

REFER TO SHEET C03DA FOR TYPICAL HOUSE DRAINAGE.



**LEGEND**

- DENOTES PROPOSED STORMWATER CULVERT HEADWALL. DETAILS TO BE PROVIDED AT CC STAGE.
- DENOTES PROPOSED STORMWATER DRAINAGE PIPE/CULVERT UNDER PROPOSED PATH/ACCESS ROAD. DETAILS TO BE PROVIDED AT CC STAGE.
- DENOTES PROPOSED DIRECTION OF FALL IN FINISHED SURFACE.
- DENOTES EXTENT OF PROPOSED ACCESS ROAD PAVEMENT (UNSEALED). DETAILS TO BE PROVIDED AT CC STAGE.
- DENOTES EXTENT OF PROPOSED FOOTPATH. DETAILS TO BE PROVIDED AT CC STAGE.
- DENOTES EXTENT OF EXISTING ROAD PAVEMENT (UNSEALED).
- DENOTES PROPOSED CUT OFF GRASSED LINED SWALE. (MIN 3000mm WIDE x 500mm DEEP). REFER TO INDICATIVE SECTION A-A ON DRAWING C03DA.
- DENOTES 10,000L ABOVE GROUND REUSE TANK. DETAILS TO BE PROVIDED AT CC.
- DENOTES EXISTING SURFACE CONTOUR.
- DENOTES TAILOUT OF SWALE.

**CONCEPT SURFACE WATER MANAGEMENT PHILOSOPHY**

- THE PROPOSED SURFACE WATER DRAINAGE SYSTEM FOR THE SITE WILL CONSIST OF:-
- **SWALES** - SWALES WILL FORM PART OF THE MINOR STORMWATER DRAINAGE SYSTEM, SAFELY CONVEYING THE 5 YEAR ARI STORM EVENT THROUGH THE SITE. FOR THE INTERNAL LOOP ROAD, SWALES WILL BE UTILISED ALONG THE HIGH SIDE OF THE ROAD RESERVE TO PREVENT SHEET FLOW ACROSS THE ROADWAY DURING MINOR STORM EVENTS. WHERE APPROPRIATE, SWALES WILL ALSO BE IMPLEMENTED THROUGH OTHER AREAS OF THE DEVELOPMENT TO CONVEY CAPTURED RUNOFF AROUND PROPOSED DWELLINGS TO THE NATURAL CREEK LINES OR UNDEVELOPED AREAS WITHIN THE SITE. SWALES WILL BE TAILOUT PRIOR TO THE VEGETATED RIPARIAN ZONE (VRZ) OF THE CREEK LINES TO ALLOW STORMWATER TO DISCHARGE TO CREEK AS UNCONTROLLED OVERLAND FLOW.
  - **CULVERTS** - PIPE CULVERTS WILL BE USED TO CONVEY STORMWATER UNDER THE PROPOSED ACCESS ROAD WHERE REQUIRED. CULVERTS WILL BE SIZED TO CATER FOR THE 5 YEAR ARI STORM EVENT WITH PROVISIONS BEING MADE FOR THE SAFE CONVEYANCE OF THE 100 YEAR ARI STORM EVENT OVER THE TOP OF THE ROADWAY.
  - **ROOF DRAINAGE** - RUNOFF FROM PROPOSED ROOF AREAS WILL BE COLLECTED AND DIVERTED TO ABOVE GROUND RAINWATER HARVESTING TANKS. IT IS PROPOSED THAT HARVESTED ROOF WATER BE USED INTERNALLY TO SUPPLY TOILET, LAUNDRY, KITCHEN AND BATHROOM AND EXTERNALLY FOR GARDEN IRRIGATION. OVERFLOW RUNOFF FROM PROPOSED ROOF AREAS/HARVESTING TANKS WILL BE DISCHARGED DIRECTLY TO EITHER PROPOSED SWALE DRAINS, EXISTING CREEK LINES OR EXISTING UNDEVELOPED LANDS VIA DISPERSED OVERLAND FLOW.
  - **STORMWATER DETENTION REQUIREMENTS** - THE PROPOSED DEVELOPMENT WILL RESULT IN ONLY A MINOR INCREASE IN IMPERVIOUS AREA WHEN CONSIDERING THE ENTIRE 112.4HA SITE AREA. FURTHERMORE, THE RAINWATER HARVESTING TANKS, PROPOSED GRASS LINED SWALES AND THE EXISTING EARTHEN DAMS WILL ASSIST IN ATTENUATING STORMWATER RUNOFF AND REDUCING PEAK FLOWS FROM THE SITE. AS SUCH IT BELIEVED THAT DETENTION STORAGE WILL NOT BE REQUIRED DUE TO THE SMALL SCALE OF THE DEVELOPMENT IN RELATION TO THE SITE AREA AND THE METHOD OF STORMWATER CONTROL AS OUTLINED ABOVE.
  - **STORMWATER QUALITY** - LIKELY POLLUTANTS GENERATED BY THE PROPOSED DEVELOPMENT INCLUDE SEDIMENTS, SMALL AMOUNTS OF NUTRIENTS AND OILS AND GREASE TYPICAL OF VEHICULAR ACCESS AREAS. POLLUTANTS GENERATED FROM THE DEVELOPMENT WILL BE TREATED USING BEST PRACTICE METHODS AND WILL INCLUDE:
    1. UTILISING GRASS LINED SWALE DRAINS FOR STORMWATER CONVEYANCE WHICH WILL ENCOURAGE STORMWATER INFILTRATION AND PROVIDE PASSIVE NUTRIENT CONTROL VIA THE VEGETATION COVER.
    2. THE EXISTING ONSITE DAMS WILL PROVIDE ADDITIONAL STORAGE VOLUME TO HELP DETAIN STORMWATER RUNOFF AND ASSOCIATED POLLUTANTS, AND PROVIDE A WATER SOURCE FOR IRRIGATION.

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**NOT FOR CONSTRUCTION**

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
A	ISSUED FOR DA	JB	MM	GK	14.02.14
B	REISSUED FOR DA-GEOTECH COMMENTS	SF	MM	GK	28.02.14

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SCALE 1:1000 @ A1

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PROJECT  
**SHEPHERDS GROUND**  
**15 GREEN WATTLE CREEK ROAD, BUTTERWICK, N.S.W.**

DRAWING TITLE  
**CONCEPT SURFACE WATER MANAGEMENT PLAN**

JOB NUMBER  
**NL130398**

DRAWING NUMBER	REVISION
<b>C02DA</b>	<b>B</b>

DRAWING SHEET SIZE = A1