

SITE

Fernhill Estate, Mulgoa NSW
LOCALITY SKETCH
Not To Scale

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FERNHILL ESTATE
MULGOA
EASTERN PRECINCT

CLIENT Fernhill Estate

PREPARED BY



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MM Project No 322876
Dwg No 0200
Revision P4
Date 29.07.14
Reason For Issue Issued for DA

268°02'198.12

PINE SHED

12.245

BLOCK WALL

MESH FENCE

12.28

12.88

0.3D RH 45

ee

ee

eg

es

250mm DIA. PIPE

INV. 12.5

ew

et

Existing electricity (underground)

Existing electricity (overhead)

Existing gas

Existing sewer

Existing stormwater drainage

Existing water

Existing telecommunications (underground)

Existing electricity pit, pole, pole with light and light pole

Existing gas valve

Existing sewer pit and maintenance hole

Existing stormwater grate, maintenance hole and pit

Existing water hydrant, stop valve and valve

Existing telecommunications pit and pillar

Existing maintenance hole (unspecified)

Existing pole (unspecified)

Existing pit (unspecified)

Existing traffic signal

Existing boundary, bearing and distance

Existing road name

Existing building

Existing kerb and spot levels

Existing block wall

Existing fence

Existing spot level

Existing earth batter

Existing tree, level, trunk diameter, height and spread

Existing electricity (underground)

Existing electricity (overhead)

Existing gas

Existing sewer

Existing stormwater drainage

Existing water

Existing telecommunications (underground)

Existing electricity pit, pole, pole with light and light pole

Existing gas valve

Existing sewer pit and maintenance hole

Existing stormwater grate, maintenance hole and pit

Existing water hydrant, stop valve and valve

Existing telecommunications pit and pillar

Existing maintenance hole (unspecified)

Existing pole (unspecified)

Existing pit (unspecified)

Existing traffic signal

General Notes

GN1

All workmanship and materials shall comply with the National Construction Code of Australia and the relevant current Australian Standards.

GN2

Any discrepancies, omissions or errors shall be reported to the Superintendent for clarification before proceeding with the work.

GN3

Do NOT scale measurements from the drawings.

Existing Services Notes

ES1

Existing services have been plotted from supplied data and as such their accuracy cannot be guaranteed. It is the responsibility of the contractor to establish the location and level of all existing services prior to the commencement of any work. Any discrepancies shall be reported to the superintendent.

ES2

The contractor shall allow for the capping off, excavation and removal if required of all redundant existing services in areas affected by works within the contract area, as shown on the drawings unless directed otherwise by the superintendent.

ES3

The contractor shall ensure that at all times services to all buildings not affected by the works are not disrupted.

ES4

If required, the contractor shall construct temporary services to maintain existing supply to buildings remaining in operation during works to the satisfaction and approval of the superintendent. Once diversion is complete and commissioned the contractor shall remove all such temporary services and make good to the satisfaction of the superintendent and the relevant service authority.

ES5

Interruption to supply of existing services shall be done so as not to cause any inconvenience to the principal. The contractor is to gain approval from the superintendent for time of interruption - the contractor is responsible for all liaison.

ES6

All branch gas and water services under driveways and brick paving shall be located in Ø80mm uPVC sewer grade conduits extending a minimum of 500mm beyond the edge of paving.

ES7

Clearance and cover requirements shall be obtained from the relevant service authority before commencement of works and shall be adhered to at all times.

ES8

Care is to be taken when excavating near existing services. No mechanical excavations are to be undertaken over telecom or electrical services. Hand excavate in these areas only.

Civil Works Legend

Construct swale type 1

Construct swale type 2

Construct Stormwater drainage line

Construct headwall and provide scour protection

Construct reinforced concrete box culvert

Stormwater drainage structure / pit number

Construct Gross Pollutant Trap

Construct Timber Edge Strip

Construct reinforced concrete block retaining wall

Construct Guard Rail

Major contour

Minor contour

Construct batter

Proposed sewer pump station area

Proposed detention basin with bio-retention at base of basin

Siteworks Notes

SN1

Datum : Australian Height Datum (AHD)
Origin of levels : PM 41894 RL 71.119
Origin of co-ordinates : Mapping Grid Of Australia (MGA)
Survey prepared by : Land Partners
L1, 20 Smith St Parramatta
02 9685 2000

SN2

The contractor must verify all dimensions and existing levels on site prior to commencement of work, and report any discrepancies to the superintendent.

SN3

All existing services (including any not shown on the plans) must be accurately located in position and level prior to any excavation. Any discrepancies shall be reported to the superintendent. minimum service clearances shall be maintained from the relevant service authority.

SN4

The contractor shall arrange for all setting out by a registered surveyor.

SN5

The contractor shall obtain all regulatory authority approvals at their own expense.

SN6

Where new works abut existing, the contractor must ensure that a smooth and even profile, free from abrupt changes is obtained.

SN7

All disturbed areas shall be restored to their original condition, unless specified otherwise.

SN8

Excavated trenches shall be compacted to the same density as the adjacent natural material. Any subsidence's during the period to be rectified as directed by the superintendent.

SN9

Any existing trees which form part of the final landscaping plan will be protected from construction activities in accordance with the landscape architect's details and / or by -

Protecting them with barrier fencing or similar materials installed outside the drip line, ensuring that nothing is nailed to them, prohibiting paving, grading, sediment wash or placing of stockpiles within the drip line except under the following conditions -
Encroachment only occurs on one side and no closer to the trunk than either 1.5m or half the distance between the outer edge of the drip line and the trunk, which ever is the greater, a drainage system that allows air and water to circulate through the root zone (eg a gravel bed) is placed under all fill layers of more than 300mm care is taken not to cut roots unnecessarily nor to compact the soil around them.

SN10

Receptors for concrete and mortar slurries, paints, acid washings, light-weight waste materials and litter are to be emptied as necessary. Disposal of waste shall be in a manner approved by the superintendent or as specified in the works contract.

Earthworks Notes

EW1

All work shall comply with AS3798 (2007) - Guidelines on earthworks for commercial and residential developments.

EW2

All work shall comply with the project geotechnical report - Geotechnical Engineer
Report Reference Number DD.MM.YY

EW3

Strip topsoil to expose naturally occurring engineering material and stockpile on site for reuse as directed by the superintendent.

EW4

All soft, wet or unsuitable material to be removed as directed by the superintendent and replaced with approved fill material.

EW5

All fill material shall be from a source approved by the superintendent and shall comply with the following -
a) free from organic and perishable matter,
b) maximum particle size 75mm,
c) plasticity index - between 2% and 15%.

EW6

All fill material shall be placed in maximum 200mm thick layers and compacted at optimum moisture content (+ or - 2%) to achieve a dry density determined in accordance with AS1289.5.1.1 - 2003 - methods of testing soils for engineering purposes of not less than the following standard minimum dry density -

location	standard dry density
under building slabs	98%
vehicular paved areas	100%
non-vehicular paved areas	98%
landscaped areas	95%

EW7

The contractor shall program the earthworks operation so that the working areas are adequately drained during the period of construction. The surface shall be graded and sealed off to remove depressions, roller marks and similar which would allow water to pond and penetrate the underlying material. any damage resulting from the contractor not observing these requirements shall be rectified by the contractor at their own expense.

EW8

Testing of the fill material shall be carried out by an approved NATA registered laboratory at the contractors expense.

EW9

Where the subgrade is unable to support construction equipment, or it is not possible to compact overlying pavement layers, only because of the subgrade moisture content, then the contractor shall condition or replace the material at the contractors discretion and expense.

EW10

Earthworks calculations are volumetric only and do not allow for bulking of excavated material. It is the contractors responsibility to make allowances for these items as part of the tender / works.

EW11

No allowance has been made for footings or foundations, retaining walls or trenching. It is the contractors responsibility to make allowances for these items as part of the tender / works.

Flexible Pavement Notes

FP1

All sub-base and base course materials shall conform with RMS QA Specification 3051 "Unbound and Modified Base and Sub-base Materials for Surface Road Pavements.

FP2

All sub-base and base course materials shall be compacted to achieve the following compaction standards -

Base course
Minimum 98% MMDD AS1289.5.2.1 - 2003 - Methods of Testing Soils for Engineering Purposes

Sub-base
Minimum 98% MMDD AS1289.5.2.1 - 2003 - Methods of Testing Soils for Engineering Purposes

Pavement Legend

Asphaltic concrete (AC)
Details to be confirmed during detail design

Roadworks Asphaltic concrete (AC)
Details to be confirmed during detail design

Fire Trail
Refer detail on 0250 for details. Details to be confirmed during detail design

Access Road
Refer detail on 0250 for details. Details to be confirmed during detail design

Stormwater Notes

SW1

For residential subdivisions and public roads -

All Ø375mm to Ø600mm drainage pipes shall be class 4 approved spigot and socket reinforced concrete pipes with rubber ring joints (UNO). All Ø675mm or larger drainage pipes shall be class 3 approved spigot and socket reinforced concrete pipes with rubber ring joints (UNO).

All uPVC drainage pipes in footways or accessways shall be DWV grade class SN8 in accordance with AS/NZS 1260:2009 - PVC-u pipes and fittings for drain, waste and vent application. heavy duty uPVC pipes to be in accordance with AS/NZS 1254 : 2010 - PVC pipes and fittings for storm and surface water applications may be used within allotments.

SW2

For commercial or industrial sites -

All Ø300mm to Ø600mm drainage pipes shall be class 4 approved spigot and socket reinforced concrete pipes with rubber ring joints (UNO). All Ø675mm or larger drainage pipes shall be class 3 approved spigot and socket reinforced concrete pipes with rubber ring joints (UNO).

All drainage pipes less than or equal to Ø225mm shall be uPVC DWV grade class SN8 in accordance with AS/NZS 1260 : 2009 - PVC-u pipes and fittings for drain, waste and vent application with solvent welded joints.

SW3

Equivalent strength fibrous reinforced concrete (F.R.C.) and / or High density polyethylene (H.D.P.E.) may be used subject to approval by the superintendent.

SW4

All pipe junctions up to and including Ø450mm and tapers, shall be via purpose made fittings (UNO).

SW5

Minimum grade to stormwater lines to be 1% (UNO).

SW6

Contractor to supply and install all fittings and specials including various pipe adaptors to ensure proper connection between dissimilar pipework.

SW7

All connections to existing drainage pits shall be made in a tradesman-like manner and the internal wall of the pit at the point of entry shall be cement rendered to ensure a smooth finish with no protrusions.

SW8

All in-situ concrete pits to be 32Mpa minimum at 28 days.

SW9

Pits and pipes in areas of salinity hazard shall have increased cover to any reinforcement.

SW10

Precast concrete pits may be installed in lieu of cast in-situ pits, when pipe junctions are accommodated within the overall dimensions of the pit, and approved by the superintendent.

SW11

Pits deeper than 1000mm shall have step irons installed in accordance with the local or statutory authority requirements.

SW12

Bedding shall be type H2 (UNO) for pipes not under pavements, and type HS2 for pipes under pavements in accordance with AS/NZS 3725 : 2007 - design for installation of buried concrete pipes.

SW13

Backfill trench with sand or approved granular backfill to 300mm (min) above the pipe. Where the pipe is under pavements backfill remainder of trench to pavement subgrade with sand or approved gravel sub-base compacted in 150mm layers to 98% standard maximum dry density. The contractor is to ensure compaction equipment is appropriate for the pipe class used.

SW14

Where stormwater lines pass under floor slabs DWV grade uPVC rubber ring joints are to be used (UNO).

SW15

Where subsoil drainage lines pass under floor slabs and vehicular pavements, unslopped uPVC DWV grade class SN8 pipe shall be used.

SW16

Provide 3m length of Ø100mm subsoil drainage line or 200 'Nylex' strip drain surrounded with 150mm of 20mm blue metal or gravel, and wrapped in 'Bidum' A24 geotextile filter fabric or approved equivalent, at invert of incoming upstream pipe on each pit.

Asphaltic Concrete Notes

General

AC1

Asphaltic concrete mix design, manufacture, placing and compaction shall be in accordance with RMS Specification R116-Asphalt (dense graded and open graded) and AS2150-2005 - Hot Mix Asphalt - A Guide To Good Practice. Annexure R116/1 to be completed by subcontractor and submitted for approval by superintendent 7 days prior to AC works.

AC2

Mineral filler to comply with AS2150 - 2005 - Hot Mix Asphalt - A Guide to Good Practice.

Mix proportions

AC3

Job mix - 7mm nominal size aggregate. Minimum bitumen content (%) by (mass of total mass) - 5.1%.

AC4

Mix stability - between 16kn and 36kn as determined by RMS test method T601 - Compaction of test specimens of dense grade bituminous mixtures and T603 - Stability of dense grade bituminous mixtures.

AC5

Air voids in compacted mix - between 4% of volume and 7% of the mix. Voids filled in binder. 65-80% of air voids in the total mineral aggregate filled by binder in accordance with RMS test method T601 - Compaction of test specimens of dense grade bituminous mixtures, T605 - Maximum density of bituminous plant mix and T606 - Bulk density of compacted dense graded bituminous mixtures.

Pavement preparation

AC6

The existing surface to be sealed, shall be dry and broomed before commencement of work to ensure complete removal of all superficial foreign and loose matter.

AC7

All depressions or uneven areas are to be tack-coated and brought up to general level of pavement with asphaltic concrete before laying of main course.

Tack coat

AC8

The whole of the area to be sheeted with asphaltic concrete shall be lightly and evenly coated with rapid setting bitumen. Application rate for residual bitumen shall be 0.15 to 0.30 litres/square metre. Application shall be by means of a mechanical sprayer with spray bar.

Spreading

AC9

All asphaltic concrete shall be spread with a self propelled paving machine.

AC10

The asphaltic concrete shall be laid at a mix temperature as shown below -

road surface temp in shade (°c)	mix temperatures (°c)
5 - 10	not permitted
10 - 15	150
15 - 25	145
25+	140

AC11

Asphaltic concrete shall not be laid when the road surface is wet or when cold winds chill the mix to adversely affect temperature of mix during spreading and compaction operations.

AC12

The minimum compacted thickness is 50mm in two (2) layers.

Joins

AC13

The number of joints both longitudinal and transverse shall be kept to a minimum.

AC14

The density and surface finish at joints shall be similar to those of the remainder of the layer.

Compaction

AC15

All compaction shall be undertaken using self propelled rollers.

AC16

Initial rolling shall be completed before the mix temperature falls below 105°c.

AC17

Secondary rolling shall be completed before the mix temperature falls below 60°c.

AC18

Minimum characteristic value of relative compaction of a lot when tested in accordance with AS2150 - 2005 - Hot mix asphalt - a guide to good practice shall be 95%.

Finished pavement properties

AC19

Finished surfaces shall be smooth, dense and true to shape and shall not vary more than 10mm from the specified plan level at any point and shall not deviate from the bottom of a 3m straight edge laid in any direction by more than 5mm.

Notes

Key to symbols

Reference drawings

P4	29.07.14	ADS	Issued for DA	GL	CJA
P3	24.07.14	ADS	Issued for information	GL	CJA
P2	07.07.14	ADS	Issued for DA Approval	GL	CJA
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Client

Fernhill Estate

Title

Fernhill Estate
General Notes and Legends
Sheet 1

Designed	GL	.	Eng check	GL	.
Drawn	DW	.	Coordination	CJA	.
Dwg check	GC	.	Approved	DB	.
Scale at A1	Status	PRE	Rev	P4	

Drawing Number

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Concrete Notes	
<u>General</u>	
CN1	Use "AS3972 - 2010 - General purpose and blended cements - Type GP" cement (UNO).
CN2	All concrete shall be subject to project control sample and testing to AS3600 - 2009 - concrete structures.
CN3	Consolidate all concrete, including footings and slabs on ground with mechanical vibrators.
CN4	Cure all concrete as follows - - keep surfaces continuously wet for 3 days, then - prevent moisture loss for the next 4 days using polythene sheeting or wet hessian protected from wind and traffic, and then allow drying out. - curing compounds may be used provided that they comply with AS3799 and they do not affect floor finishes. - PVA-based curing compounds are NOT acceptable.
CN5	Fix reinforcement as shown on drawings. The type and grade is indicated by a symbol as shown below - <div><div>N</div><div>R</div><div>SL / RL</div><div>hot rolled deformed bar, grade 500 plain round bar, grade 250 hard drawn wire fabric square or rectangular</div></div> following this symbol a numeral indicates the specified diameter.
CN6	Provide bar supports or spacers to provide concrete cover as detailed to all reinforcement.
<u>Concrete Pavements</u>	
CN7	Concrete mix parameters - maximum aggregate size 20mm flexural strength at 28 days = 3.5 MPa, F'c= 32 MPa, (UNO) flexural strength at 90 days = 3.85 MPa max water/cement ratio = 0.55 max shrinkage limit = 650 micron strains (AS1012.13-1992) min cement content = 300kg/m³ cement to be type "SL" (normal cement) to AS3972-2010 slump = 80mm
CN8	Early age saw cutting ('softcut') or similar shall be used for initial saw out. It is to be performed as soon as the concrete has hardened sufficiently, to prevent excessive chipping, spalling, or tearing regardless of time or weather conditions.
CN9	Joint layout shall be as detailed on the plans.
CN10	Provide 10mm wide expansion joints between all buildings, other structures and pavements.
CN11	Bond breaker to be two (2) uniform coats of bitumen emulsion all over the exposed surface and on end.
CN12	Dowels and tie bars to meet strength requirements of structural grade steel in accordance with AS ISO 1302 - 2005 - geometrical product specifications. Dowels and tie bars shall be - straight, to length specified, all dowels to be hot dip galvanised, sawn to length not cropped.
CN13	Dimensions of sealant reservoir dependant on the sealant type adopted. Superintendent approval to be obtained for sealant and reservoir dimensions and detail proposed by the contractor. Refer to plans for typical arrangement and sealant.
CN14	Prior to the placement of concrete in the adjacent slab, 'Ableflex' filler shall be adhered to the already cast and cleaned concrete face using an approved waterproof adhesive. Adhesive shall be liberally applied to the full face of the concrete slab to be covered by the filler, and on the full face of the filler to be adhered.
CN15	The base course shall be kept moist (not wet) by sprinkling with water immediately prior to pouring the concrete.
CN16	All work to be finished to satisfy its intended use as shown on the plans, and / or in accordance with the specification.
<u>Kerbing Notes</u>	
CN17	All concrete kerbs to have a minimum characteristic compressive strength F'c=25MPa (UNO).
CN18	All kerbs, dish drains, etc. to be constructed on 75mm minimum base course.(UNO on the Drawings)
CN19	Kerb expansion joints shall be formed from 10mm 'Ableflex' (or approved equivalent) for the full depth of the section.
CN20	Expansion joints shall be located at drainage pits, tangent points of curves and elsewhere at 12m maximum spacing (UNO).
CN21	Tooled joints shall be min 3mm wide and located at maximum 3m spacing.
CN22	Integral kerb joints shall match the location of the pavement jointing.


Linemarking Notes	
LM1	All linemarking works to be in accordance with either the current Australian standard AS1742.2-2009-Manual Uniform Traffic Control Devices, or as shown on the plans or as directed by the superintendent.
LM2	The scope of work shall include all pavement markings to roads and carparks.
LM3	The work carried out and testing performed shall comply with the current, relevant Australian standards and RMS standards where necessary.
LM4	All markings shall be spotted out and verified by the contractors representative prior to application.
LM5	Paint shall be applied at a wet thickness of between 0.35mm - 0.45mm.
LM6	Paint shall only be applied to clean and dry surfaces.
LM7	All longitudinal lines shall be applied by a self-propelled machine.
LM8	Linemarking removal shall be carried out by grinding or sandblasting. Removal by burning will not be permitted.
LM9	The extent of linemarking to be eradicated shall be confirmed on site prior to removal. Any markings incorrectly removed shall be reinstated at the contractor's expense.
LM10	All markings shall be completed in a workmanlike manner and be straight, smooth and with even curves. Any non-conforming work, shall be removed and reinstated at the direction of the superintendent at the contractor's expense.
LM11	Linemarking on AC pavements to be provided no sooner than 7-10 days once the asphalt has set.

Notes

Key to symbols

Reference drawings

P4	29.07.14	ADS	Issued for DA	GL	CJA
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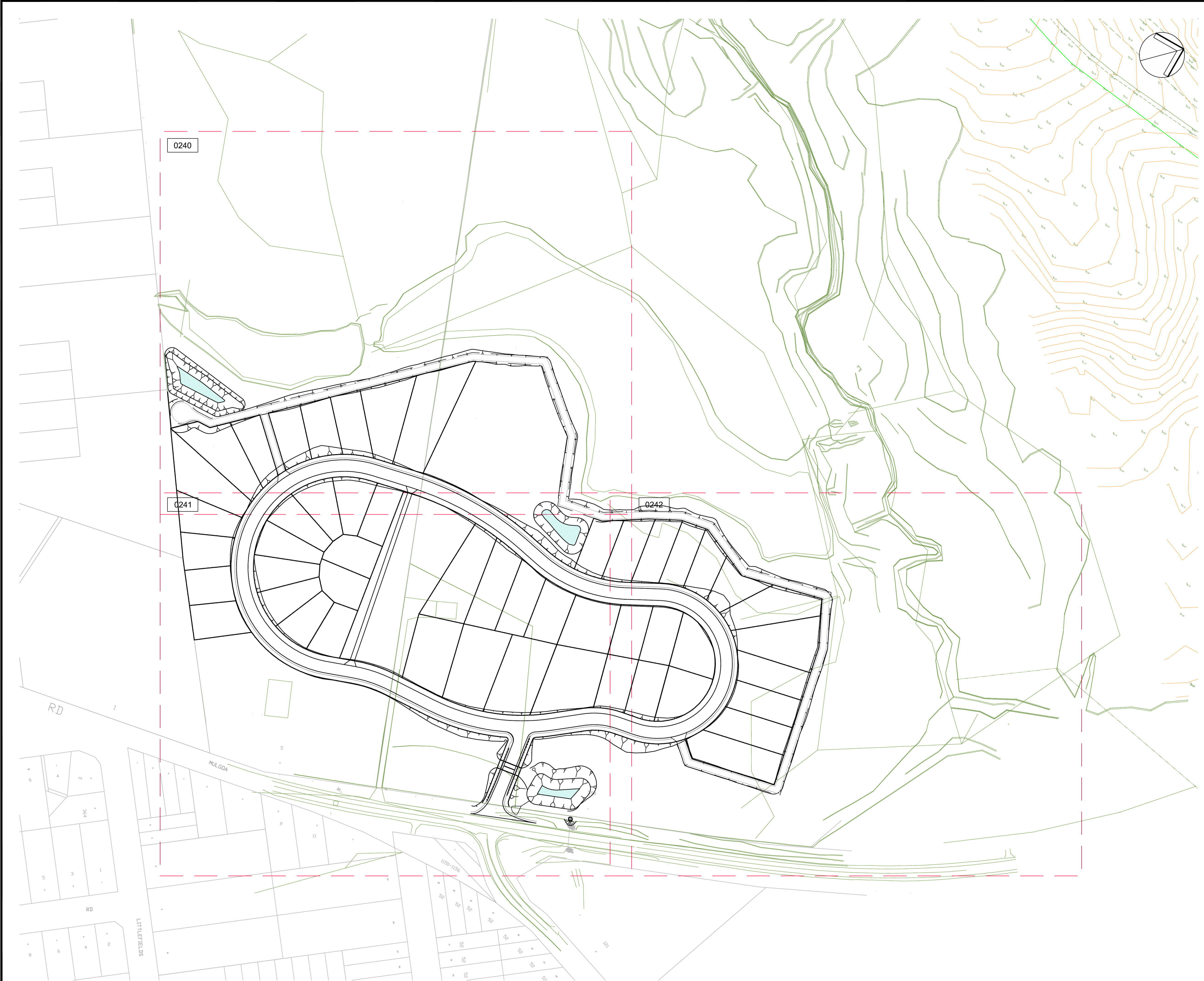
Client	Fernhill Estate
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Title	Fernhill Estate General Notes and Legends Sheet 2
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Drawn	DW	.	Coordination	CJA	.
Dwg check	GC	.	Approved	DB	.
Scale at A1		Status		Rev	
		PRE		P4	

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Notes

Key to symbols

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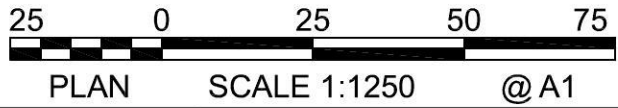
Client
Fernhill Estate

Title
Fernhill Estate
General Arrangement Plan

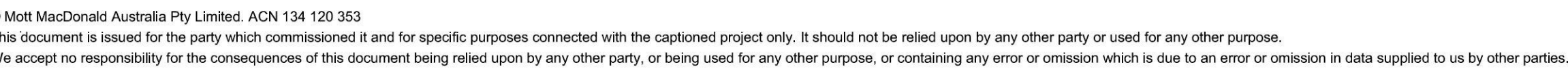
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Scale at A1	1:1250	Status	PRE	Rev	P4

Drawing Number
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Soil and Water Management Notes

General Instructions

SWM01 These plans present a conceptual soil and water management plan (SWMP) only and shows a possible way of managing soil and erosion. The contractor shall be responsible for the establishment and management of the site and preparing a detailed plan and obtaining approval from the relevant authority prior to the commencement of any works.

SWM02 This plan is to be read in conjunction with the engineering plans and any other plans, written instructions, specification or documentation that may be issued and relating to development of the subject site.

SWM03 The contractor will ensure that all soil and water management works are consistent with 'Managing Urban Stormwater - Soils and Construction' - also known as 'The Blue Book'.

SWM04 All builders and sub-contractors shall be informed of their responsibilities in minimising the potential for soil erosion and pollution to downslope lands and waterways.

Erosion Control

SWM05 Water shall be prevented from entering the permanent drainage system until sediment concentration is less than or equal to 50mg/L, ie the catchment area has been permanently landscaped and / or any likely sediment has been filtered through an approved structure.

SWM06 Any sand used in the concrete curing process (spread over the surface) will be removed as soon as possible and within 10 working days from placement.

SWM07 Acceptable receptors will be constructed for concrete and mortar slurries, paints, acid washings, light-weight waste materials and litter.

SWM08 'Sediment' fencing will be installed as indicated on the plans and at the direction of site superintendent to ensure containment of sediment. The sediment fencing will outlet or overflow under stabilised conditions into the sediment basin, to safely convey water into a suitable filtering system should the pores in the fabric block.

SWM09 The sediment basins will be constructed with the minimum wet sediment capacity of 20 cubic metres and designed to remain stable in at least the 1 in 20 year critical duration storm event. Artificial flocculation of the finer particles may not be necessary in this instance.

SWM10 Stockpiles should not be located within 5m of trees and hazard areas, including likely areas of concentrated or high velocity flows such as waterways, drainage lines, paved areas and driveways. Where they are within 5m from such areas, special sediment control measures should be taken to minimise possible pollution to downstream waters. Measures should also be applied to prevent the erosion of the stockpile.

SWM11 All cut and fill batters are to be seeded and mulched within 14 days of completion of formation.

SWM12 Any existing trees which form part of the final landscaping plan will be protected from construction activities by-

- a. Protecting them with barrier fencing or similar materials installed outside the drip line,
- b. Ensuring that nothing is nailed to them,
- c. Prohibiting paving, grading, sediment wash or placing of stockpiles within the drip line except under the following conditions,

(i) Encroachment only occurs on one side and no closer to the trunk than either 1.5 metres or half the distance between the outer edge of the drip line and the trunk, whichever is the greater,

(ii) A drainage system that allows air and water to circulate through the root zone (e.g. a gravel bed) is placed under all fill layers of more than 300 millimetres depth

(iii) Care is taken.

SWM13 During windy weather, large disturbed unprotected areas should be kept moist (not wet) by sprinkling with water to keep dust under control.

SWM14 Temporary protection from erosive forces will be undertaken on lands where final shaping has not been completed but works are unlikely to proceed for periods of two months or more (eg. on topsoil stockpiles). This may be achieved with a vegetative cover. A recommended listing of plant species for temporary cover is -

- i) autumn/winter sowing - oats/ryecorn at 20 kg/ha
- japanese millet at 10 kg/ha
- japanese millet at 20 kg/ha
- ii) spring/summer sowing - oats/ryecorn at 10 kg/ha

SWM15 Diversion banks / channels will be rehabilitated as soon as possible and within 5 working days from their final shaping. Other than in the winter months, suitable materials include turf grasses such as Couch or Kikuyu. During winter, or at other times when temporary rehabilitation (more than 3 months) is required, it is suggested that hessian cloth is used but only if latched with appropriate pegs and an anionic bitumen emulsion. Foot and vehicular traffic should be kept away from these areas.

SWM16 Undertake site development works in accordance with the engineering plans. Where possible, phase development so that land disturbance is confined to areas of workable size.

Construction Sequence

SWM17 Where practical, the soil erosion hazard on the site should be kept as low as possible. To this end, works should be undertaken in the FOLLOWING SEQUENCE -

(i) Install inlet sediment traps to all gully pits fronting the site,

(ii) Install a 1.8m chain wire fence around the boundaries and attach hessian cloth or similar to it on the windward side (ties at the top, centre and bottom and at 1m intervals or as instructed by the superintendent),

(iii) Install geofabric sediment fence and sediment traps around all permanent stormwater reticulation structures as shown on the plan,

(iv) Construct stabilised construction entrance as shown on the plan or to location as determined by superintendent,

(v) Install diversion banks along the boundary where required, rehabilitate disturbed lands downslope from the basins within 20 working days,

(vi) Ensure that the sediment basin is directed onto a turfed area and drains to a suitable location. A temporary stormwater line may be necessary to convey the flows to this location. Construct diversion channels at the boundary to drain into the sediment basin as shown on plans,

(vii) At completion stabilise site and decommission sediment basin and all erosion control devices.

SWM18 Temporary soil and water management structures will be removed only after the lands they are protecting are rehabilitated.

SWM19 Final site landscaping will be undertaken as soon as possible and within 20 working days from completion of construction activities.

Site Inspection and Maintenance

SWM20 At least weekly and after every rain fall event, the contractor will inspect the site and ensure that -

(i) Drains and all sediment control devices operate effectively and initiate repair or maintenance as required,

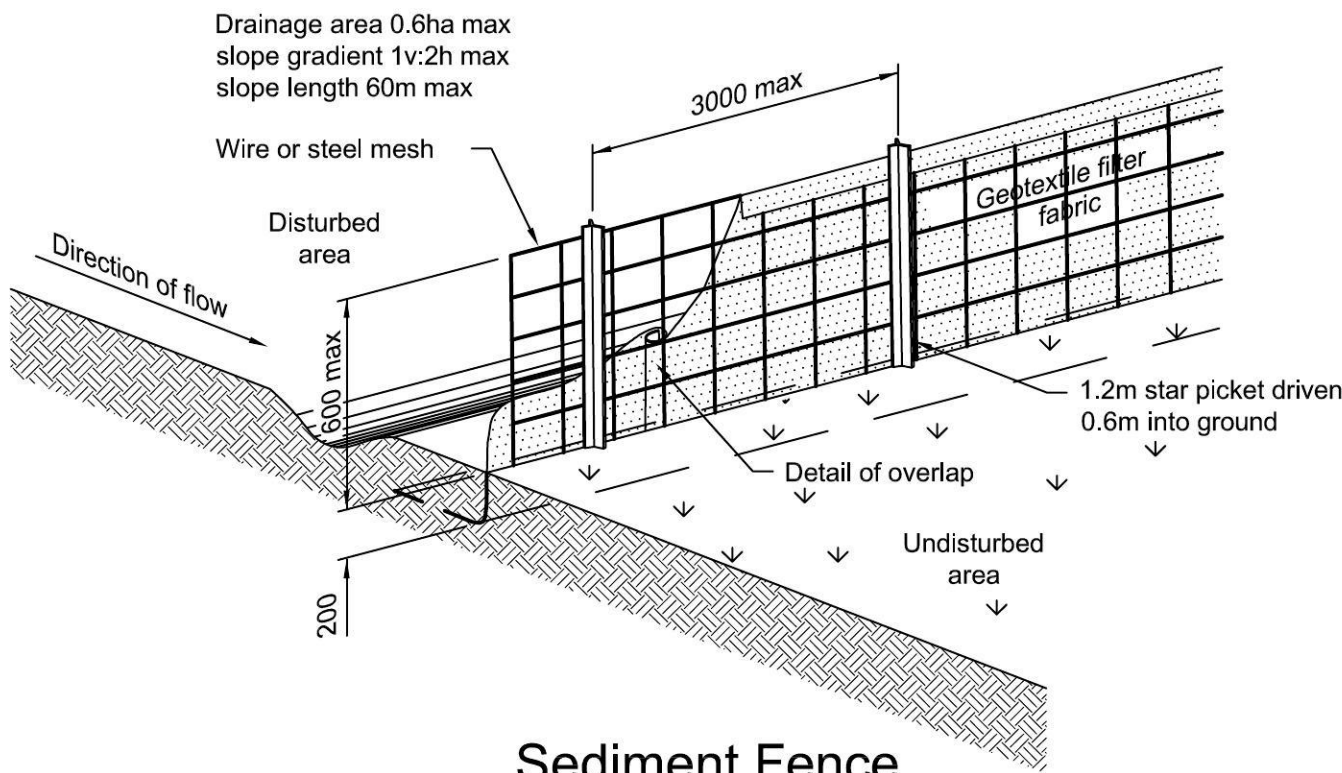
(ii) Receptors for concrete and mortar slurries, paints, acid washings, light-weight waste materials and litter are to be emptied as necessary. Disposal of waste shall be in a manner approved by the superintendent,

(iii) Spilled sand (or other materials) is removed from hazard areas, including likely areas of concentrated or high velocity flows such as waterways, gutters, paved areas and driveways,

(iv) Sediment is removed from basins and / or traps when less than 20m³ of trapping capacity remain per 1000m² of disturbed lands, and / or less than 500mm depth remains in the settling zone. Any collected sediment will be disposed in areas where further pollution to down slope lands and waterways is unlikely,

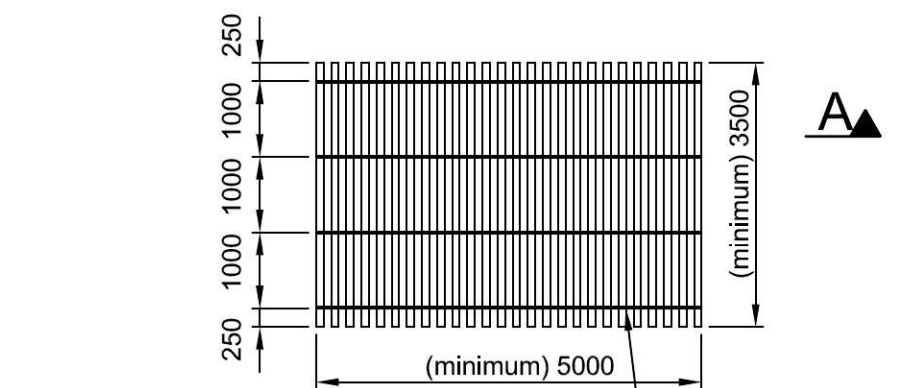
(v) Rehabilitated lands have effectively reduced the erosion hazard and initiate upgrading or repair as appropriate.

SWM21 The contractor shall provide all monitoring control and testing.

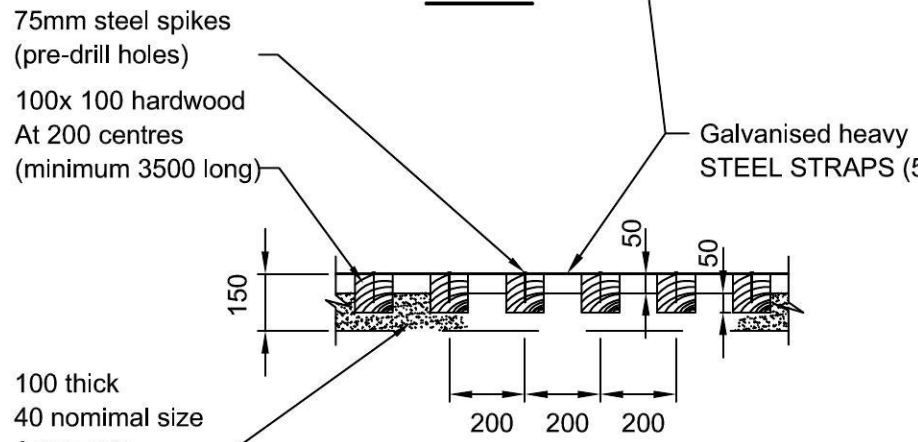


Sediment Fence (Geotextile Filter Fabric)

NTS



Plan



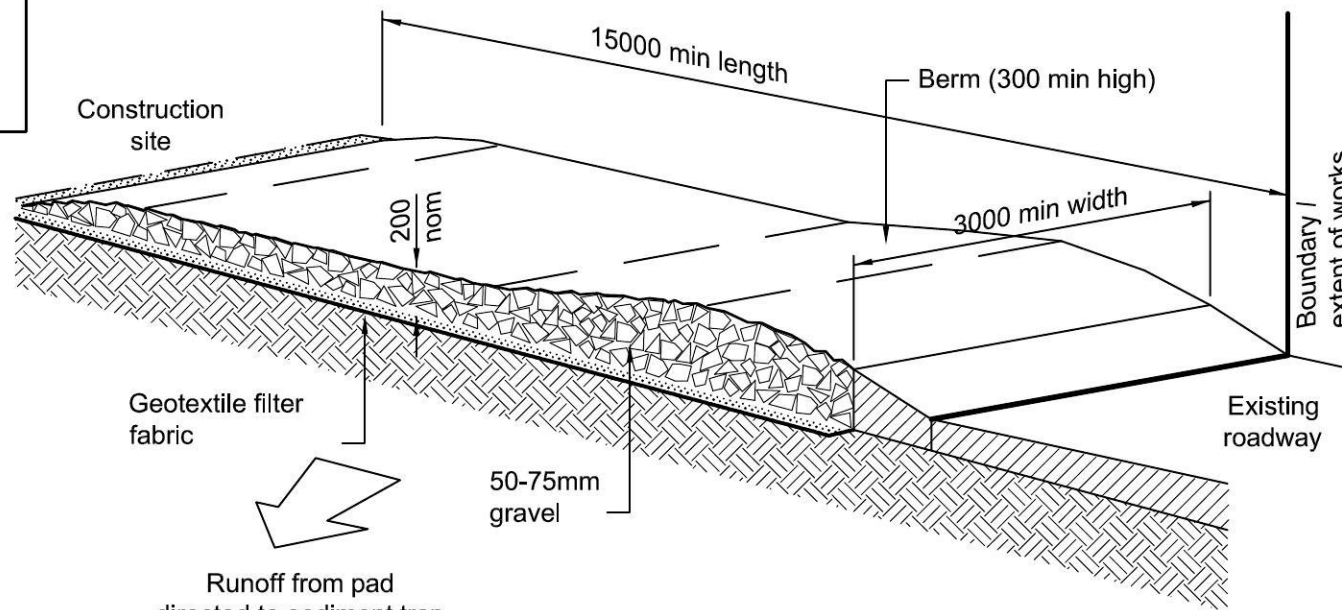
Section A-A

Shaker Grid

Not To Scale

Shaker Grid Notes

- 1 This device is to be located at all exits from the construction site.
 - 2 the device is to be regularly cleaned of deposited material so as to maintain a 50 mm deep space between planks.
 - 3 Any unsealed road between this device and Councils nearest roadway to be topped with 100mm thick 40mm nominal size aggregate.
 - 4 Alternatively, three (3) precast concrete cattle grids (as manufactured by 'humes concrete') may be used.
- Notes 1, 2, 3, above also apply.

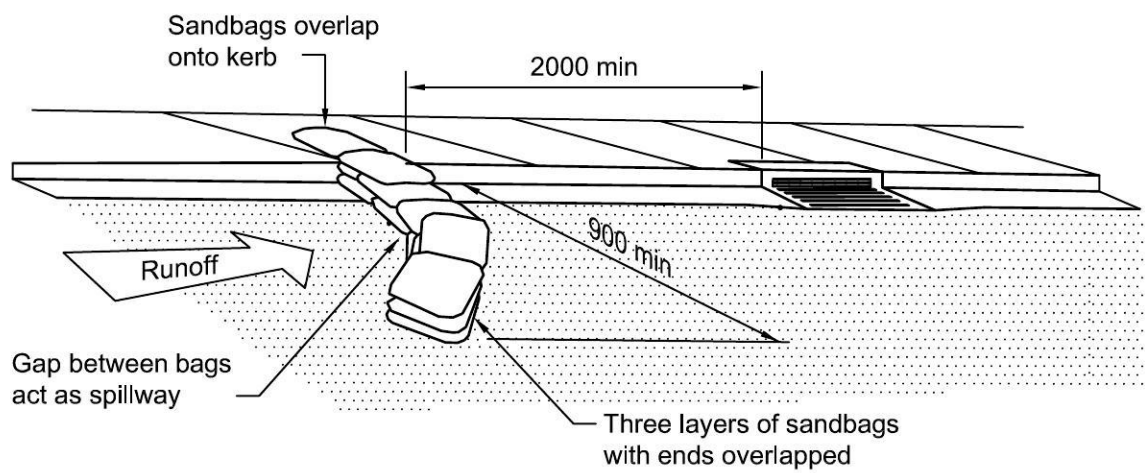


Temporary Site Entrance

NTS

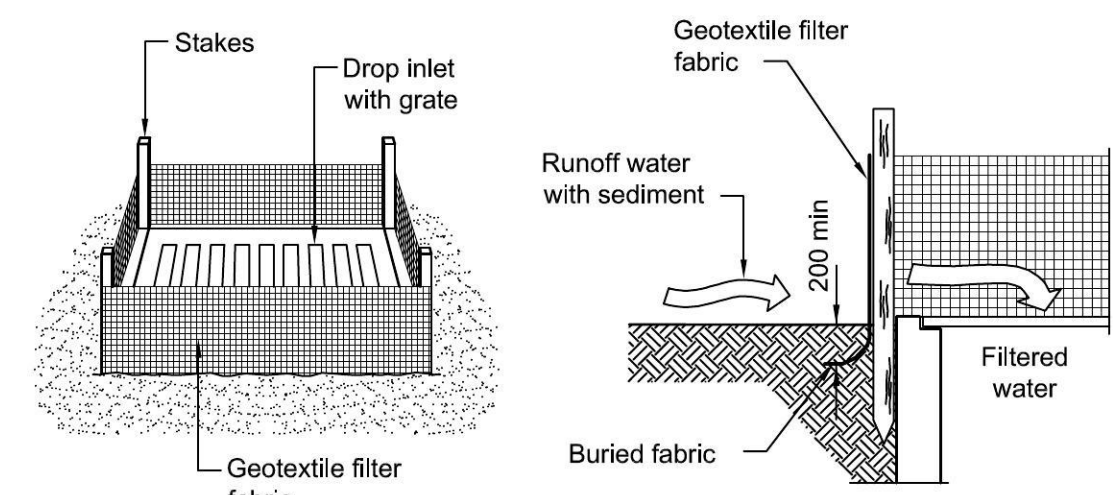
Maintenance

- The temporary access shall be maintained in a condition that prevents tracking or flowing of sediment onto public rights of way.
- This may require periodic top dressing with additional gravel as conditions demand and repair and/or cleanout of any measures used to trap sediment.
- All sediment spilled, dropped, washed or tracked onto public rights of way must be removed immediately.



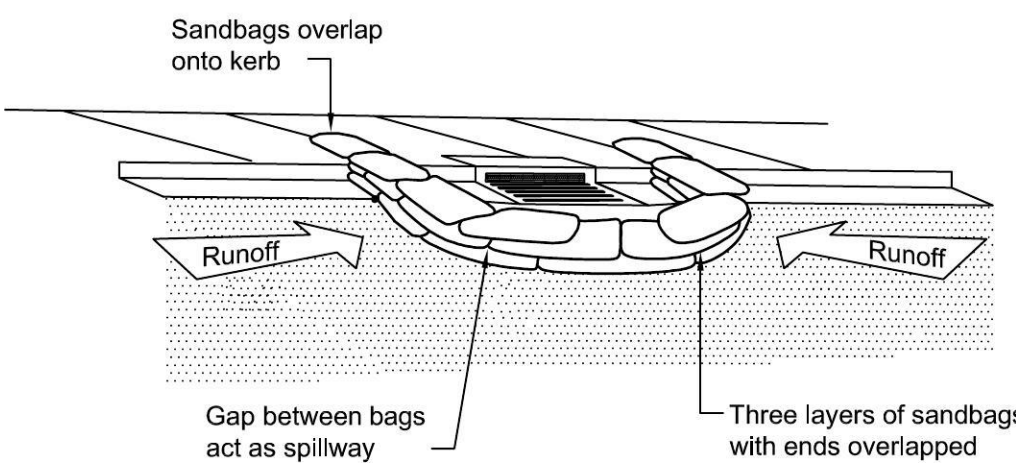
Sediment Trap for Kerb Inlet (On Grade - Sandbag)

NTS



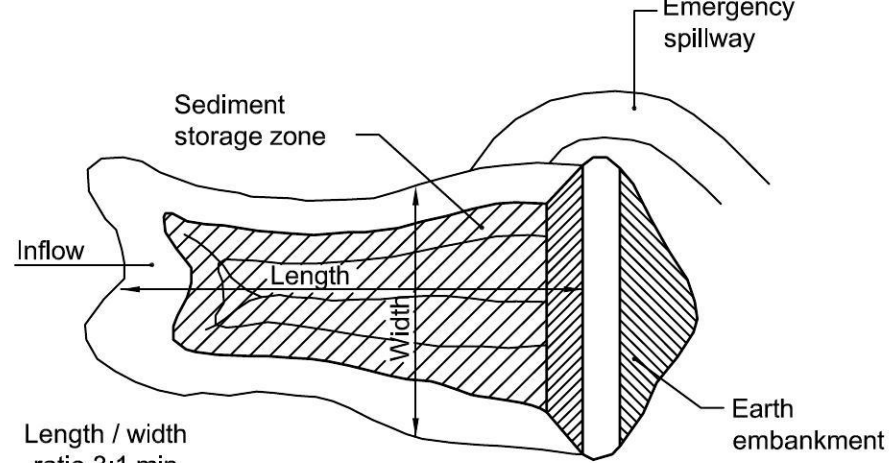
Sediment Trap for Drop Inlet (Geotextile Filter Fabric)

NTS



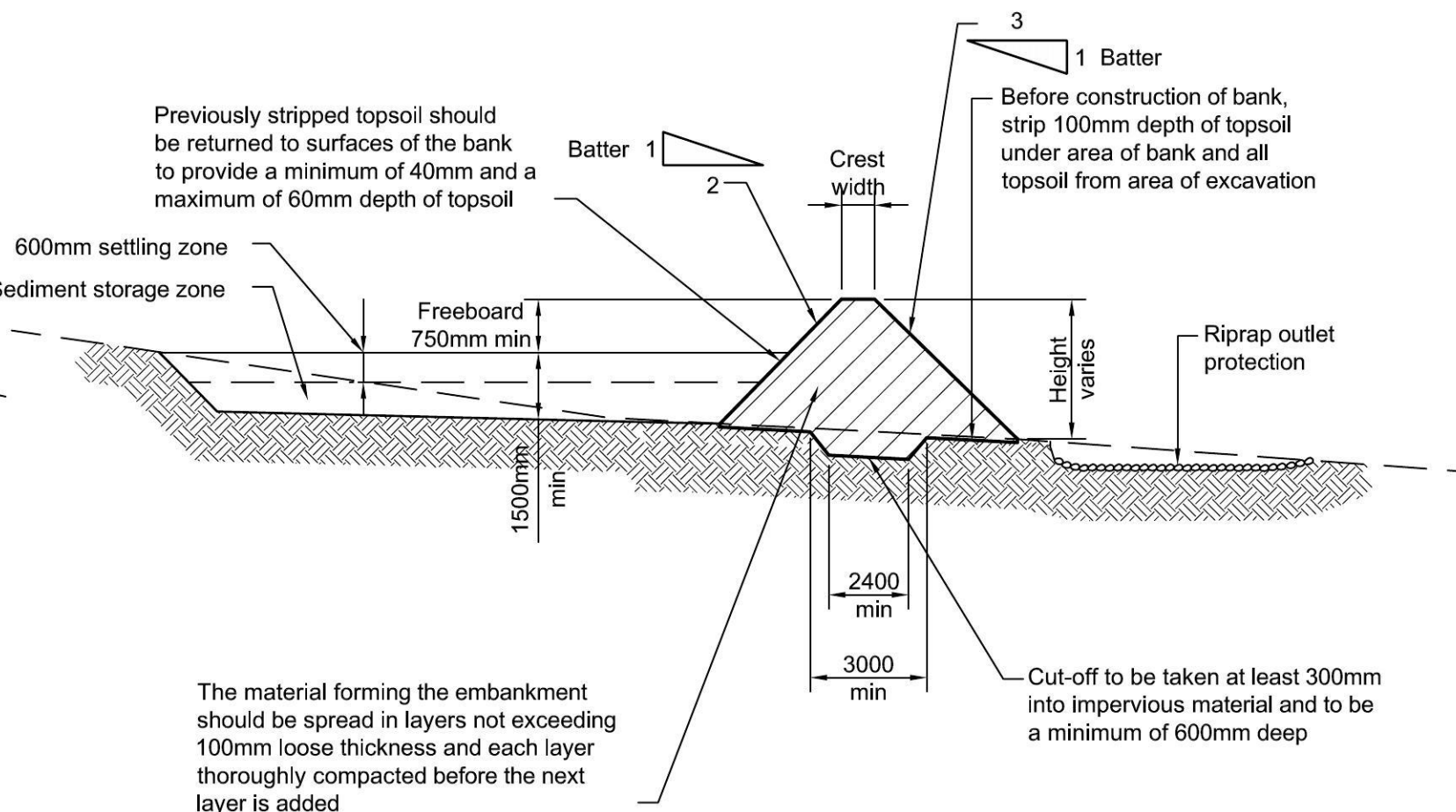
Sediment Trap for Kerb Inlet (at Low Point - Sandbag)

NTS



Sediment Basin Wet (Typical) Plan - Type D and F soils

NTS



Sediment Basin (Typical) Cross Section - Type D and F soils

NTS

Not For Construction

Notes

Key to symbols

Reference drawings

P4	29.07.14	ADS	Issued for DA	GL	CJA
P3	24.07.14	ADS	Issued for information	GL	CJA
P2	07.07.14	ADS	Issued for DA Approval	GL	CJA
P1	30.06.14	ADS	Issued for information	GL	CJA
Rev	Date	Drawn	Description	Ch'k'd	App'd



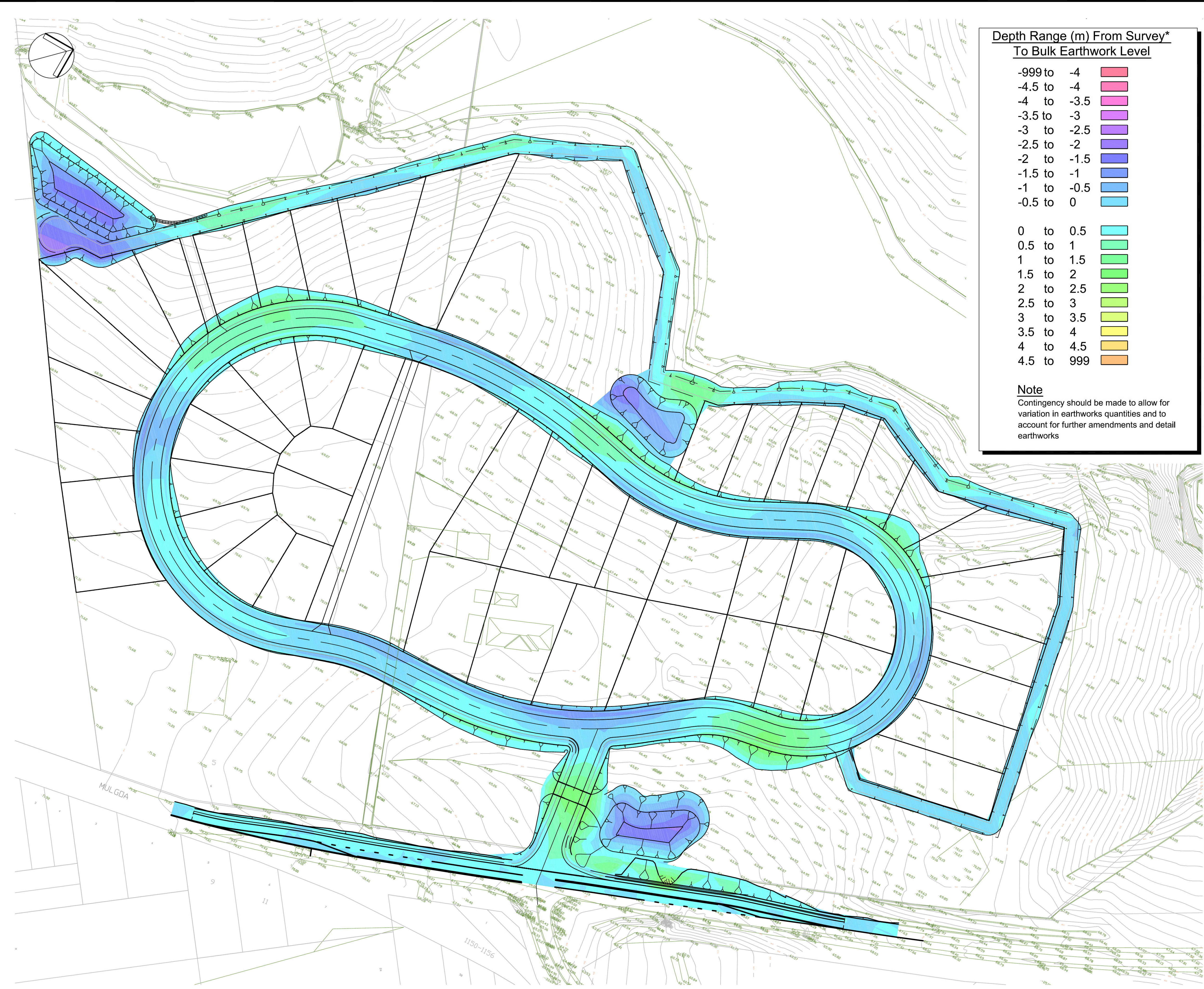
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Client
Fernhill Estate

Title
**Fernhill Estate
Soil and Water Management Details**

Designed	GL	.	Eng check	GL	.
Drawn	DW	.	Coordination	CJA	.
Dwg check	GC	.	Approved	DB	.
Scale at A1	NTS	Status	PRE	Rev	P4

Drawing Number
MMD-322876-C-DR-00-EA-0216



Depth Range (m) From Survey*
To Bulk Earthwork Level

-999 to	-4	
-4.5 to	-4	
-4 to	-3.5	
-3.5 to	-3	
-3 to	-2.5	
-2.5 to	-2	
-2 to	-1.5	
-1.5 to	-1	
-1 to	-0.5	
-0.5 to	0	
0 to	0.5	
0.5 to	1	
1 to	1.5	
1.5 to	2	
2 to	2.5	
2.5 to	3	
3 to	3.5	
3.5 to	4	
4 to	4.5	
4.5 to	999	


Note
Contingency should be made to allow for variation in earthworks quantities and to account for further amendments and detail earthworks

Notes

Key to symbols

Reference drawings

P2	29.07.14	AMP	Issued for DA	GL	CJA
P1	24.07.13	AMP	Issued for information	GL	-
Rev	Date	Drawn	Description	Ch'k'd	App'd



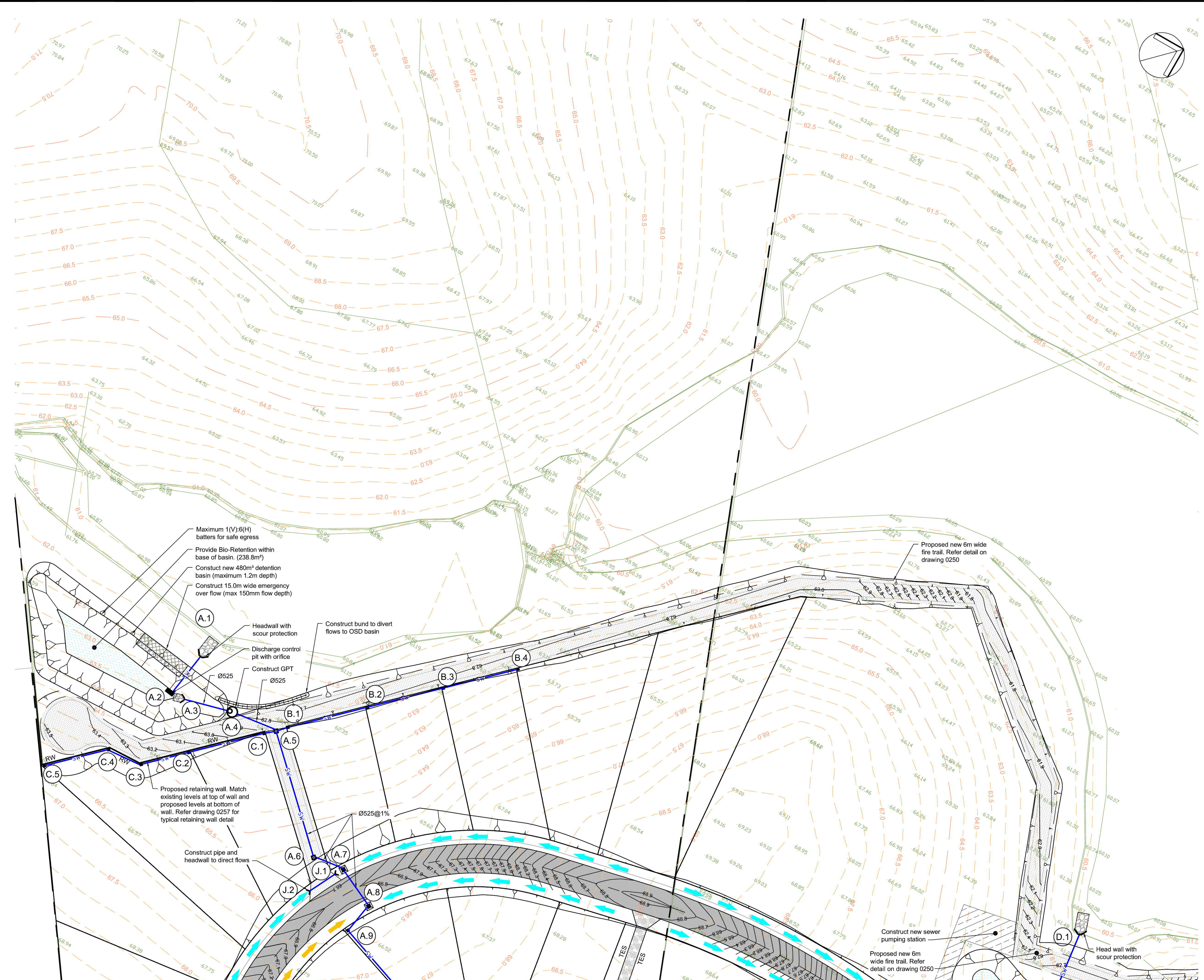
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Client
Fernhill Estate

Title
Fernhill Estate
Earthworks Cut and Fill Plan

Designed	GL	.	Eng check	GL	.
Drawn	DW	.	Coordination	CJA	.
Dwg check	GC	.	Approved	DB	.
Scale at A1 1:800	Status PRE		Rev P2		

Drawing Number
MMD-322876-C-DR-00-EA-0225



Notes

- All Proposed road batters maximum 1(H):5(V)
- All services shown are approximate only.
- Inter allotment drainage per Penrith City Council DCP unless noted otherwise.

Key to symbols

	Swale Type 1
	Swale Type 2
	Asphaltic concrete (AC)
	Fire Trail (6m)
	Access road

Reference drawings

P5	29.07.14	ADS	Issued for DA	GL	CJA
P4	24.07.14	ADS	Issued for information	GL	CJA
P3	08.07.14	ADS	Re-issued for DA Approval	GL	CJA
P2	07.07.14	ADS	Issued for DA Approval	GL	CJA
P1	30.06.14	ADS	Issued for information	GL	CJA
Rev	Date	Drawn	Description	Ch'k'd	App'd

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Client

Fernhill Estate

Title

Fernhill Estate
Siteworks and Stormwater Plan
Sheet 1








Designed	GL		Eng check	GL	
Drawn	DW		Coordination	CJA	
Dwg check	GC		Approved	DB	
Scale at A1	1:500	Status	PRE	Rev	P5

Drawing Number

MMD-322876-C-DR-00-EA-0240

[illegible]

1. All Proposed road batters maximum 1(H):5(V)
2. All services shown are approximate only.
3. Inter allotment drainage per Penrith City Council DCP unless noted otherwise.

		Swale Type 1
		Swale Type 2
		Asphaltic concrete (AC)
		Fire Trail (6m)
		Access road

[illegible]

P5	29.07.14	ADS	Issued for DA	GL	CJA
P4	24.07.14	ADS	Issued for information	GL	CJA
P3	08.07.14	ADS	Re-issued for DA Approval	GL	CJA
P2	07.07.14	ADS	Issued for DA Approval	GL	CJA
P1	30.06.14	ADS	Issued for information	GL	CJA
Rev	Date	Drawn	Description	Ch'k'd	App'd



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Title	Fernhill Estate Siteworks and Stormwater Plan Sheet 2
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Designed	GL	.	Eng check	GL	.
Drawn	DW	.	Coordination	CJA	.
Dwg check	GC	.	Approved	DB	.
Scale at A1	Status		Rev		
1:500	PRE		P5		

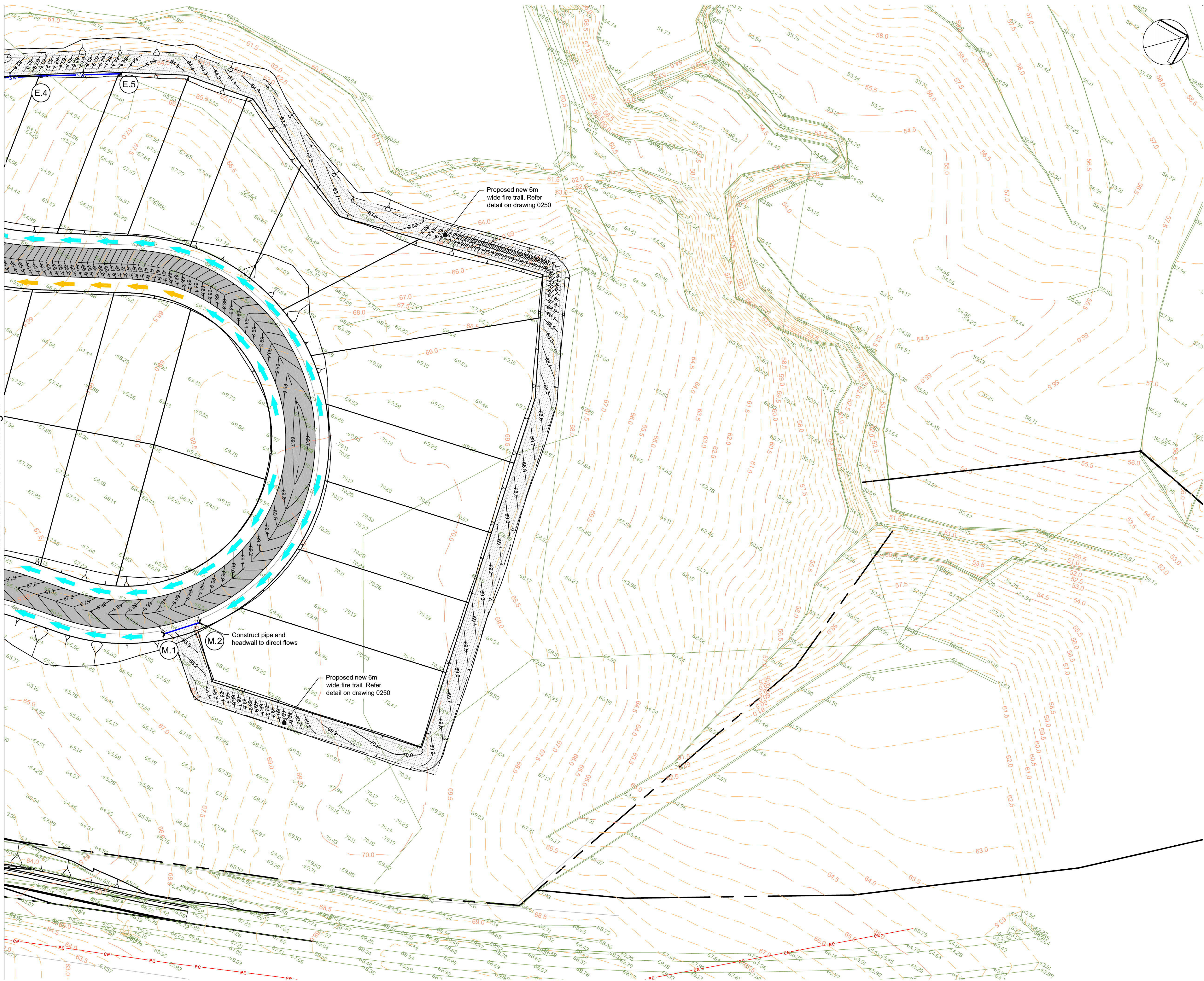
Drawing Number
MMD-322876-C-DR-00-EA-0241

For continuation refer drawing 0242

Not For Construction

10 5 0 10 20 30
PLAN SCALE 1:500 @ A1

For continuation refer drawing 0241



- Notes
- All Proposed road batters maximum 1(H):5(V)
 - All services shown are approximate only.
 - Inter allotment drainage per Penrith City Council DCP unless noted otherwise.

Key to symbols

	Swale Type 1
	Swale Type 2
	Asphaltic concrete (AC)
	Fire Trail (6m)
	Access road

Reference drawings

P5	29.07.14	ADS	Issued for DA	GL	CJA
P4	24.07.14	ADS	Issued for information	GL	CJA
P3	08.07.14	ADS	Re-issued for DA Approval	GL	CJA
P2	07.07.14	ADS	Issued for DA Approval	GL	CJA
P1	30.06.14	ADS	Issued for information	GL	CJA
Rev	Date	Drawn	Description	Ch'k'd	App'd

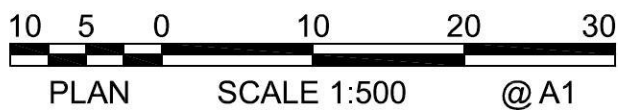
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Client **Fernhill Estate**

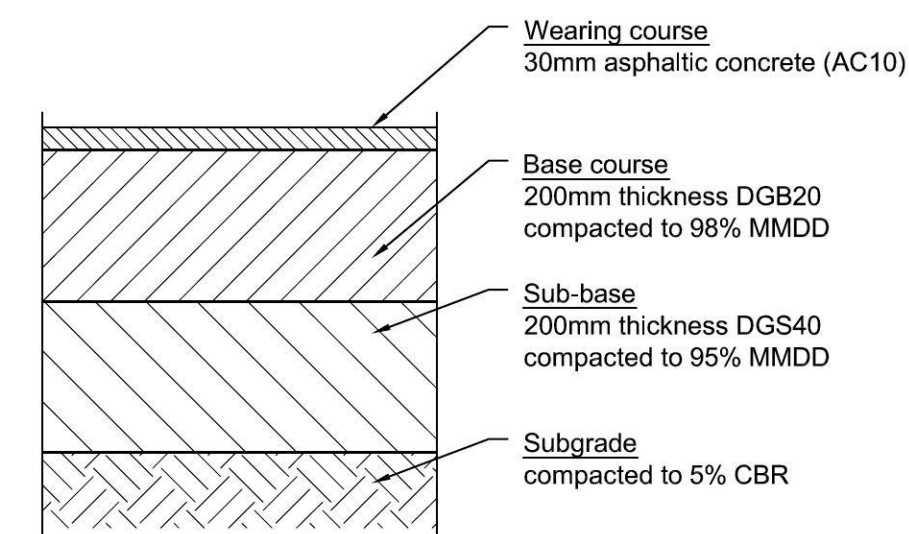
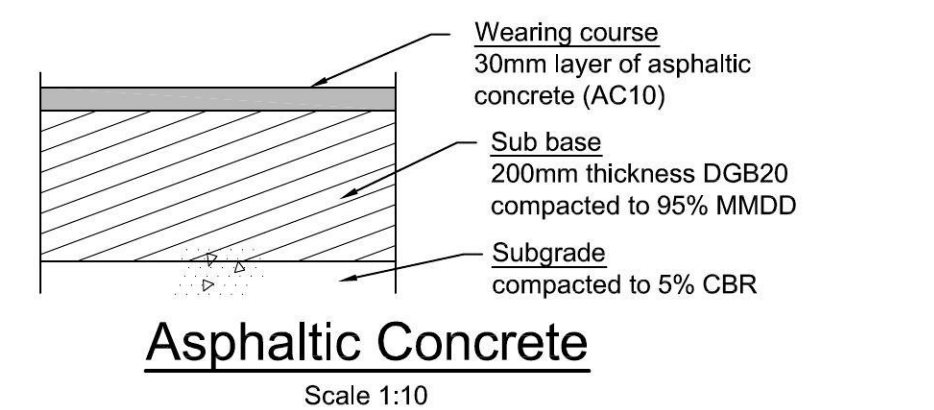
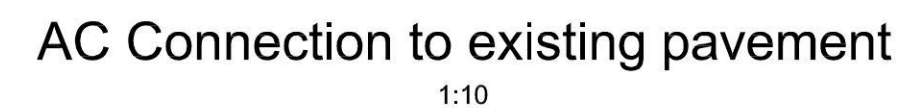
Title **Fernhill Estate
Siteworks and Stormwater Plan
Sheet 3**

Designed	GL		Eng check	GL	
Drawn	DW		Coordination	CJA	
Dwg check	GC		Approved	DB	
Scale at A1	1:500	Status	PRE	Rev	P5

Drawing Number
MMD-322876-C-DR-00-EA-0242



Not For Construction




Note: All Pavements are subject to geotechnical/structural testing, investigation and design. The pavements listed above are provisional only.

Notes

Key to symbols

Reference drawings					
P4	30.07.14	ADS	Re-issued for DA	GL	CJA
P3	29.07.14	ADS	Issued for DA	GL	CJA
P2	07.07.14	ADS	Issued for DA Approval	GL	CJA
P1	30.06.14	ADS	Issued for information	GL	CJA
Rev	Date	Drawn	Description	Ch'k'd	App'd


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Client **Fernhill Estate**

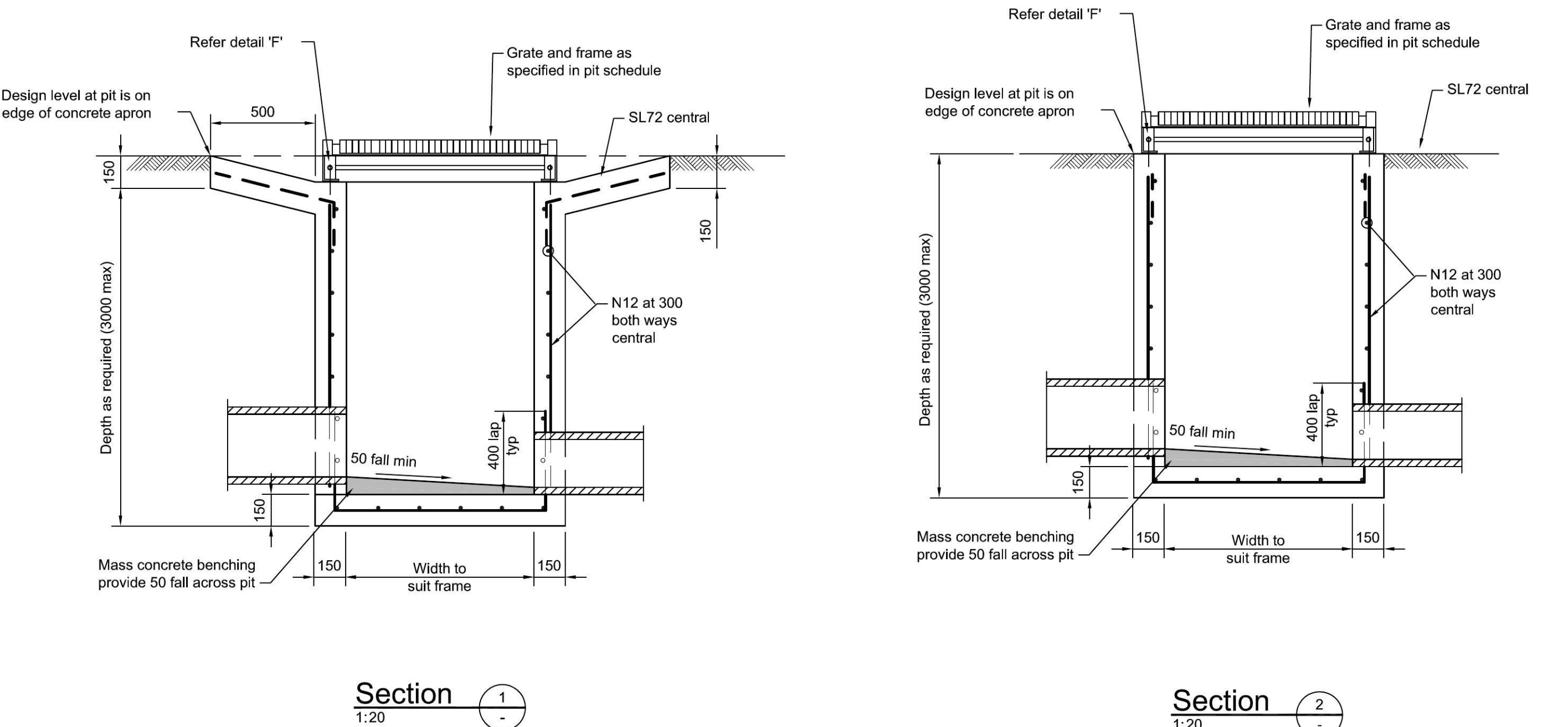
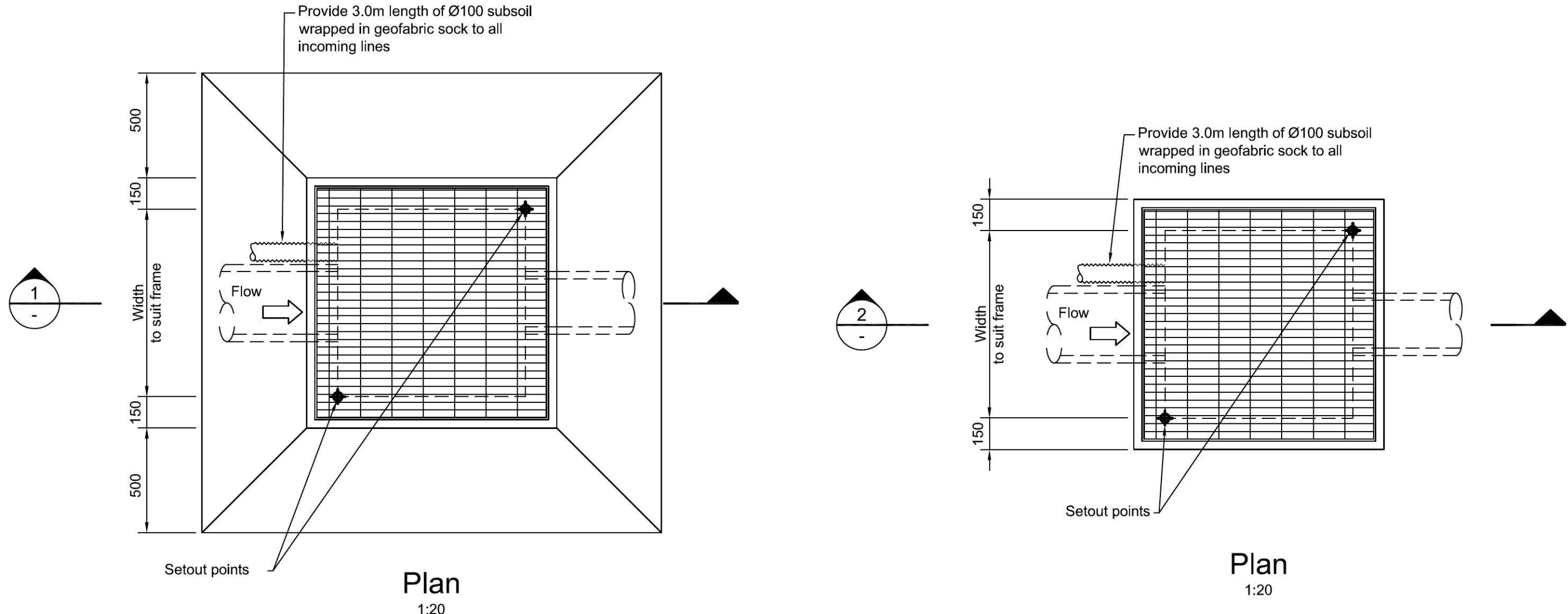
Title	Fernhill Estate Typical Road Cross Sections and Fire Trail Section Sheet
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Designed	GL	.	Eng check	GL	.
Drawn	DW	.	Coordination	CJA	.
Dwg check	GC	.	Approved	DB	.
Scale at A1	Status		Rev		
As Shown		PRE		P4	

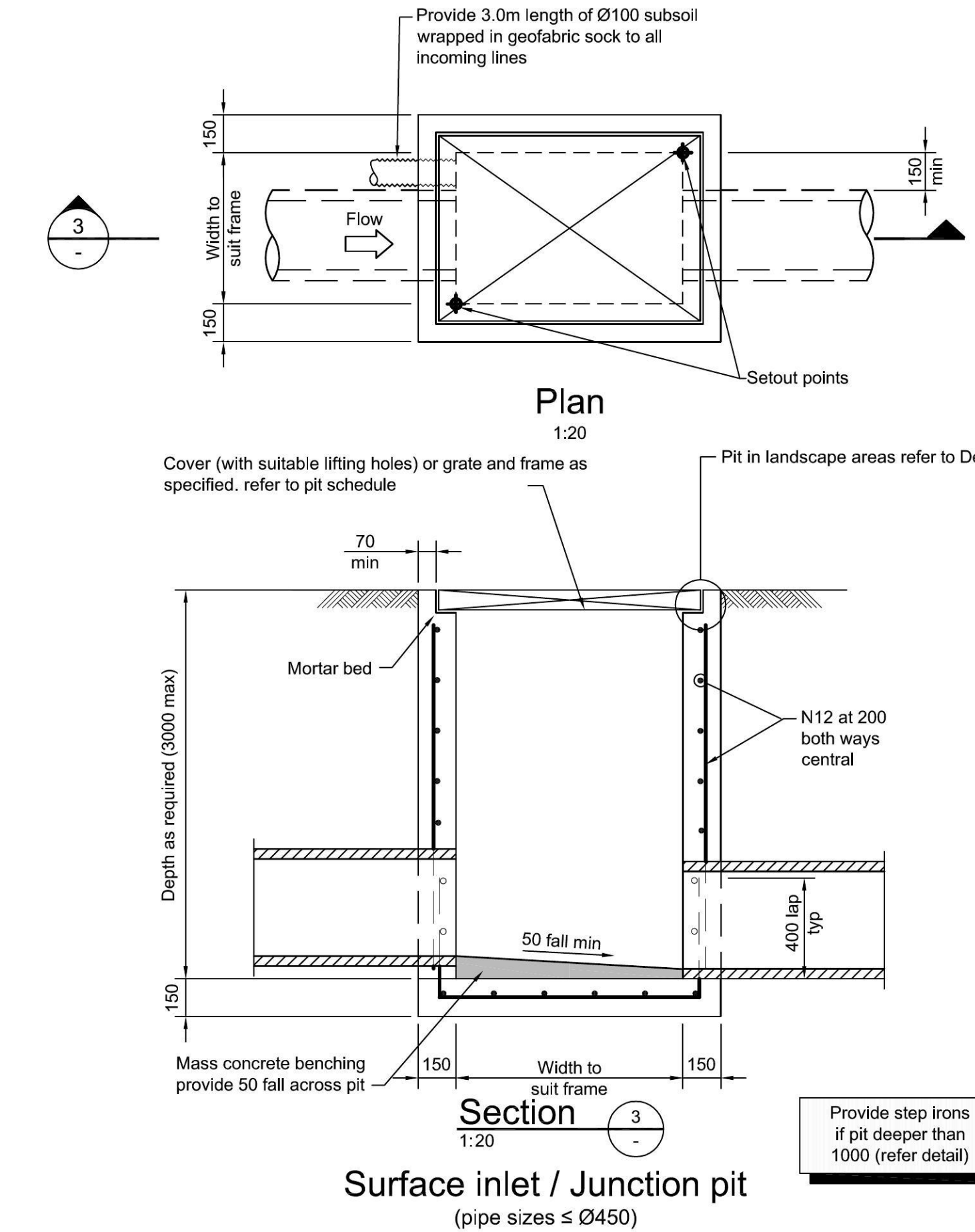
Drawing Number
MMD-322876-C-DR-00-EA-0250

Not For Construction

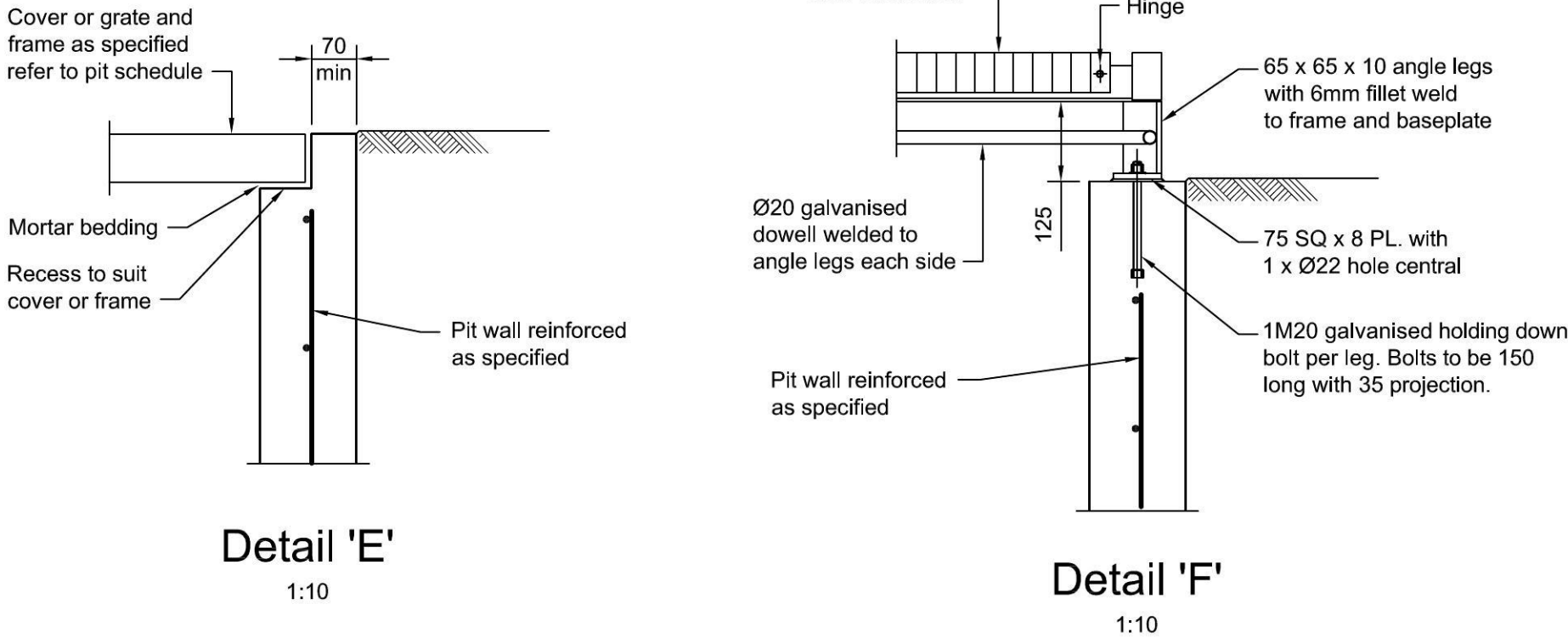
STORMWATER PIT SCHEDULE			
PIT NO.	PIT TYPE	INTERNAL DIMENSIONS	COVER AND CLASS
A.1	HEADWALL	-	-
A.2	ON-SITE DETENTION/BIORETENTION PIT	1200 X 1200	2 X 1200 X 1200 CLASS B GALVANISED MILD STEEL RAISED GRATE
A.3	HEADWALL	-	-
A.4	GPT	REFER DETAIL	-
A.5	JUNCTION PIT	900 X 900	900 X 900 CLASS D CAST IRON COVER WITH CONCRETE INFILL
A.6	JUNCTION PIT	900 X 900	900 X 900 CLASS D CAST IRON COVER WITH CONCRETE INFILL
A.7	SURCHARGE PIT WITH RAISED GRATE	1200 X 1200	1200 X 1200 CLASS B GALVANISED MILD STEEL GRATE
A.8	SURCHARGE PIT WITH RAISED GRATE	1200 X 1200	1200 X 1200 CLASS B GALVANISED MILD STEEL GRATE
A.9	SURFACE INLET PIT	450 X 450	450 X 450 CLASS B GALVANISED MILD STEEL GRATE HINGED TO FRAME
A.10	SURFACE INLET PIT	450 X 450	450 X 450 CLASS B GALVANISED MILD STEEL GRATE HINGED TO FRAME
A.11	SURFACE INLET PIT	450 X 450	450 X 450 CLASS B GALVANISED MILD STEEL GRATE HINGED TO FRAME
A.12	SURFACE INLET PIT	450 X 450	450 X 450 CLASS B GALVANISED MILD STEEL GRATE HINGED TO FRAME
A.13	SURFACE INLET PIT	450 X 450	450 X 450 CLASS B GALVANISED MILD STEEL GRATE HINGED TO FRAME
A.14	SURFACE INLET PIT	450 X 450	450 X 450 CLASS B GALVANISED MILD STEEL GRATE HINGED TO FRAME
A.15	SURFACE INLET PIT	450 X 450	450 X 450 CLASS B GALVANISED MILD STEEL GRATE HINGED TO FRAME
A.16	SURFACE INLET PIT	450 X 450	450 X 450 CLASS B GALVANISED MILD STEEL GRATE HINGED TO FRAME
B.1	SURFACE INLET PIT	450 X 450	450 X 450 CLASS B GALVANISED MILD STEEL GRATE HINGED TO FRAME
B.2	SURFACE INLET PIT	450 X 450	450 X 450 CLASS B GALVANISED MILD STEEL GRATE HINGED TO FRAME
B.3	SURFACE INLET PIT	450 X 450	450 X 450 CLASS B GALVANISED MILD STEEL GRATE HINGED TO FRAME
B.4	SURFACE INLET PIT	450 X 450	450 X 450 CLASS B GALVANISED MILD STEEL GRATE HINGED TO FRAME
C.1	SURFACE INLET PIT	450 X 450	450 X 450 CLASS B GALVANISED MILD STEEL GRATE HINGED TO FRAME
C.2	SURFACE INLET PIT	450 X 450	450 X 450 CLASS B GALVANISED MILD STEEL GRATE HINGED TO FRAME
C.3	SURFACE INLET PIT	450 X 450	450 X 450 CLASS B GALVANISED MILD STEEL GRATE HINGED TO FRAME
C.4	SURFACE INLET PIT	450 X 450	450 X 450 CLASS B GALVANISED MILD STEEL GRATE HINGED TO FRAME
C.5	SURFACE INLET PIT	450 X 450	450 X 450 CLASS B GALVANISED MILD STEEL GRATE HINGED TO FRAME
D.1	HEADWALL	-	-
D.2	ON-SITE DETENTION/BIORETENTION PIT	1200 X 1200	2 X 1200 X 1200 CLASS B GALVANISED MILD STEEL RAISED GRATE
D.3	HEADWALL	-	-
D.4	GPT	REFER DETAIL	-
D.5	SURCHARGE PIT WITH RAISED GRATE	1200 X 1200	1200 X 1200 CLASS B GALVANISED MILD STEEL RAISED GRATE
D.6	SURCHARGE PIT WITH RAISED GRATE	1200 X 1200	1200 X 1200 CLASS B GALVANISED MILD STEEL RAISED GRATE
E.1	HEADWALL	-	-
E.2	SURFACE INLET PIT	450 X 450	450 X 450 CLASS B GALVANISED MILD STEEL GRATE HINGED TO FRAME
E.3	SURFACE INLET PIT	450 X 450	450 X 450 CLASS B GALVANISED MILD STEEL GRATE HINGED TO FRAME
E.4	SURFACE INLET PIT	450 X 450	450 X 450 CLASS B GALVANISED MILD STEEL GRATE HINGED TO FRAME
F.1	HEADWALL	-	-
F.2	GPT	REFER DETAIL	-
F.3	JUNCTION PIT	900 X 900	900 X 900 CLASS D CAST IRON COVER WITH CONCRETE INFILL
F.4	SURFACE INLET PIT	1200 X 1200	1200 X 1200 CLASS B GALVANISED MILD STEEL GRATE HINGED TO FRAME
F.5	SURCHARGE PIT WITH RAISED GRATE	1200 X 1200	1200 X 1200 CLASS B GALVANISED MILD STEEL RAISED GRATE
F.6	SURCHARGE PIT WITH RAISED GRATE	1200 X 1200	1200 X 1200 CLASS B GALVANISED MILD STEEL RAISED GRATE
G.1	SURFACE INLET PIT	1200 X 1200	1200 X 1200 CLASS B GALVANISED MILD STEEL GRATE HINGED TO FRAME
G.1	SURFACE INLET PIT	1200 X 1200	1200 X 1200 CLASS B GALVANISED MILD STEEL GRATE HINGED TO FRAME
H.1	HEADWALL	-	-
H.2	ON-SITE DETENTION/BIORETENTION PIT	1200 X 1200	2 X 1200 X 1200 CLASS B GALVANISED MILD STEEL RAISED GRATE
I.1	HEADWALL	-	-
J.1	HEADWALL	-	-
J.2	HEADWALL	-	-
K.1	HEADWALL	-	-
K.2	HEADWALL	-	-
L.1	HEADWALL	-	-
L.2	SURCHARGE PIT WITH RAISED GRATE	1200 X 1200	1200 X 1200 CLASS B GALVANISED MILD STEEL RAISED GRATE
M.1	HEADWALL	-	-
M.2	HEADWALL	-	-
N.1	SURFACE INLET PIT	450 X 450	450 X 450 CLASS B GALVANISED MILD STEEL GRATE HINGED TO FRAME



Surcharge pit with raised grate

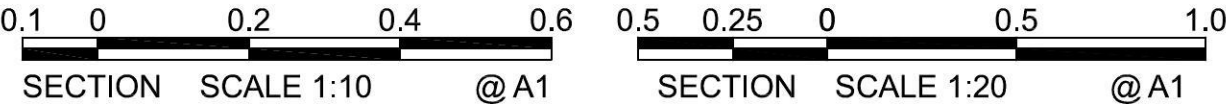


Surface inlet / Junction pit
(pipe sizes ≤ Ø450)



Detail 'E'

Detail 'F'




Not For Construction

Notes

Key to symbols

Reference drawings

P4	29.07.14	ADS	Issued for DA	GL	CJA
P3	24.07.14	ADS	Issued for information	GL	CJA
P2	07.07.14	ADS	Issued for DA Approval	GL	CJA
P1	30.06.14	ADS	Issued for information	GL	CJA
Rev	Date	Drawn	Description	Ch'k'd	App'd

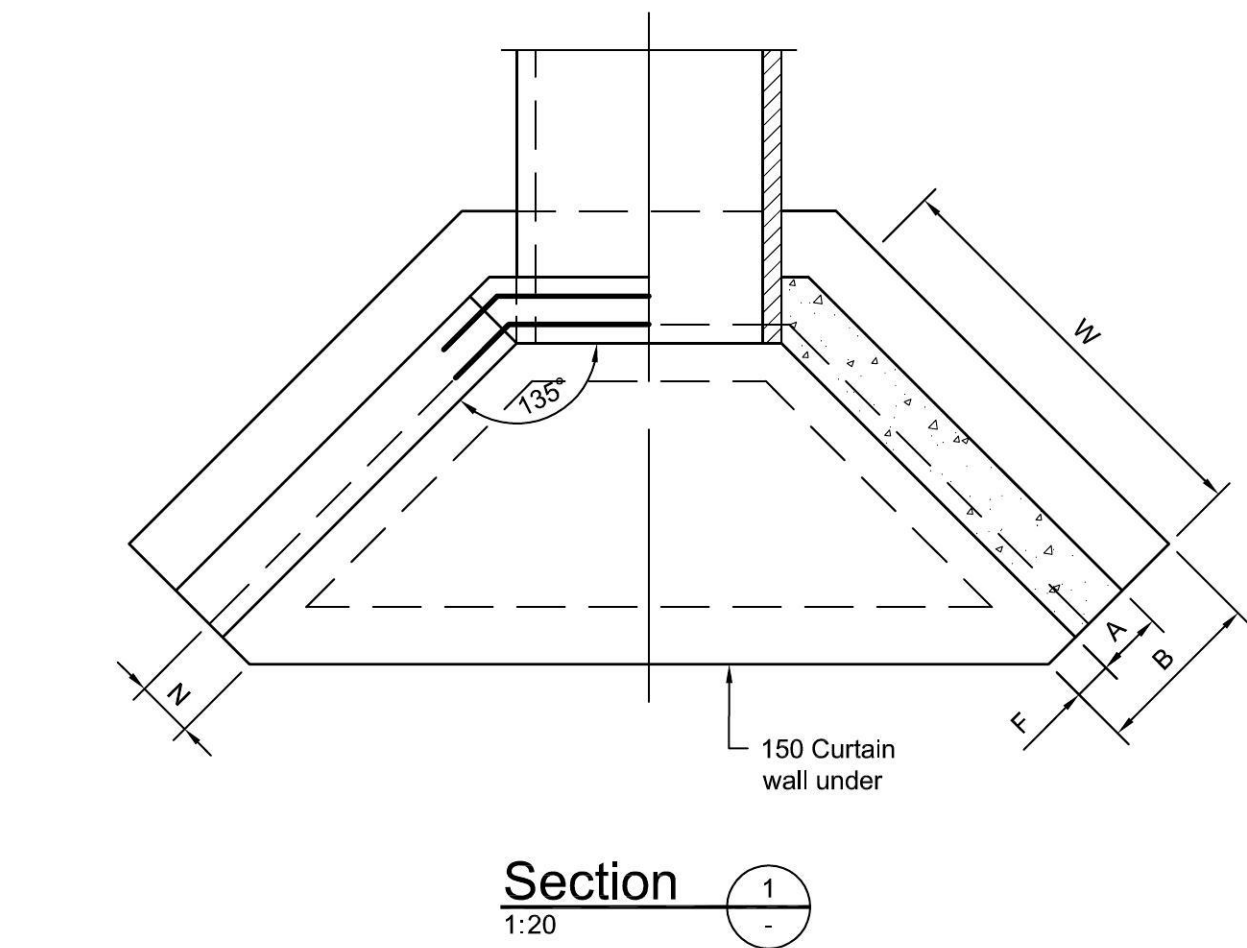


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Client
Fernhill Estate

Title
Fernhill Estate
Siteworks Details
Sheet 1

Designed	GL	.	Eng check	GL	.
Drawn	DW	.	Coordination	CJA	.
Dwg check	GC	.	Approved	DB	.
Scale at A1	Status		Rev		
As Shown		PRE		P4	
Drawing Number					
MMD-322876-C-DR-00-EA-0255					

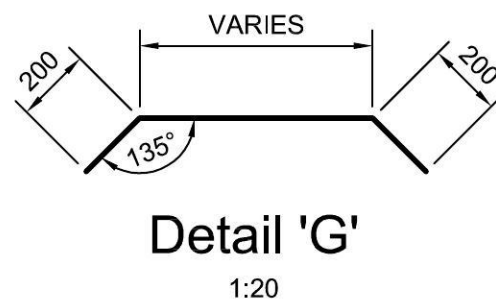


Notes

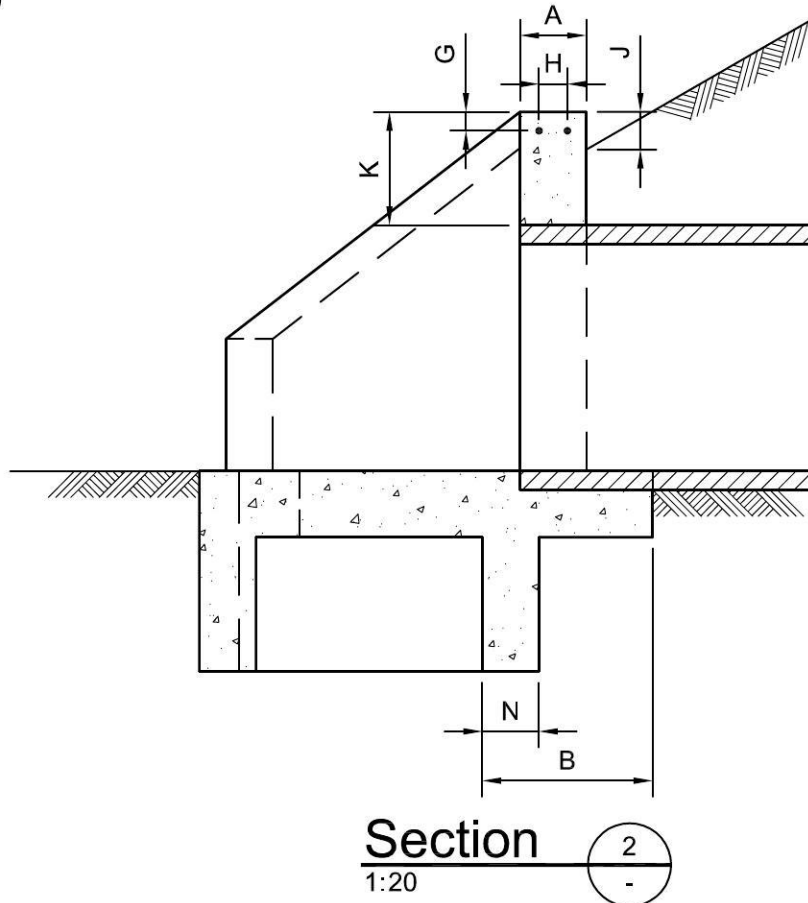
- Compressive strength (F_c) for cast-in-situ concrete to be in accordance with AS3600, for the relevant exposure conditions - 25MPa as a minimum at 28 days.
- 25mm Chamfer on all exposed edges.

Headwall dimensions

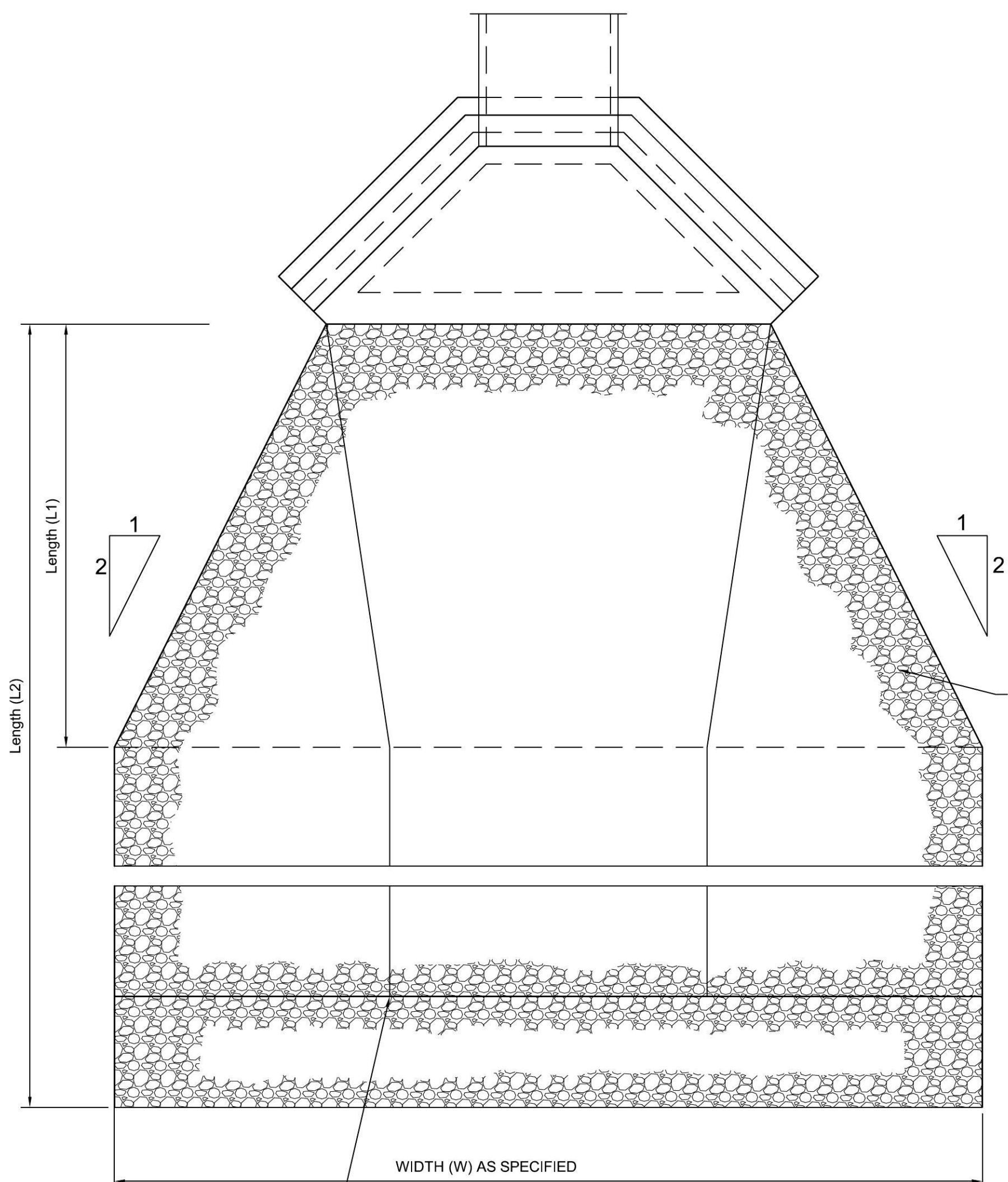
Ø Pipe	300
A	150
B	300
C	300
D	375
E	150
F	75
G	40
H	70
J	100
K	200
N	150
W	700
Reinforcement Ø	12



Detail 'G'
1:20



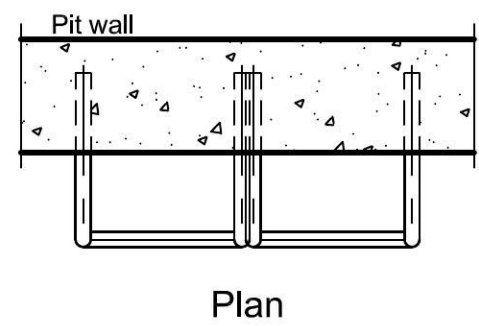
Section 2
1:20



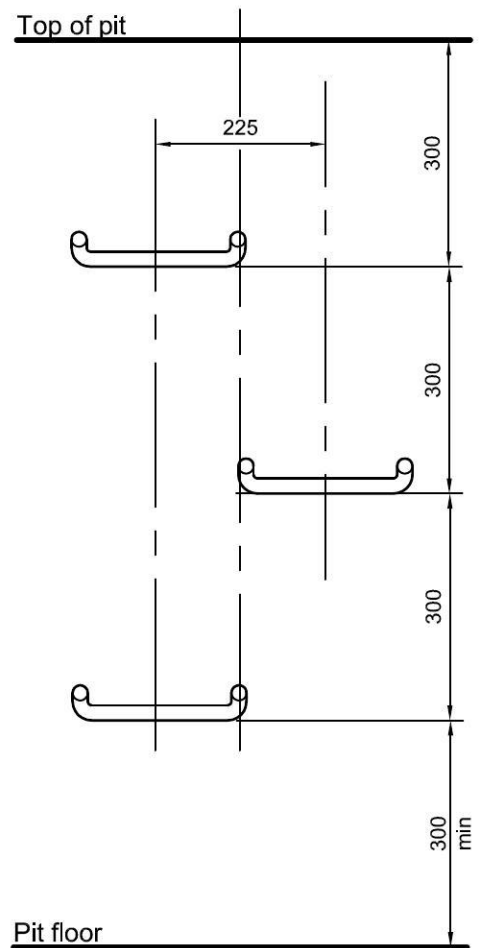
NOTE
Refer to the "blue book"
detail sd 5-6 for construction notes.

Galvanised wire or plastic coated
wire mesh mattress filled with rock
and securely wired together.
mattress to be contoured to suit
inlet or outlet drains.

Pipe Headwall With Apron
1:20

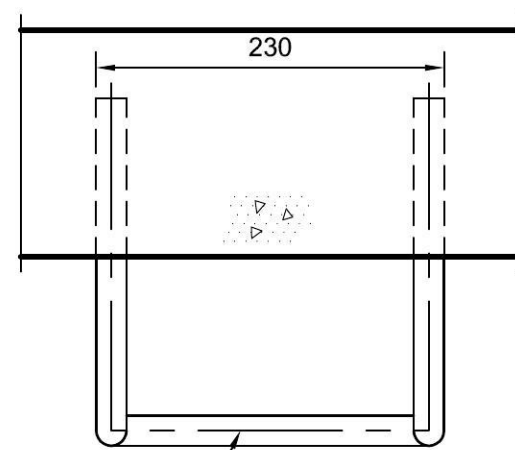


Plan

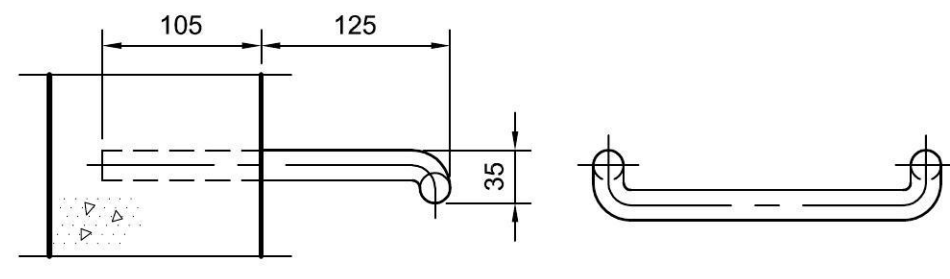


Elevation

Step iron
placement to pit wall
NTS



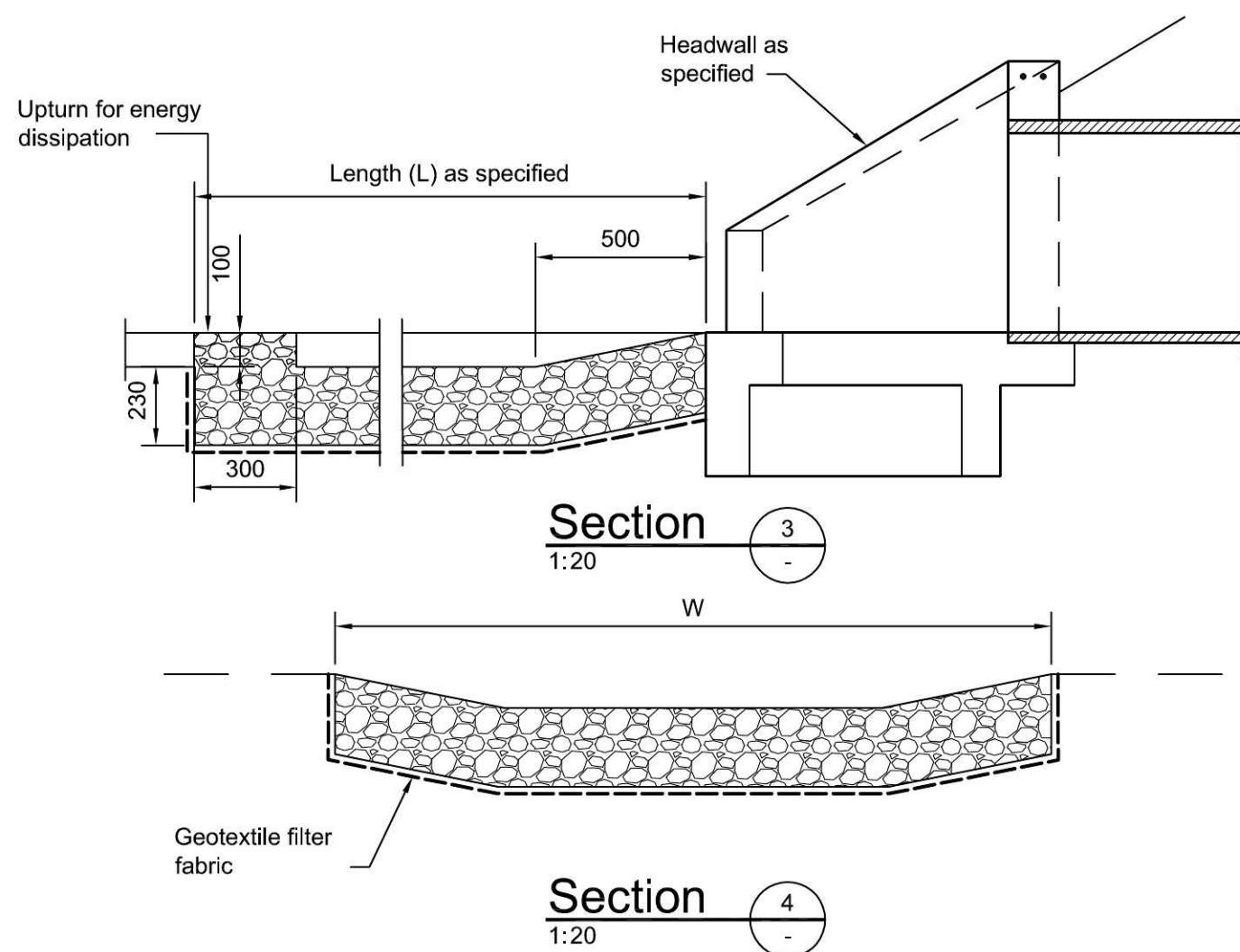
Ø20 galvanised
mild steel
Plan



Side elevation

Front elevation

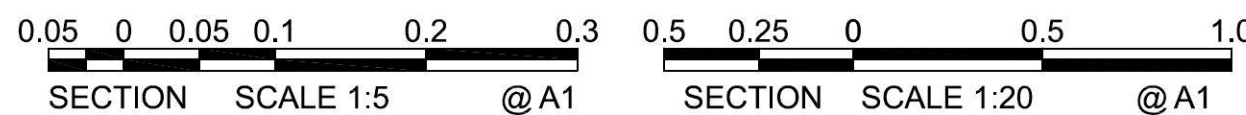
Step iron detail
1:5



Section 3
1:20

Section 4
1:20

Outlet Scour Protection
1:20



Not For Construction

Notes

Key to symbols

Reference drawings

P4	29.07.14	ADS	Issued for DA	GL	CJA
P3	24.07.14	ADS	Issued for information	GL	CJA
P2	07.07.14	ADS	Issued for DA Approval	GL	CJA
P1	30.06.14	ADS	Issued for information	GL	CJA
Rev	Date	Drawn	Description	Ch'k'd	App'd



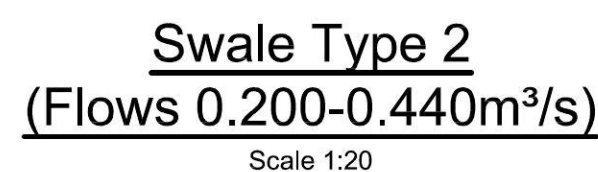
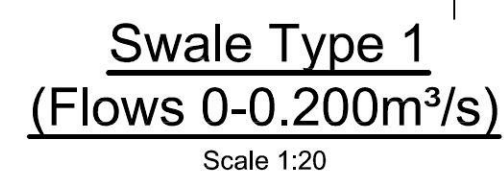
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Client
Fernhill Estate

Title
Fernhill Estate
Siteworks Details
Sheet 2

Designed	GL	.	Eng check	GL	.
Drawn	DW	.	Coordination	CJA	.
Dwg check	GC	.	Approved	DB	.
Scale at A1	As Shown	Status	PRE	Rev	P4

Drawing Number
MMD-322876-C-DR-00-EA-0256



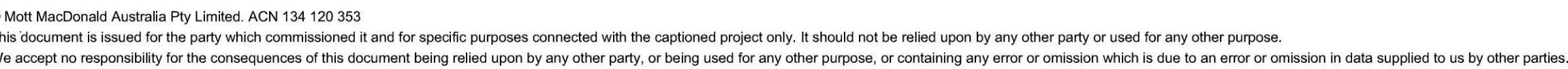
Wall Height 'H'	Base Width 'B'	Bar Type 'X' & 'Y'
800	800	N16-400
1000	900	N16-400
1200	1000	N16-400
1400	1100	N16-400
1600	1200	N16-400
1800	1400	N16-400
2000	1600	N16-200
These dimensions are provided based on a 5kPa surcharge		

Retaining Wall Notes:

1. Ø100mm rigid silted up PVC sub-soil pipe with filter sock (on min. 0.5% fall) to nearest available stormwater pit.
 2. 150mm surround of 20mm blue metal or gravel.
 3. Geofabric surround to be 'Bidum' A24 filter fabric or approved equal.
 4. Provide Ø250 weep holes located above concrete dish drain at 1600 maximum centers.
 5. Provide 'E' shaped clean-out block at base of retaining wall. omit horizontal bars of 6mm dia. at 100mm centers.
- If tanking membrane is required the design and certification is to be provided by waterproofing specialist.
7. Refer to blockwork notes.



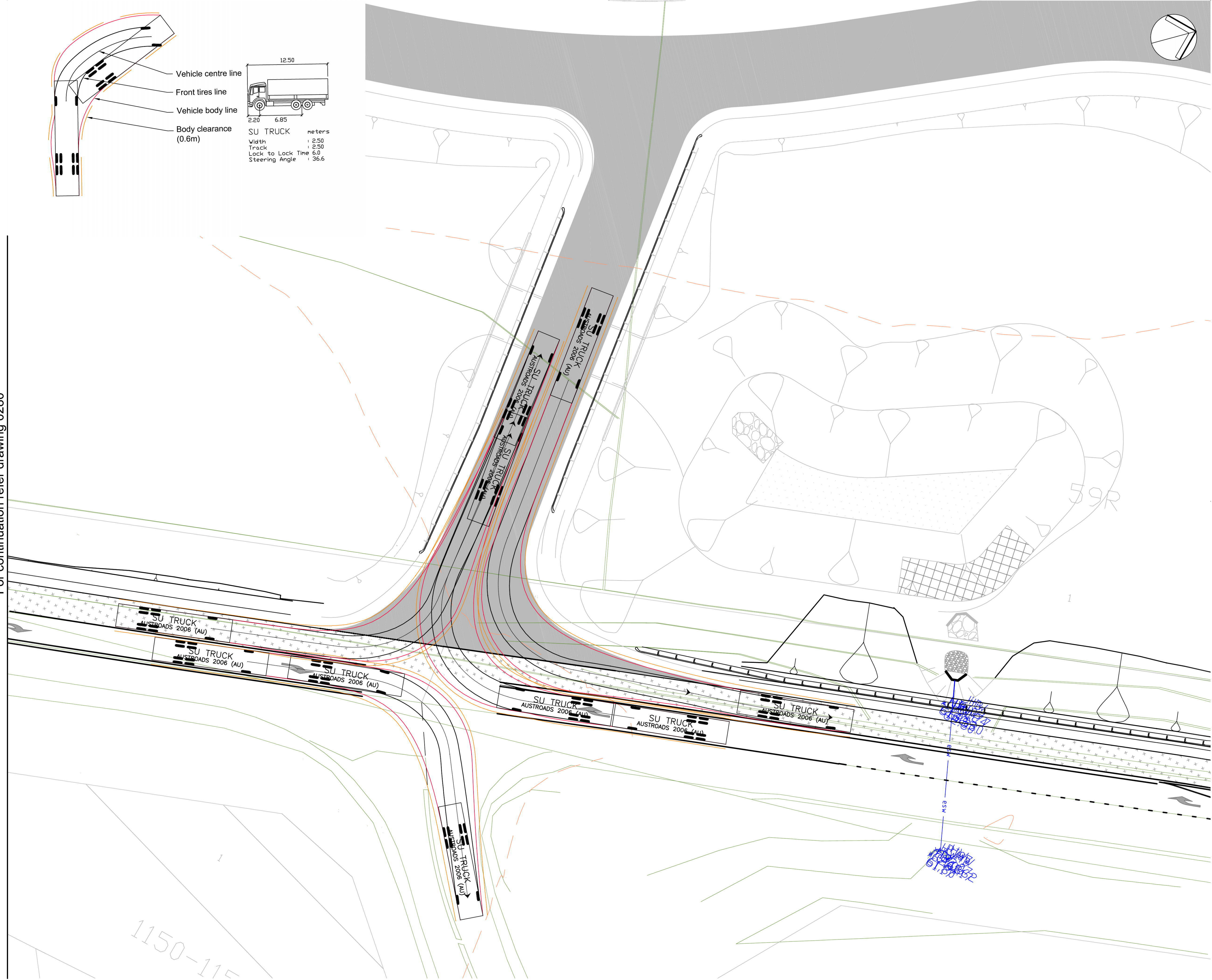
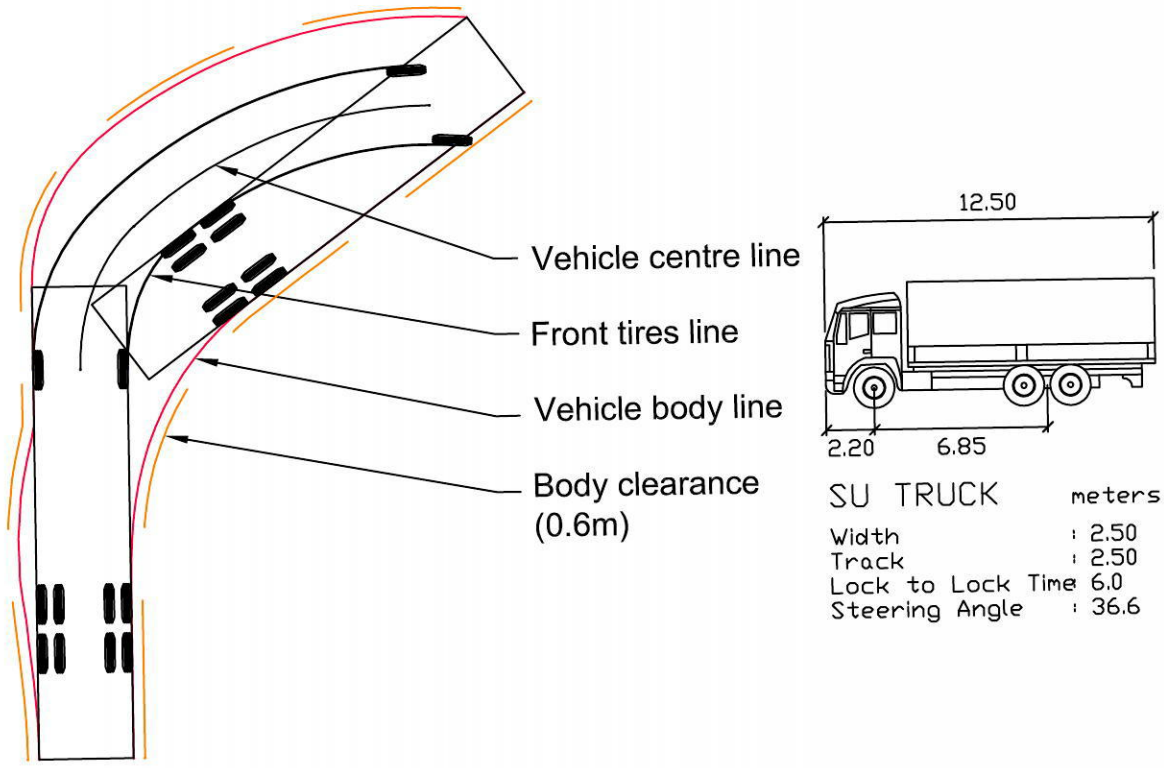
Not For Construction



Not For Construction

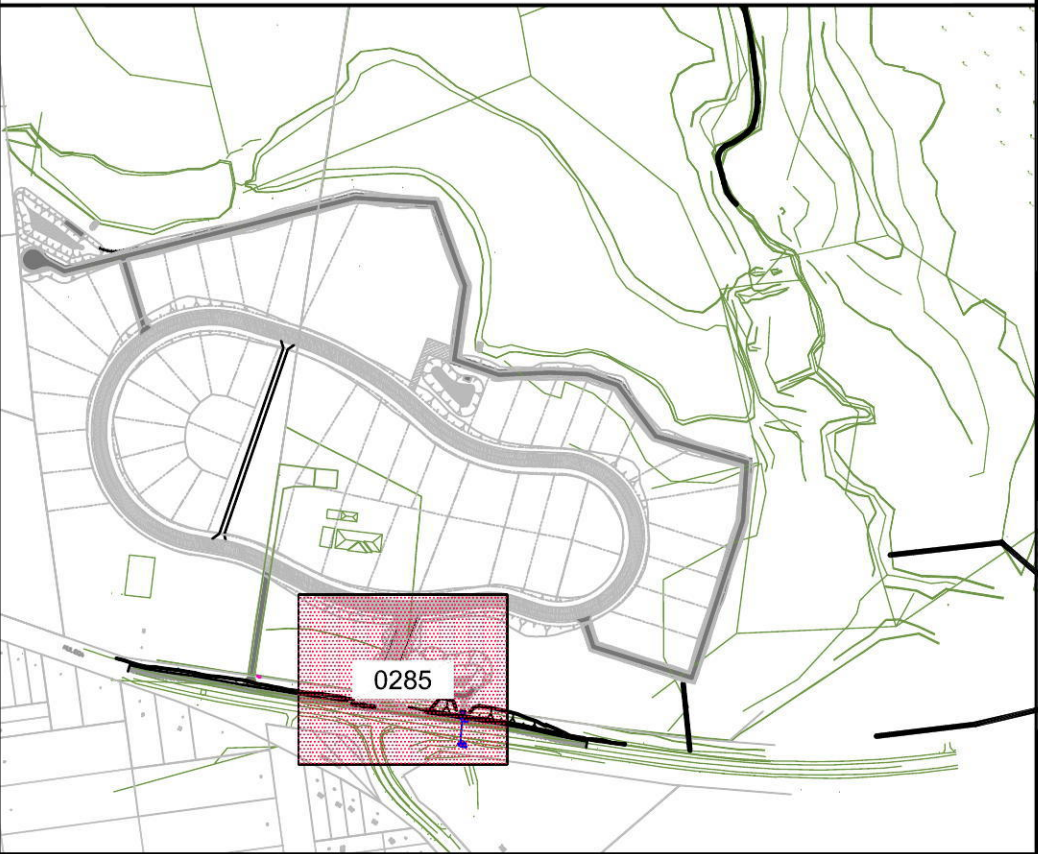
Drawing Number
MMD-322876-C-DR-00-EA-0280

For continuation refer drawing 0280



Notes

Key to symbols



Reference drawings

P2	29.07.14	ADS	Issued for DA	GL	CJA
P1	24.07.14	ADS	Issued for information	GL	CJA
Rev	Date	Drawn	Description	Ch'k'd	App'd



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Client
Fernhill Estate

Title
Fernhill Estate
Roadworks Turning
Simulation Plan

Designed	GL	.	Eng check	GL	.
Drawn	ADS	.	Coordination	CJA	.
Dwg check	GC	.	Approved	CJA	.
Scale at A1	1:200	Status	PRE	Rev	P2

Drawing Number
MMD-322876-C-DR-00-EA-0285

Not For Construction

Legend

ee

Existing electricity (underground)

eeOH

Existing electricity (overhead)

esw

Existing stormwater drainage

es

Existing sewer

ew

Existing water

et

Existing telecommunications

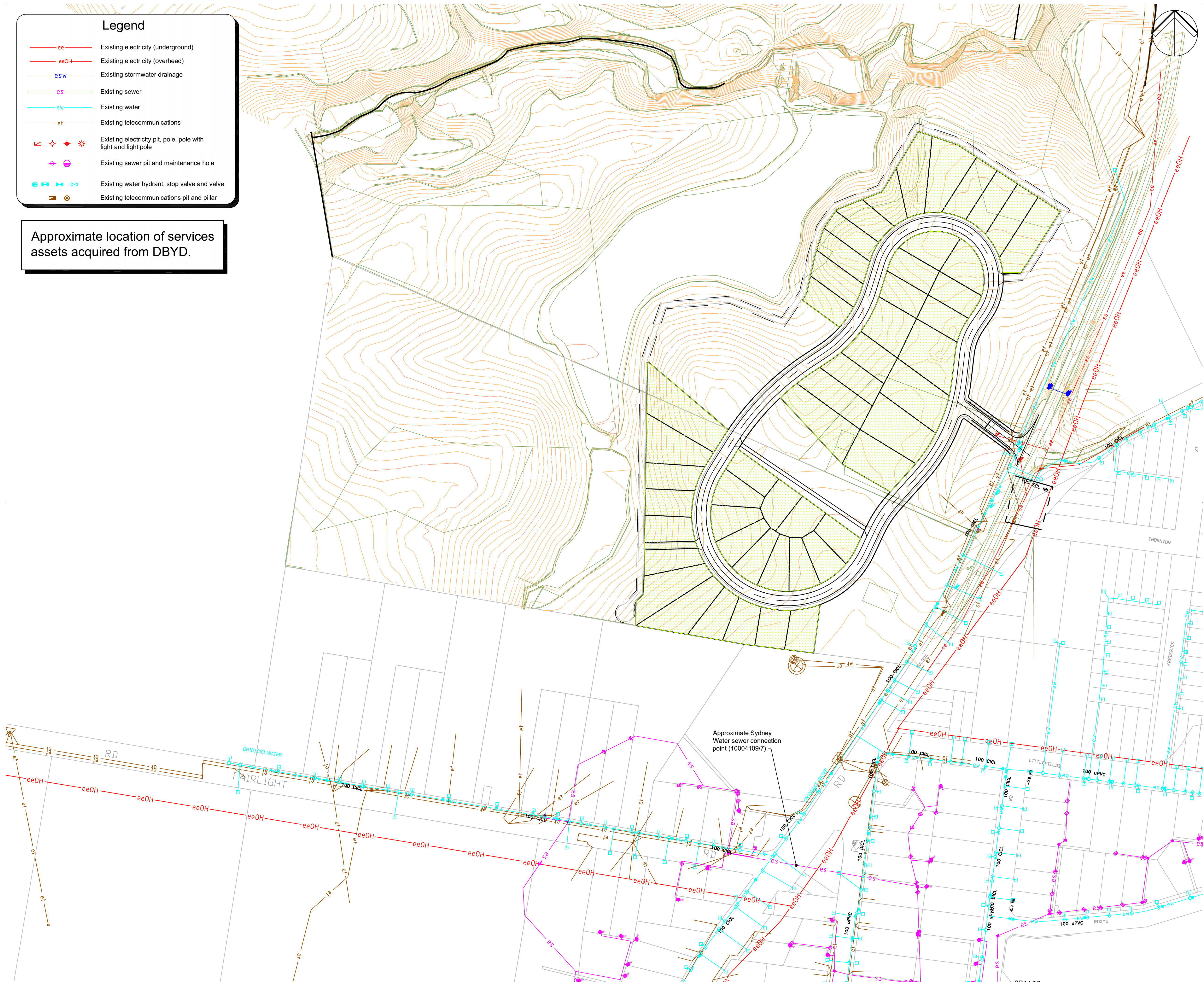
Existing electricity pit, pole, pole with light and light pole

Existing sewer pit and maintenance hole

Existing water hydrant, stop valve and valve

Existing telecommunications pit and pillar

Approximate location of services
assets acquired from DBYD.



Notes

Key to symbols

New residential

Reference drawings

P2	29.07.14	ADS	Issued for DA	GL	CJA
P1	24.07.14	ADS	Issued for information	GL	CJA
Rev	Date	Drawn	Description	Ch'k'd	App'd

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Client
Fernhill Estate

Title
Fernhill Estate
Existing Services Plan

Designed	GL	.	Eng check	GL	.
Drawn	ADS	.	Coordination	CJA	.
Dwg check	GC	.	Approved	CJA	.
Scale at A1 1:1500	Status PRE	Rev P2			

Drawing Number
MMD-322876-C-DR-00-EA-0290

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10 0 25 50 100
PLAN SCALE 1:1500 @ A1

P:\Parramatta\Projects\32xxxx\322876\06 CAD\6_4 Working drawings\Civil\Autocad\Drawings\MMD-322876-C-DR-00-EA-0290.dwg Jul 30, 2014 - 9:35AM jac55913

Legend

ee

Existing electricity (underground)

eeOH

Existing electricity (overhead)

esw

Existing stormwater drainage

es

Existing sewer

ew

Existing water

et

Existing telecommunications

⬢

⬢

⬢

⬢

Existing electricity pit, pole, pole with light and light pole

⬢

⬢

Existing sewer pit and maintenance hole

⬢

⬢

⬢

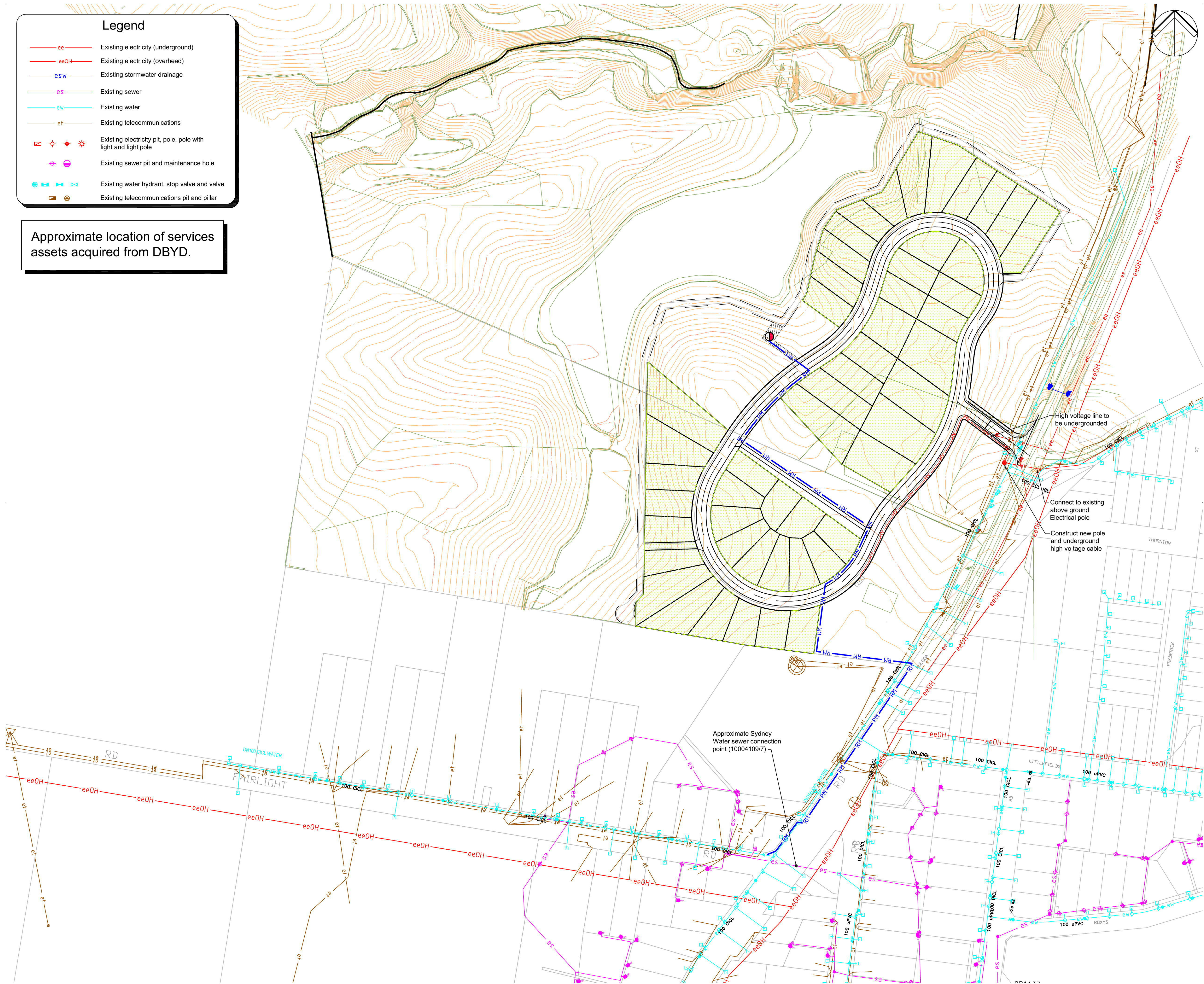
Existing water hydrant, stop valve and valve

⬢

⬢

Existing telecommunications pit and pillar

Approximate location of services assets acquired from DBYD.



Notes

Key to symbols

Reference drawings

P2	29.07.14	ADS	Issued for DA	GL	CJA
P1	24.07.14	ADS	Issued for information	GL	CJA
Rev	Date	Drawn	Description	Ch'k'd	App'd

New residential

Sewer Treatment Plan

Pump Station

Indicative Padmount Substation location

RM

Rising Main

HV

HV Feeder

Indicative Proposed Power Pole Location

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Client

Fernhill Estate

Title

Fernhill Estate
Proposed Services Plan
Proposed Major Asset
Services Plan

Designed	GL	.	Eng check	GL	.
Drawn	ADS	.	Coordination	CJA	.
Dwg check	GC	.	Approved	CJA	.

Scale at A1

1:1500

Status

PRE

Rev

P2

Drawing Number

MMD-322876-C-DR-00-EA-0291

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PLAN SCALE 1:1500 @ A1

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Version: 1, Version Date: 14/08/2014

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