTD

Civil Engineers and Project Managers

Suite 702, 6A Glen Street
Missions Point NSW 2061
ABN 96 130 882 405
Tel: 02 6920 2466
Fax: 02 9922 5102
www.ait.net.au
info@ait.net.au

Project: EPPING PARK
61 MOBBS LANE
EPPING

INTERNAL WORKS
GENERAL ARRANGEMENT
PLAN SHEET 1 OF 2

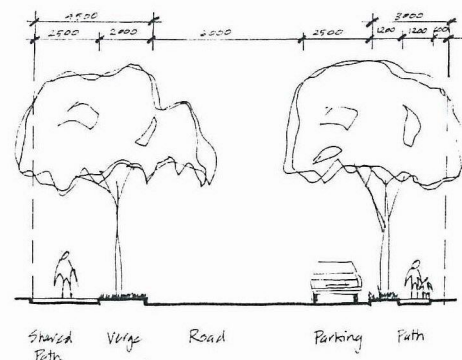


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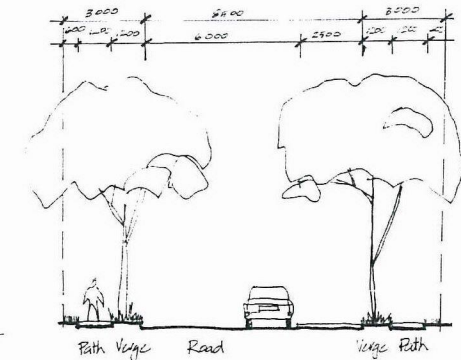
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PROPOSED ROAD RESERVE FOOTPATH

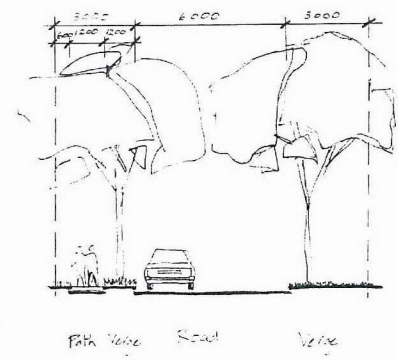
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Grid		Approved
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Civil Engineers and Project Managers	 Suite 702, 6A Glen Street Milsons Point NSW 2061 ABN 96 130 882 405 Tel: 02 8920 2466 Fax: 02 9922 5102 www.atl.net.au info@atl.net.au	
Project	EPPING PARK 61 MOBBS LANE EPPING	
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		10-26
		Issue
		P1



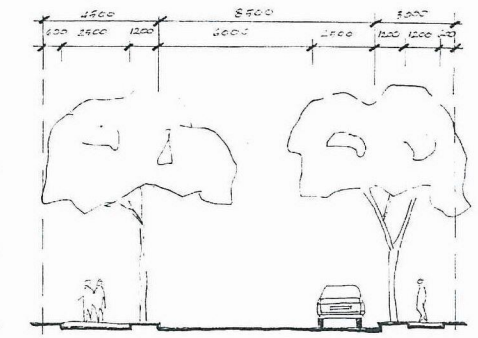
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ROAD 2 SECTION B SCALE 1:100



ROAD 2 SECTION C SCALE 1:100



ROAD 3 SECTION D SCALE 1:100



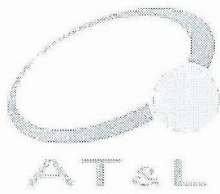
EPPING PARK
MOBBS LAKE

OPEN SPACE
STREETSCAPE PLAN

SCALE: 1:500
DATE: 30th July 2010
DRAWING: SK-1019-01

STURT ASSOCIATES
Landscape architecture, environmental design & urban design

Suite 91, 330 Wattle Street
HELVINGDON NSW 2007
Ph: (02) 9211 3144 Fax: (02) 9211 9449
www.sturtassociates.com.au
Email: enquiries@sturtassociates.com.au



Concept Stormwater Quality Assessment:

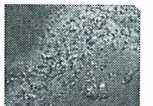
Proposed Development – Mobbs
Lane, Epping, NSW

P1002719JR01V02
July 2010

ENVIRONMENTAL



WATER



WASTEWATER



GEOTECHNICAL



CIVIL



PROJECT
MANAGEMENT



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Head Office
6/37 Leighton Place
Hornsby, NSW 2077, AUSTRALIA
ACN 070 240 890 ABN 85 070 240 890
Phone: +61-2-9476 9999
Fax: +61-2-9476 8767
Email: mail@martens.com.au
Web: www.martens.com.au

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All enquiries regarding this project are to be directed to the Project Manager.

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1 Overview

1.1 Background

Martens & Associates Pty Ltd has prepared this concept stormwater quality assessment for a proposed development on Mobbs Lane, Epping, NSW.

This report details findings from relevant desktop investigations and provides recommendations for the proposed development in light of the stormwater management strategy report prepared by Worley Parsons (report no. 301015-01035-CI-REP01, April 26, 2009) and geotechnical report prepared by Douglas Partners (report no. 45925, March, 2009).

1.2 Development Proposal

The Mobbs Lane project is the re-development of the old Channel Seven studios in Epping. The site is approximately 8.8ha and is proposed to be redeveloped into 600 plus apartments, open space and parklands along a village square and tennis courts.

A proposed site plan is shown in Sheet 2 Attachment A.

1.3 Project Scope

This report provides an assessment of stormwater quality management measures for the proposed development to ensure that the development complies with the principles of water sensitive urban design (WSUD), water quality objectives outlined in Parramatta Council Development Control Plan, "Section 4 – General Principles for Development" and Department of Environment and Climate Change NSW (DECC), Management Urban Stormwater: Urban design (Consultation Draft, 2008).

2 Site Characterisation

2.1 Location and Site Description

The site is located on the northern side of Mobbs Lane, Epping within the Parramatta Council Local Government Area. It is bordered by Grimes Lane to the north-west, Mobbs Lane reserve to the South-west, Mobbs Lane to the south-east and existing residential allotments to the North-east. It is approximately 8.88ha in size.

The site was previously occupied by Sydney Broadcast Property Pty Ltd and is used as Channel 7 broadcast station. Existing car parks, helicopter pad and station building could be found in the existing site.

An existing site plan is shown in Sheet 1 Attachment A.

2.2 Geology and Groundwater

Based on a review of Douglas Partners Geotechnical Report (No: 45925, dated March 2005), the following information is pertinent to our water quality assessment:

2.2.1 Geology

The Sydney 1:1000000 Geological Sheet 9130 (NSW Dept. Mineral Resources, 1983) describes the geology in the area of the site as Bringelly Shale, consisting of shale, carbonaceous claystone, laminate, fine to medium grained lithic sandstone and rare coal.

2.2.2 Soils

Geotechnical investigation revealed the site is underlain by sandy silty and clayey topsoil of depths vary from 0.1m to 0.25m, and clay, gravelly clay, gravelly silty clay, sandy gravel and sandy clay filling vary from 0.2m to 4.6m, overlaying silty clay, clay, and weathered shale to the depth of 12.1m to 13.27m.

2.2.3 Groundwater

Groundwater table was found at depths of approximately 5.0m below ground level.

3 Stormwater Management – Water Quality

3.1 Policy and Guidelines

The stormwater drainage design considers the following guidelines:

- Australian Rainfall Quality (2006);
- Parramatta Council Development Control Plan (2005), "Section 4 – General Principles For Development"; and
- Department of Environment and Climate Change NSW (DECC), Management Urban Stormwater: Urban design (Consultation Draft, 2008)

3.2 Objectives

We note that the DECC has no formal documentation for stormwater quality requirements, however Parramatta City Council Development Control Plan (2005), reduction objectives for stormwater quality assessment are summarised in Table 1. These are consistent with typical values noted in DECC (2008).

Table 1: Stormwater Pollutant Reduction Objectives

Pollutants	Parramatta City Council Pollutant Reduction Objectives
Total Suspended Solids (TSS)	80%
Total Phosphorus (TP)	45%
Total Nitrogen (TN)	45%
Gross Pollutants	70%

Pollutant reduction percentages are expressed in terms of "annual post-development pollutant loads" from the development.

3.3 Music Modelling

3.3.1 Modelling Overview

The Model for Urban Stormwater Improvement Conceptualisation (MUSIC, Version 3.0.1) was used to evaluate pre- and post-development pollutant loads from the site. The following modelling scenarios were considered:

1. Pre-development (existing) conditions - Sheet 3, Attachment A; and
2. Post-development (untreated) conditions without water quality treatment structures - Sheet 4, Attachment A; and
3. Post-development (treated) conditions based on the proposed site development - Sheet 5, Attachment A.

3.3.2 Site Catchment

Catchment areas of the pre- and post-development (untreated and treated) are outlined in Table 2 to Table 4 below. Catchment boundaries of post-development are shown on Sheet 4 (untreated) and Sheet 5 (treated), Attachment A.

Table 2: Summary of catchment details for existing conditions in MUSIC model.

Description	Adopted ARQ Source Node Parameter	Adopted Pervious (%)	Adopted Impervious (%)	Area (ha)
Roof Area	Roofs	0	100	1.15
Paving Area	Roads	5	95	2.07
Landscape	All Urban	90	10	5.66
Total (ha) =				8.88

Table 3: Summary of catchment details under post-development (untreated) conditions in MUSIC model.

Catchment	Total Area (ha)	Description	Adopted ARQ Source Node Parameter	Adopted Pervious (%)	Adopted Impervious (%)	Area (ha)
Catchment 1	6.52	Roof Area	Roofs	0	100	1.76
		Paving Area	Roads	5	95	0.66
		Landscape	All Urban	90	10	4.15
Catchment 2	1.89	Roof Area	Roofs	0	100	0.23
		Paving Area	Roads	5	95	0.06
		Landscape	All Urban	90	10	1.60
Catchment 3	0.47	Roof Area	Roofs	0	100	0.06
		Paving Area	Roads	5	95	0.06
		Landscape	All Urban	90	10	0.36
					Total (ha)	8.88
					=	

Table 4: Summary of catchment details under post-development (treated) conditions in MUSIC model.

Catchment	Drains To	Total Area (ha)	Description	Adopted ARQ Source Node Parameter	Adopted Pervious (%)	Adopted Impervious (%)	Area (ha)
Catchment 1	Basin 2 then Basin 1	5.36	Roof Area	Roofs	0	100	1.57
			Paving Area	Roads	5	95	0.61
			Landscape	All Urban	90	10	3.18
Catchment 2	Basin 1	1.35	Roof Area	Roofs	0	100	0.20
			Paving Area	Roads	5	95	0.05
			Landscape	All Urban	90	10	1.10
Catchment 3	Off-site	1.70	Roof Area	Roofs	0	100	0.22
			Paving Area	Roads	5	95	0.06
			Landscape	All Urban	90	10	1.42
Catchment 4	Off-site	0.47	Roof Area	Roofs	0	100	0.06
			Paving Area	Roads	5	95	0.06
			Landscape	All Urban	90	10	0.35
Total (ha) =							8.88

3.3.3 Music Model Parameters

Pollutant Concentration Parameters

Pollutant Concentration Parameters for each land-use type adopted in the MUSIC models were derived from Australian Runoff Quality (Engineers Australia, 2006) and Bui *et al.* (November, 2002) and are summarised in Table 5 and Table 6. In all cases, the stochastic generation option for pollutant generation was selected. Pollutant Concentration Parameters for each land-use type adopted in the MUSIC models are shown on Attachment A.

Table 5: Adopted base flow pollutant concentration parameters in MUSIC model.

Catchment Type	Total Suspended Solids (mg/L) ¹		Total Phosphorus (mg/L) ¹		Total Nitrogen (mg/L) ¹	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
All Urban	1.255	0.477	-0.877	0.374	0.404	0.276
Roofs ¹	-	-	-	-	-	-
Roads ¹	-	-	-	-	-	-

Note: All values are derived from Australian Runoff Quality (Engineers Australia, 2006) and Bui *et al.* (November, 2002).

¹ No base flow generated from roofs and roads.

Table 6: Adopted storm flow pollutant concentration parameters in MUSIC model.

Catchment Type	Total Suspended Solids (mg/L) ¹		Total Phosphorus (mg/L) ¹		Total Nitrogen (mg/L) ¹	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
All Urban	1.255	0.477	-0.877	0.374	0.404	0.276
Roofs	1.556	0.377	-0.886	0.301	-0.086	0.298
Roads	1.839	0.644	-0.602	0.162	0.164	0.298

Note: All values are derived from Australian Runoff Quality (Engineers Australia, 2006) and Bui *et al.* (November, 2002).

3.4 Modelling Results

To achieve the objectives as stated in Section 3.2 Table 1, stormwater quality improvement devices (SQIDs) are required to achieve the reduction percentage.

A number of SQIDs have been included in the model with details of SQIDs provided in Section 3.5. MUSIC modelling results (Table 7 and Table 8) confirm the proposed SQIDs achieve the stated reduction objective. Pollutant loads for the post-development scenario are improved (ie. less than) compared to the pre-development model.

Table 7: Music modelling results presented as mean annual loads at the receiving node under pre-development and post-development (untreated) conditions.

Pollutants	Pre-Development (existing) ¹	Post-Development (untreated) ²	Difference	% Increased	Reduction Objectives (From Section 3.2)	Required to Treat
TSS (kg/year)	7730	4930	-2800	-36%	80%	986
TP (kg/year)	160	15	-145	-91%	45%	8.20
TN (kg/year)	172	176	4	2%	45%	96.80
Gross Pollutants (kg/year)	1410	1860	450	32%	70%	558.00

Note: ¹ Music modelling results under pre-development (existing) conditions are shown on Sheet 6, Attachment A.

² Music modelling results under pre-development (untreated) conditions are shown on Sheet 7, Attachment A.

Table 8: Music modelling results presented as mean annual loads at the receiving node under pre-development (existing) and post-development (treated) conditions.

Pollutants	Post-Development (untreated) ¹	Post-Development (treated) ²	Difference	% Reduced From Untreated Post-Development	Reduction Objectives (From Section 3.2)
TSS (kg/year)	4930	935	3995	-81%	80%
TP (kg/year)	15	5.2	10	-65%	45%
TN (kg/year)	176	94.4	82	-46%	45%
Gross Pollutants (kg/year)	1860	95.7	1764	-95%	70%

Note: ¹ Music modelling results under pre-development (existing) conditions are shown on Sheet 7, Attachment A.

² Music modelling results under pre-development (treated) conditions are shown on Sheet 8, Attachment A.

3.5 Stormwater Quality Improvement Devices (SQIDS) Requirements

The stormwater quality improvement devices (SQIDS) required for the proposed development are described in Table 9. SQIDS input data used in the MUSIC model are shown on Sheet 10, Attachment A.

Table 9: Summary of proposed stormwater quality improvement devices (SQIDS)

Element	Water Quality Function	Description	Preliminary Specification(s)
Gross Pollutant Traps (GPT)	Primary litter removal mechanism.	Roof and road runoff from Catchment 3 to be directed to a gross pollutant traps prior discharge off-site by overland runoff. Runoff from Catchment 4 to be direct to gross pollutant traps prior to discharge off-site by overland runoff.	At this stage, the proposed GPT have not been specified. This will ultimately depend on inflow rates and may consist of CDS units or other commercially available equivalent. Treatment efficiencies of the GPT used in the model were assumed as follows based on CDS specification: TSS 70 % retention TN 10 % retention TP 30 % retention Gross pollutants 98 % retention
Basin 2	Provide stormwater polishing prior to discharge to Basin 1.	Runoff from Catchment 1 to be directed to Basin 2 prior to discharge into Basin 1.	Basin 2 properties assumed for modelling purposes included: Surface area: 500m ² Depth: 0.3m Seepage loss: 3.6mm/hr Filter area: 500m ² Filter depth: 0.3m
Basin 1	Provide final stormwater polishing prior to discharge off-site.	Runoff from Catchment 2 to be directed to Basin 1 prior to discharge into pit and pipe system.	Basin 1 properties assumed for modelling purposes included: Surface area: 2000m ² Depth: 0.3m Seepage loss: 3.6mm/hr Filter area: 2000m ² Filter depth: 0.3m

3.6 Conclusions

Stormwater quality objectives adopted from Parramatta Council DCP (2005) have been achieved using end of line treatment structures including GPT's and bio-retention basins. The majority of the development (Catchment's 1 and 2) are to be treated by the bio-retention basins, consisting of 2 "cascading" basins of 500m² and 2000m² respectively. Collected run-off from impervious area of Catchment3 and 4 are to be directed to a GPT (CDS unit or similar) prior to discharge off-site.

4 References

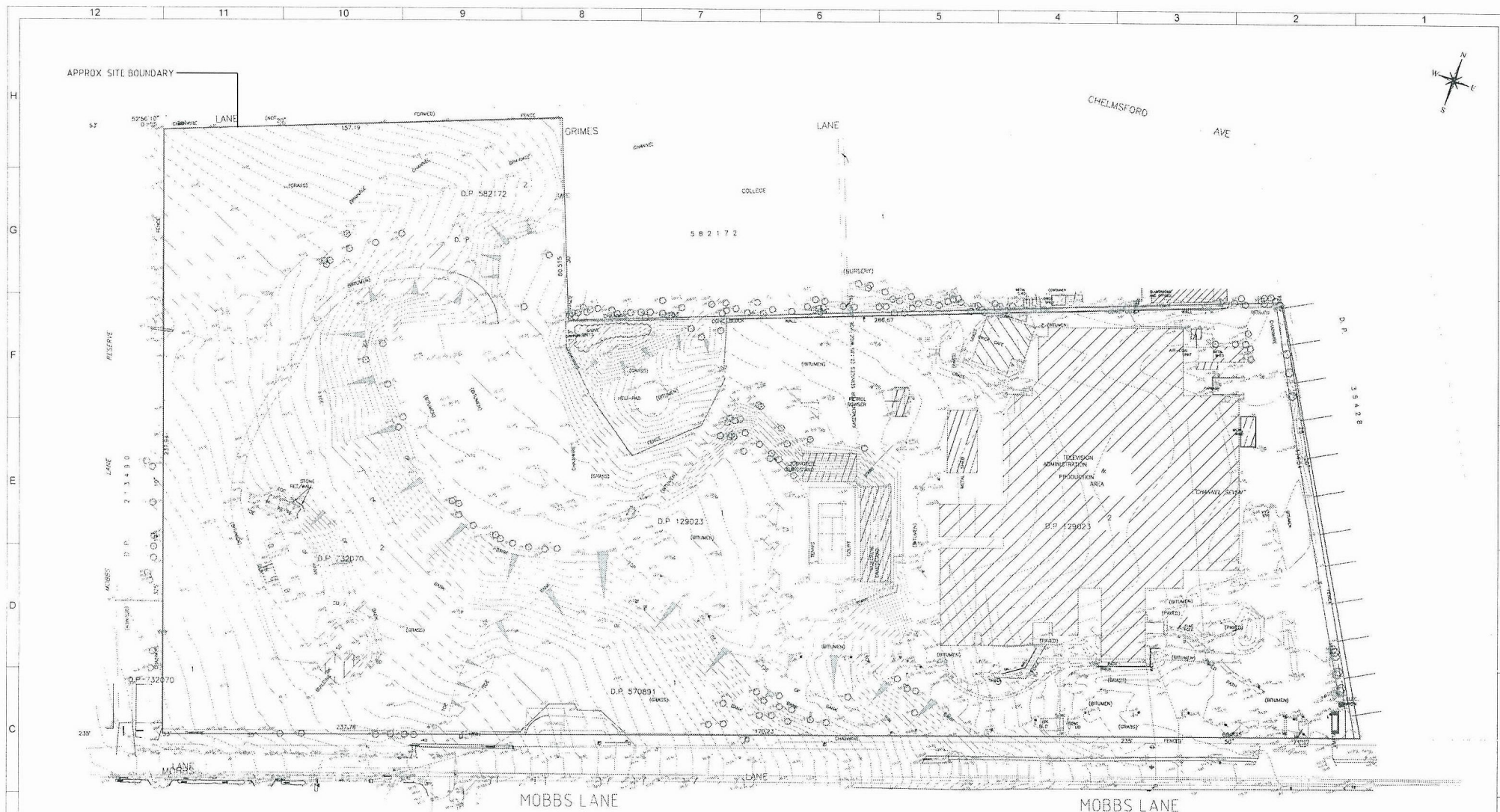
Institute of Engineers Australia, 2006. *Australian Rainfall and Runoff*.

Department of Environment and Climate Change NSW (DECC),
2008. *Management Urban Stormwater: Urban design*
(Consultation Draft)

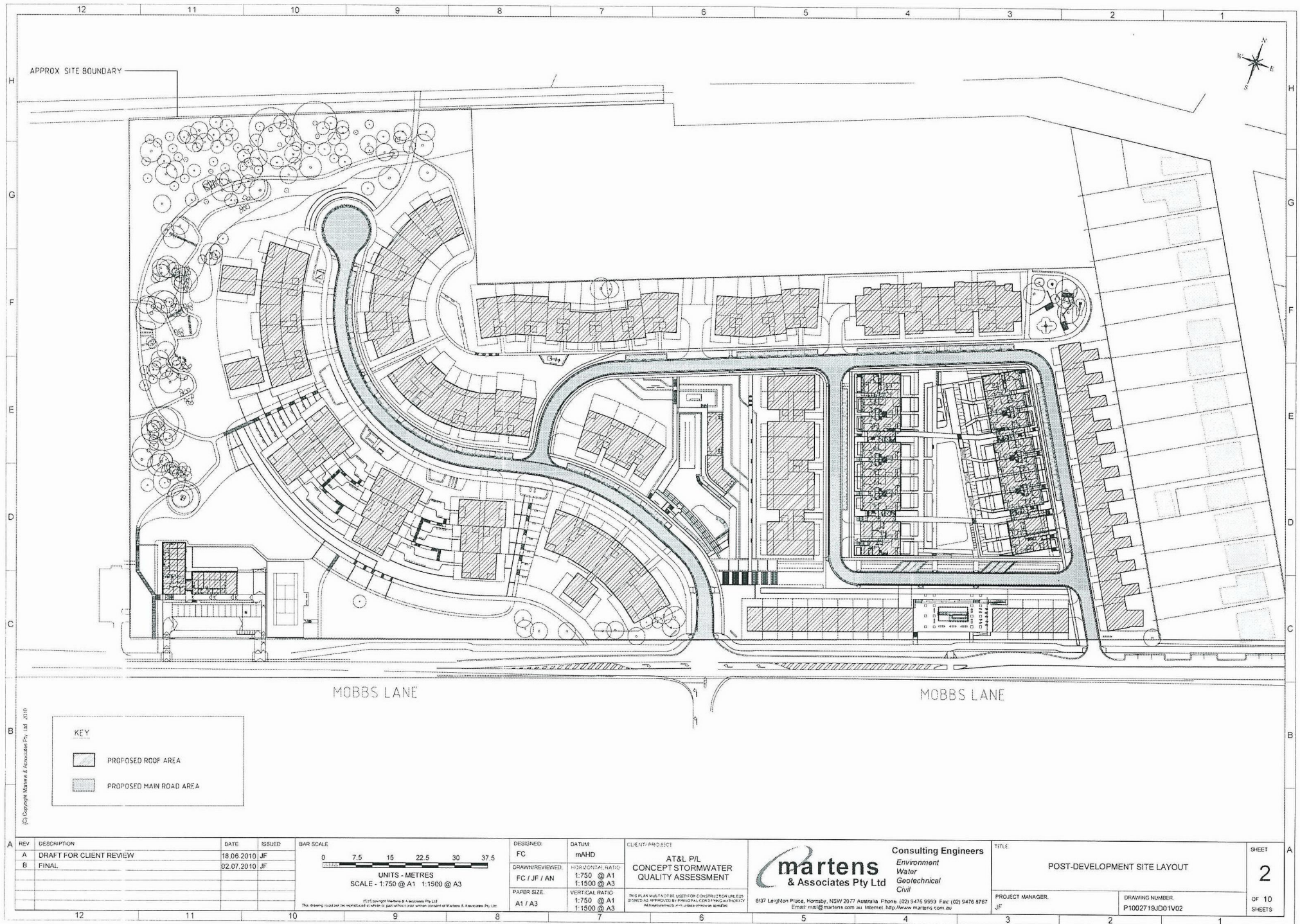
Parramatta City Council, 2005. *Development Control Plan, Section 4:*
General Principles For Development.

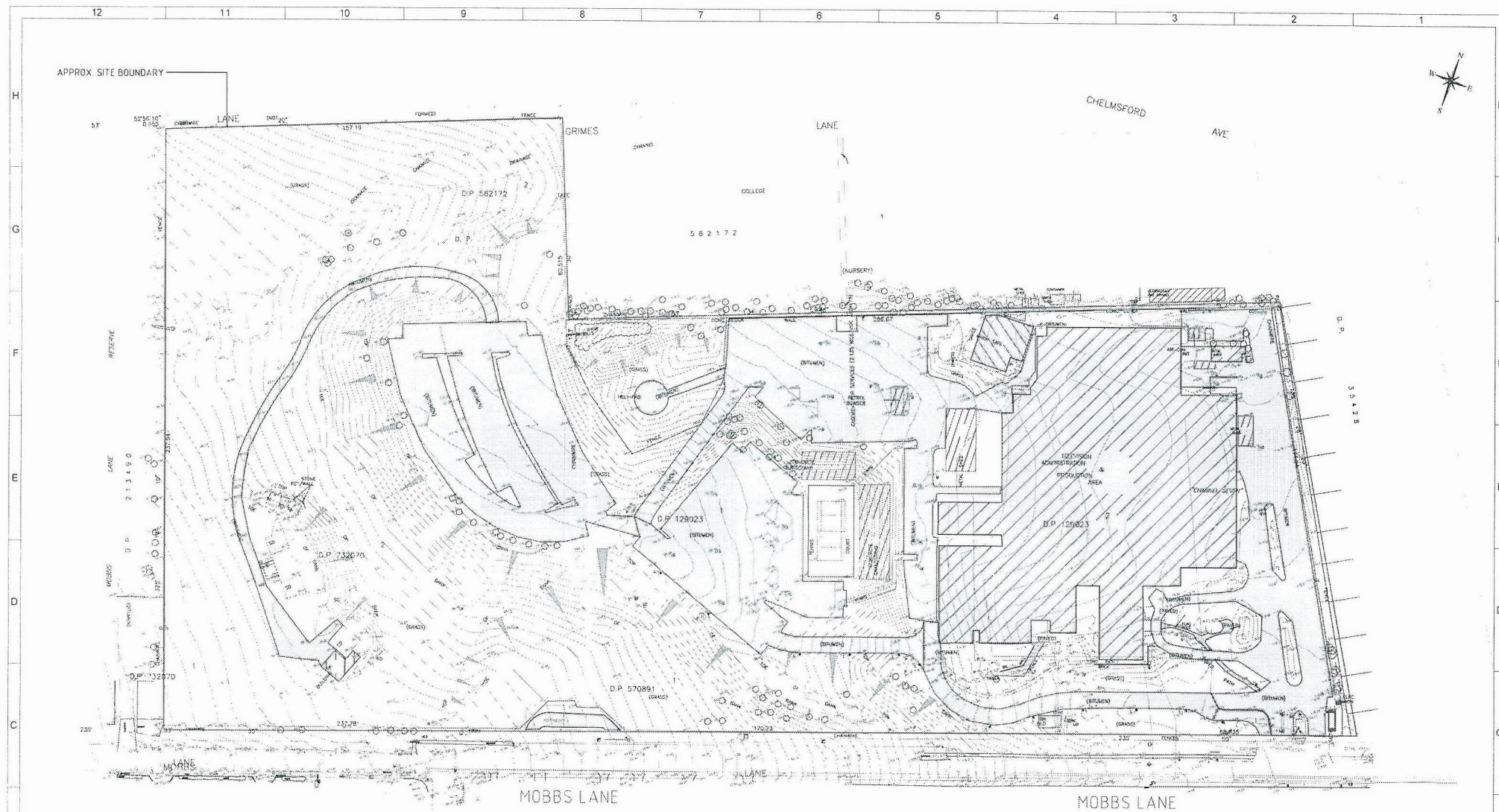
Sydney Catchment Authority, 2009. *Draft MUSIC Users Guideline*.

5 Attachment A – Plan Set



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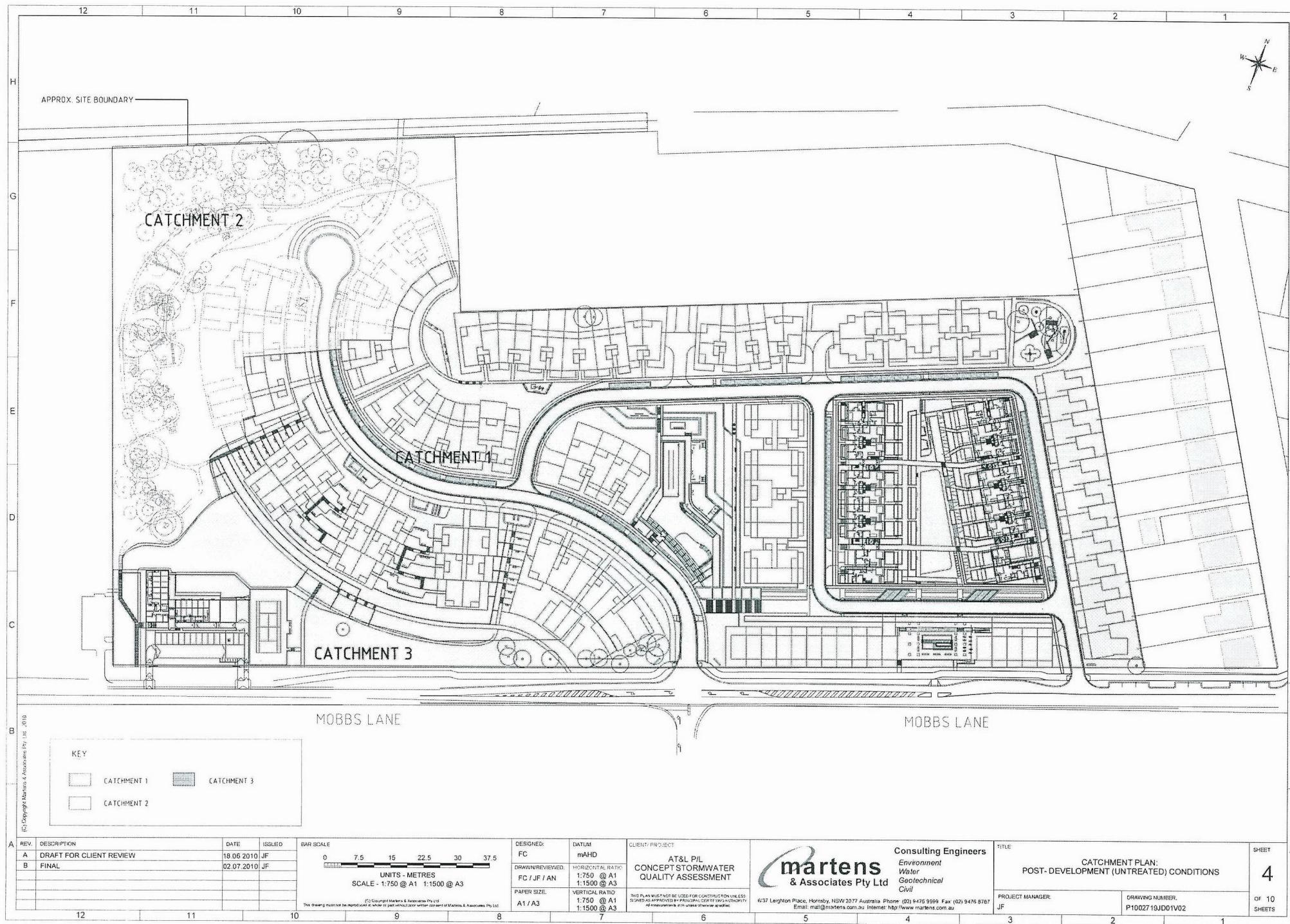


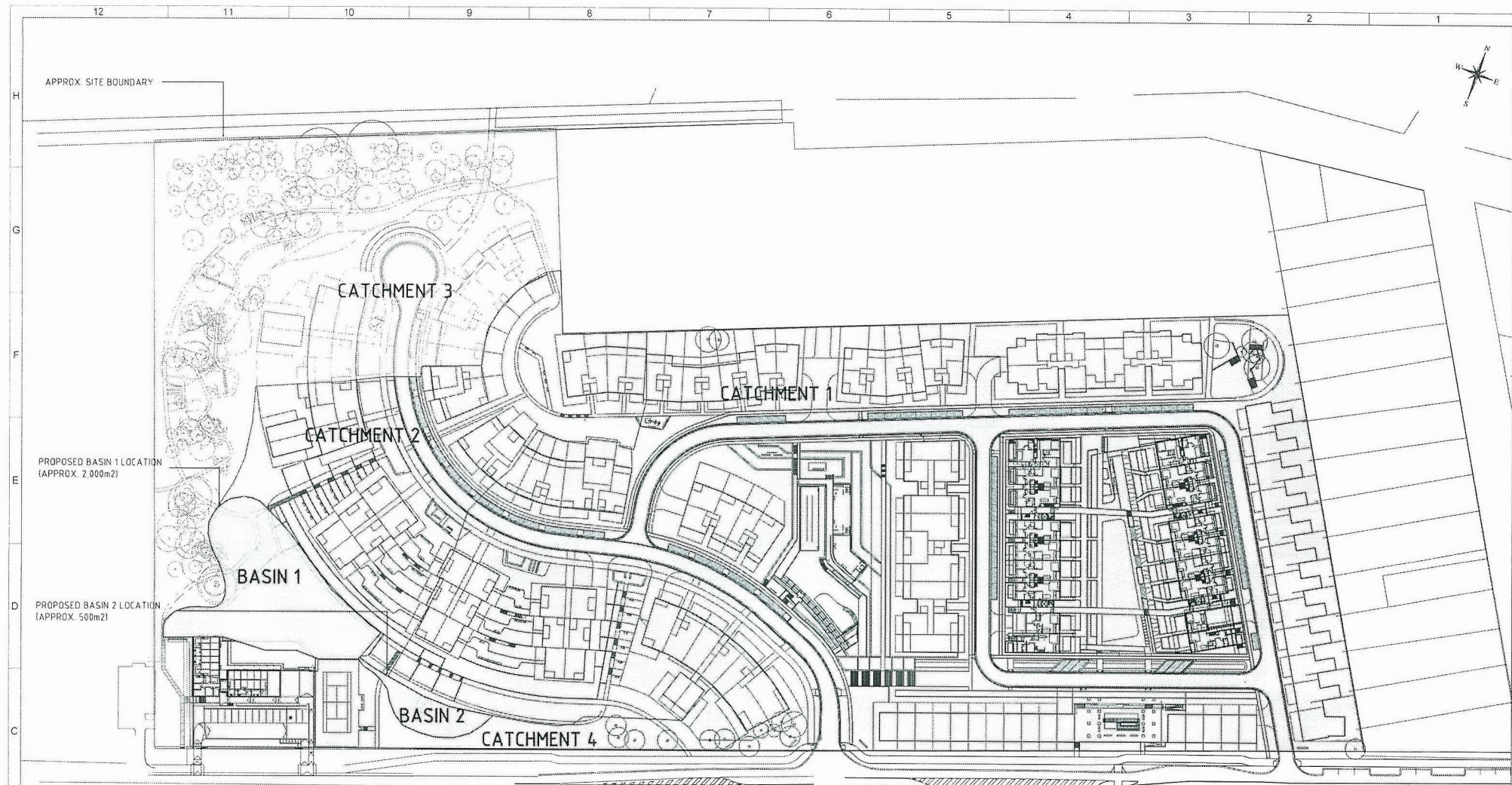


KEY

- MUSIC PARAMETER - ROOFS
- MUSIC PARAMETER - ROADS
- MUSIC PARAMETER - LANDSCAPE

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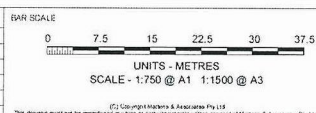


KEY

- CATCHMENT 1 - FLOW TO BASIN 2 AND THEN BASIN 1
- CATCHMENT 2 - FLOW TO BASIN 1
- CATCHMENT 3 - FLOW OFF-SITE
- CATCHMENT 4 - FLOW OFF-SITE
- PROPOSED BASIN 1 AND 2

Catchment	Total Area (ha)	Roof Area (ha)	Road Area (ha)	Urban Area (ha)
1	5.36	1.57	0.61	3.18
2	1.35	0.20	0.05	1.10
3	1.70	0.22	0.06	1.42
4	0.47	0.06	0.06	0.35
Total	8.88	2.05	0.78	6.05

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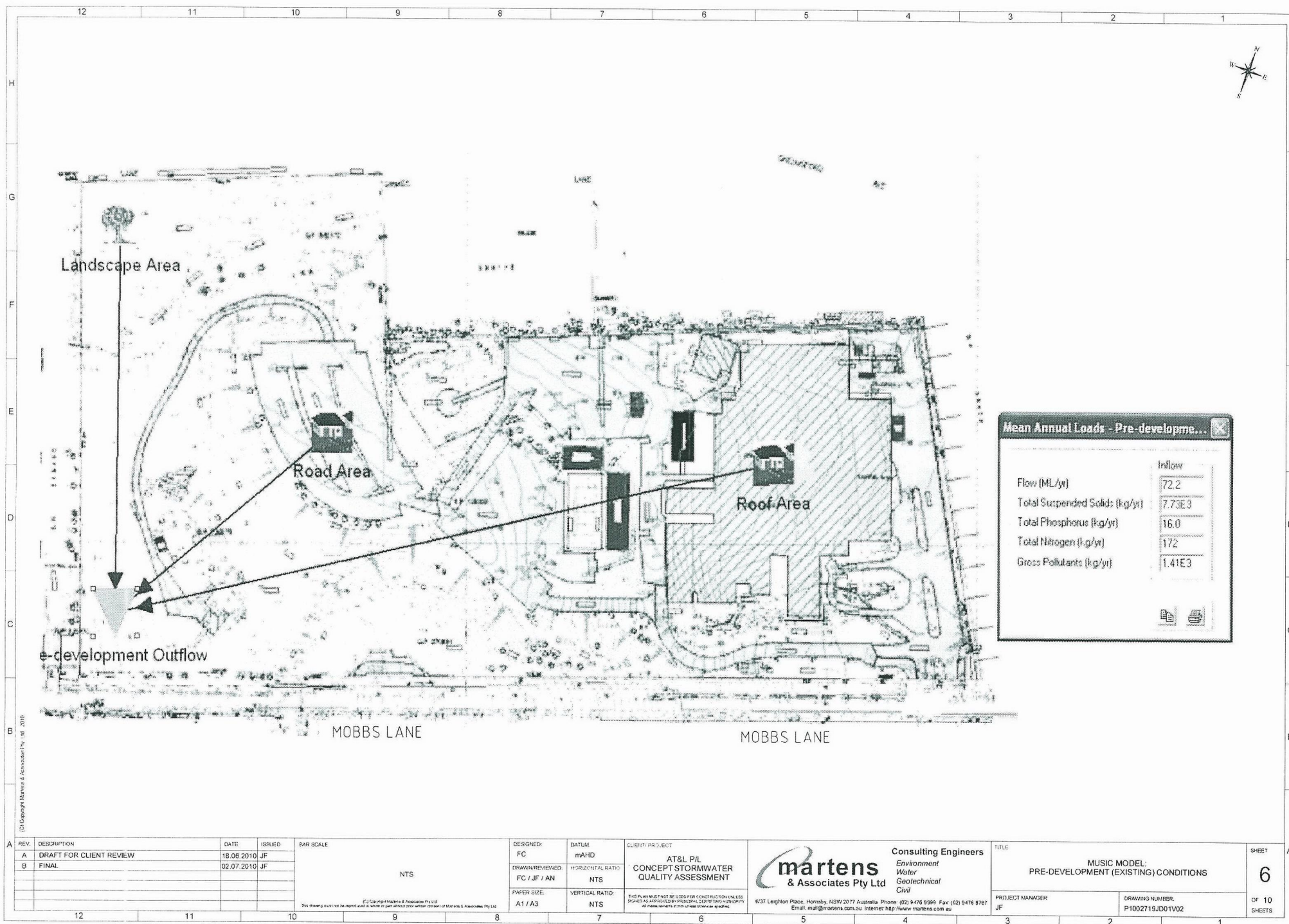
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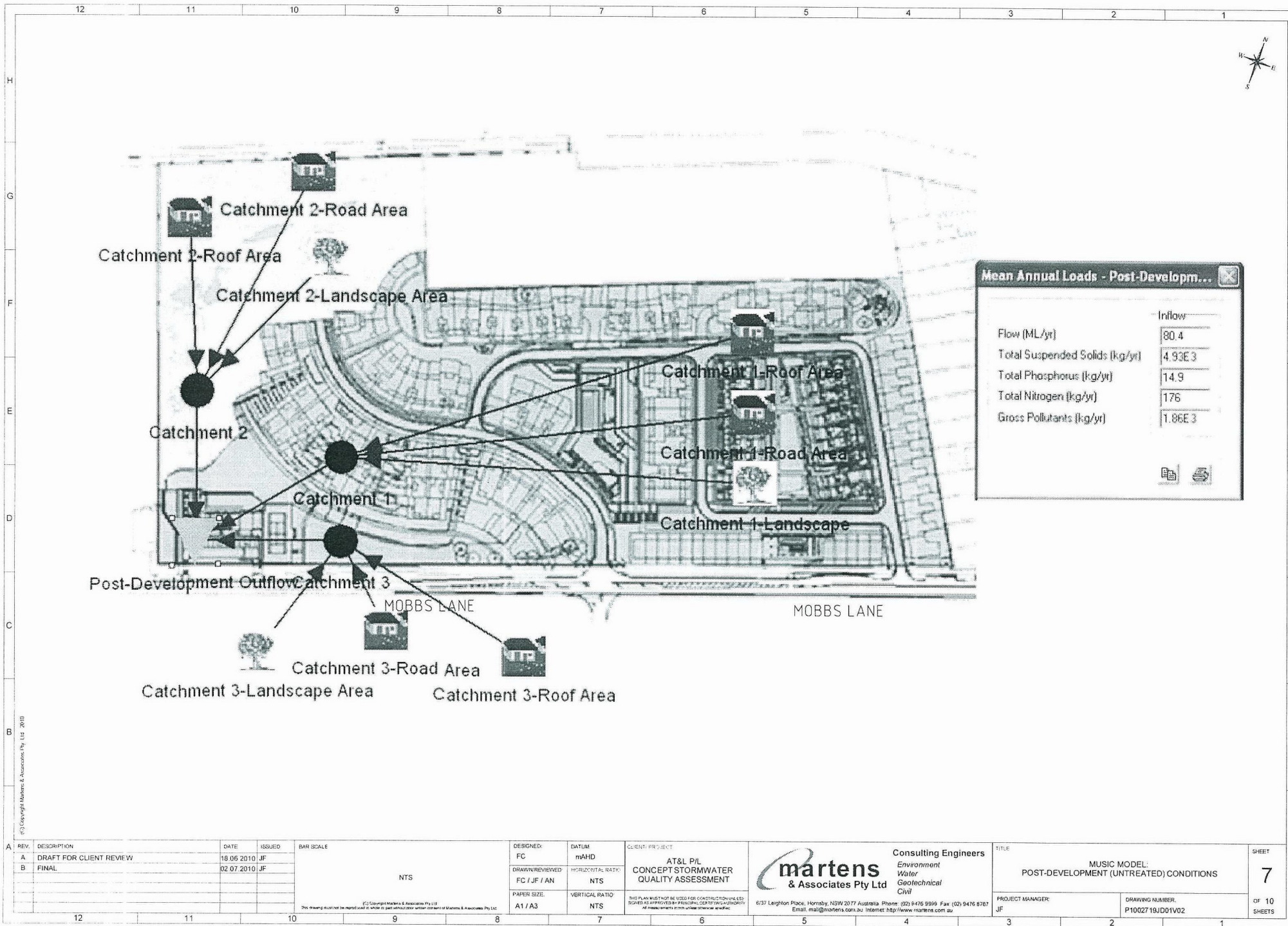
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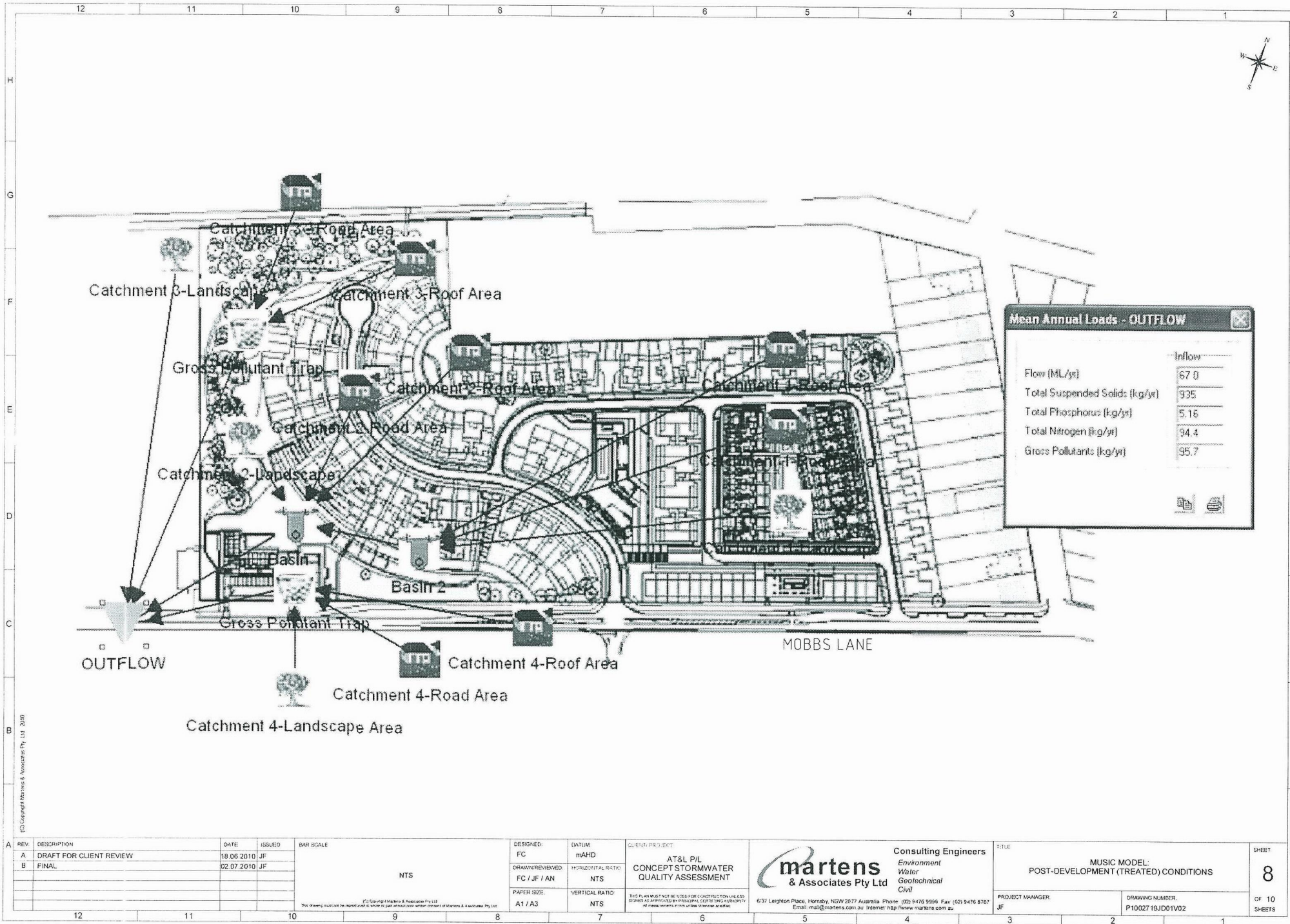
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The figure displays four screenshots of the HSPF model interface, specifically the 'Properties of Catchment 1 - Wet Area' section for pages 2, 3, 4, and 5. Each screenshot shows a different set of input parameters and their values.

- Page 2:** Shows 'Impervious Area Properties' (Impervious Area: 1.00, Impervious Area Fraction: 0.10), 'Sediment Concentration Parameters' (Sediment Concentration: 1.00, Sediment Concentration Fraction: 0.10), and 'Total Phosphorus' (Total Phosphorus: 1.00, Total Phosphorus Fraction: 0.10).
- Page 3:** Shows 'Sediment Concentration Parameters' (Sediment Concentration: 1.00, Sediment Concentration Fraction: 0.10), 'Total Phosphorus' (Total Phosphorus: 1.00, Total Phosphorus Fraction: 0.10), and 'Total Nitrogen' (Total Nitrogen: 1.00, Total Nitrogen Fraction: 0.10).
- Page 4:** Shows 'Sediment Concentration Parameters' (Sediment Concentration: 1.00, Sediment Concentration Fraction: 0.10), 'Total Phosphorus' (Total Phosphorus: 1.00, Total Phosphorus Fraction: 0.10), and 'Total Nitrogen' (Total Nitrogen: 1.00, Total Nitrogen Fraction: 0.10).
- Page 5:** Shows 'Sediment Concentration Parameters' (Sediment Concentration: 1.00, Sediment Concentration Fraction: 0.10), 'Total Phosphorus' (Total Phosphorus: 1.00, Total Phosphorus Fraction: 0.10), and 'Total Nitrogen' (Total Nitrogen: 1.00, Total Nitrogen Fraction: 0.10).

The figure displays four sequential screenshots of the 'Properties of Catchment 1 Flood Area' dialog box, illustrating the configuration of different flood parameters:

- General Flood Parameters:** Shows inputs for 'Return Period (yr)', 'Peak Flow (m³/s)', 'Peak Time (hr)', 'Peak Shape (1 to 4)', 'Peak Coefficient', 'Peak Coefficient', 'Peak Coefficient', and 'Peak Coefficient'. The 'Return Period (yr)' is set to 100. The 'Peak Flow (m³/s)' is 1000. The 'Peak Time (hr)' is 100. The 'Peak Shape (1 to 4)' is 1. The 'Peak Coefficient' is 1.0. The 'Peak Coefficient' is 1.0. The 'Peak Coefficient' is 1.0. The 'Peak Coefficient' is 1.0.
- Mean Flow Concentration Parameters:** Shows inputs for 'Mean Flow Concentration (m³/s)', 'Mean Flow Concentration (m³/s)', 'Mean Flow Concentration (m³/s)', and 'Mean Flow Concentration (m³/s)'. The 'Mean Flow Concentration (m³/s)' is 100. The 'Mean Flow Concentration (m³/s)' is 100. The 'Mean Flow Concentration (m³/s)' is 100. The 'Mean Flow Concentration (m³/s)' is 100.
- Total Reservoir:** Shows inputs for 'Return Period (yr)', 'Peak Flow (m³/s)', 'Peak Time (hr)', 'Peak Shape (1 to 4)', 'Peak Coefficient', 'Peak Coefficient', 'Peak Coefficient', and 'Peak Coefficient'. The 'Return Period (yr)' is set to 100. The 'Peak Flow (m³/s)' is 1000. The 'Peak Time (hr)' is 100. The 'Peak Shape (1 to 4)' is 1. The 'Peak Coefficient' is 1.0. The 'Peak Coefficient' is 1.0. The 'Peak Coefficient' is 1.0. The 'Peak Coefficient' is 1.0.
- Total Reservoir Mean Flow Concentration Parameters:** Shows inputs for 'Mean Flow Concentration (m³/s)', 'Mean Flow Concentration (m³/s)', 'Mean Flow Concentration (m³/s)', and 'Mean Flow Concentration (m³/s)'. The 'Mean Flow Concentration (m³/s)' is 100. The 'Mean Flow Concentration (m³/s)' is 100. The 'Mean Flow Concentration (m³/s)' is 100. The 'Mean Flow Concentration (m³/s)' is 100.

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TYPICAL INPUTS FOR BASIN 1

Properties of Basin 1

Location: **Basin1**

Inlet Properties:

Low Flow By-Pass (cubic metres per sec): 0.000

High Flow By-pass (cubic metres per sec): 2.000

Storage Properties:

Extended Detention Depth (metres): 0.30

Surface Area (square metres): 2000.0

Seepage Loss (mm/hr): 3.60

Infiltration Properties:

Filter Area (square metres): 2000.0

Filter Depth (metres): 0.3

Filter Median Particle Diameter (mm): 2.00

Saturated Hydraulic Conductivity (mm/hr): 100.00

Depth below underdrain pipe (% of Filter Depth): 0.0

Outlet Properties:

Overflow Weir Width (metres): 10.0

Fluxes... Notes... More

TYPICAL INPUTS FOR BASIN 2

Properties of Basin 2

Location: **Basin2**

Inlet Properties:

Low Flow By-Pass (cubic metres per sec): 0.000

High Flow By-pass (cubic metres per sec): 2.000

Storage Properties:

Extended Detention Depth (metres): 0.30

Surface Area (square metres): 500.0

Seepage Loss (mm/hr): 3.60

Infiltration Properties:

Filter Area (square metres): 500.0

Filter Depth (metres): 0.3

Filter Median Particle Diameter (mm): 2.00

Saturated Hydraulic Conductivity (mm/hr): 100.00

Depth below underdrain pipe (% of Filter Depth): 0.0

Outlet Properties:

Overflow Weir Width (metres): 10.0

Fluxes... Notes... More

TYPICAL INPUTS FOR GROSS POLLUTANT TRAPS (GPT)

Properties of Gross Pollutant Trap

Location: **Gross Pollutant Trap**

Inlet Properties:

Low Flow By-pass (cubic metres per sec): 0.000

High Flow By-pass (cubic metres per sec): 100.000

Transfer Functions:

☒ Total Suspended Solids (mg/L) ☒ Total Nitrogen (mg/L)

☒ Total Phosphorus (mg/L) ☒ Gross Pollutants (µg/mL)

Total Suspended Solids (mg/L)

Output

Input

Drag points on the graph to modify the transfer function.

Fluxes... Notes...

Properties of Gross Pollutant Trap

Location: **Gross Pollutant Trap**

Inlet Properties:

Low Flow By-pass (cubic metres per sec): 0.000

High Flow By-pass (cubic metres per sec): 100.000

Transfer Functions:

☒ Total Suspended Solids (mg/L) ☒ Total Nitrogen (mg/L)

☒ Total Phosphorus (mg/L) ☒ Gross Pollutants (µg/mL)

Total Nitrogen (mg/L)

Output

Input

Drag points on the graph to modify the transfer function.

Fluxes... Notes...

Properties of Gross Pollutant Trap

Location: **Gross Pollutant Trap**

Inlet Properties:

Low Flow By-pass (cubic metres per sec): 0.000

High Flow By-pass (cubic metres per sec): 100.000

Transfer Functions:

☒ Total Suspended Solids (mg/L) ☒ Total Nitrogen (mg/L)

☒ Total Phosphorus (mg/L) ☒ Gross Pollutants (µg/mL)

Total Phosphorus (mg/L)

Output

Input

Drag points on the graph to modify the transfer function.

Fluxes... Notes...

Properties of Gross Pollutant Trap

Location: **Gross Pollutant Trap**

Inlet Properties:

Low Flow By-pass (cubic metres per sec): 0.000

High Flow By-pass (cubic metres per sec): 100.000

Transfer Functions:

☒ Total Suspended Solids (mg/L) ☒ Total Nitrogen (mg/L)

☒ Total Phosphorus (mg/L) ☒ Gross Pollutants (µg/mL)

Gross Pollutants (µg/mL)

Output

Input

Drag points on the graph to modify the transfer function.

Fluxes... Notes...

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SHEET 10	OF 10 SHEETS
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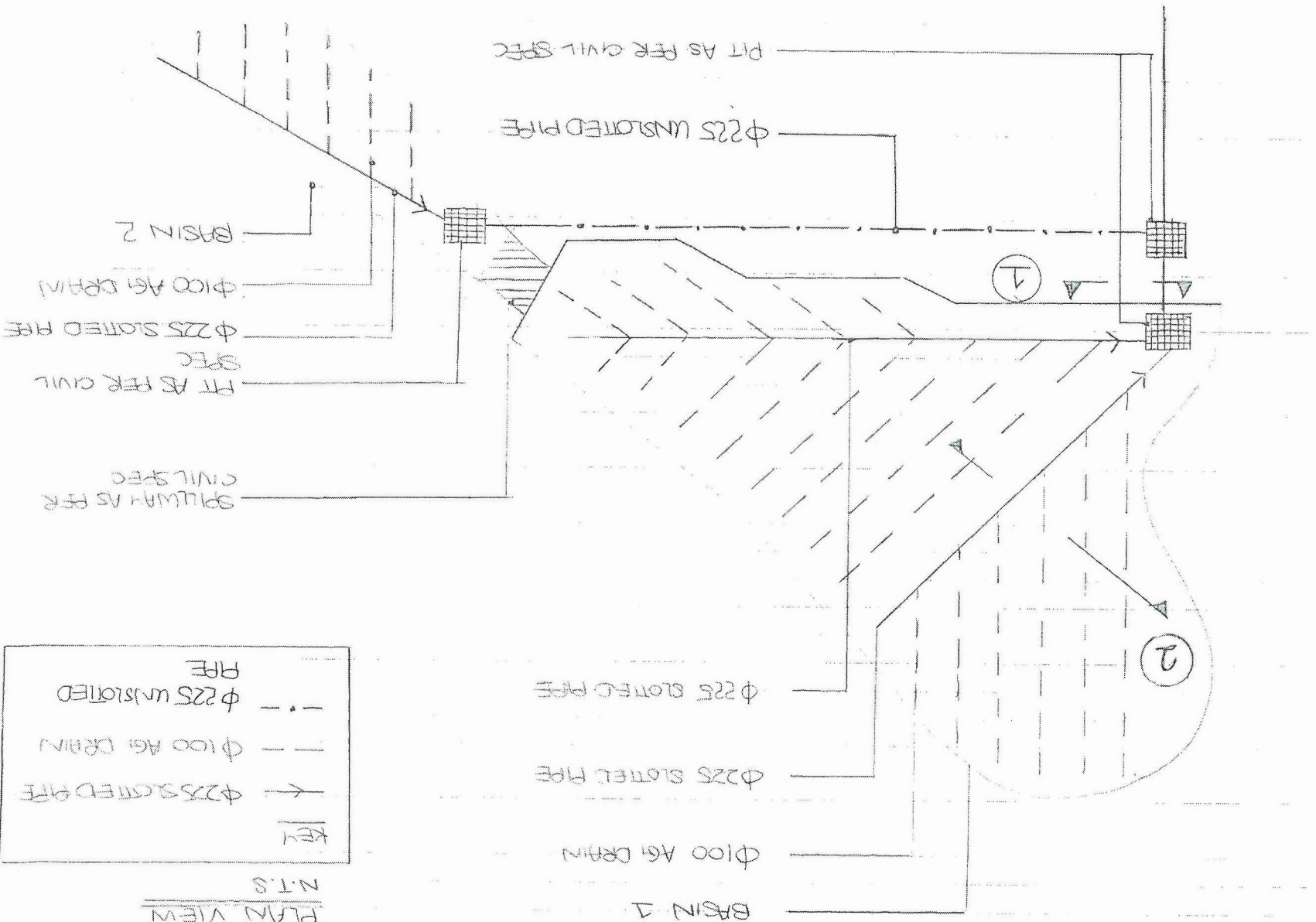
6 Attachment B – Schematic Drawings of Stormwater Basins

CALCULATION SHEET

REFERENCE NO.

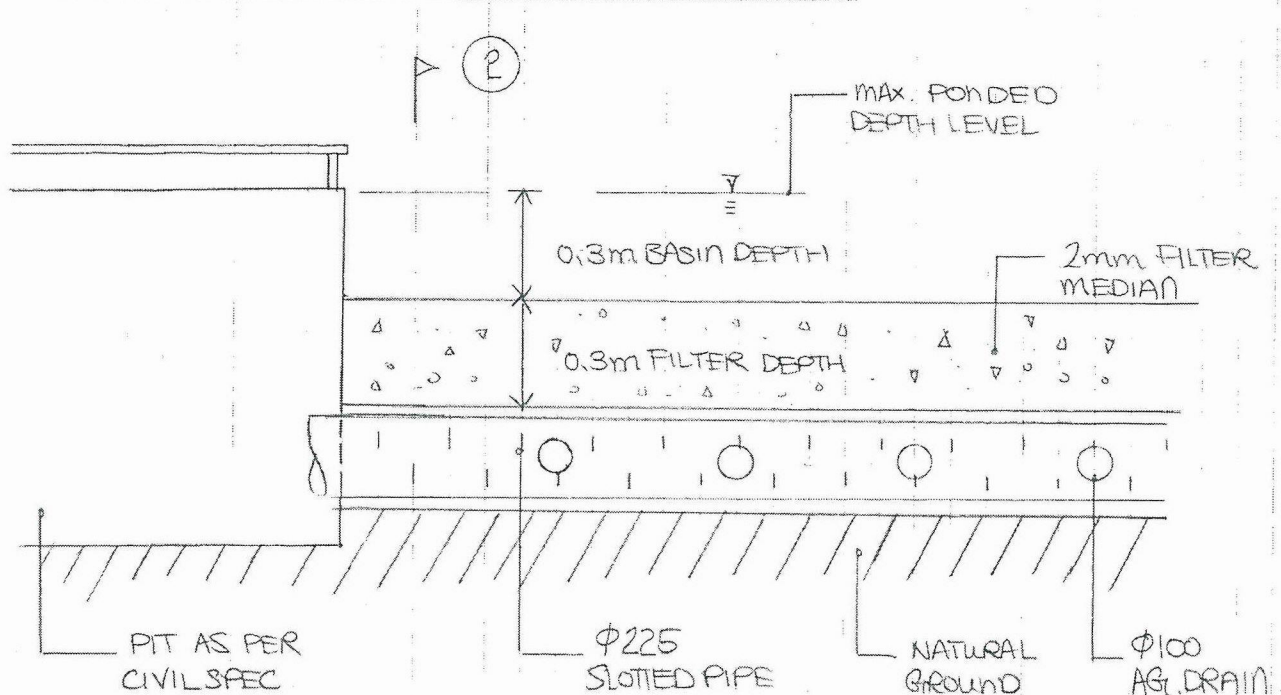
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TYPICAL X-SECTIONS THROUGH PIT / INLET PIPE



SECTION 1



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