



Metro North-West Joint Development Assessment Panel Agenda

Meeting Date and Time: 7 November 2017; 3:00pm
Meeting Number: MNWJDAP/191
Meeting Venue: City of Wanneroo Lechenaultia Meeting Room
23 Dundobar Road
Wanneroo

Attendance

DAP Members

Mr Karen Hyde (Presiding Member)
Mr Ray Haeren (Deputy Presiding Member)
Mr Jason Hick (A/Specialist Member)
Cr Christine Hamilton-Prime (Local Government Member, City of Joondalup)
Cr Philippa Taylor (Local Government Member, City of Joondalup)
Cr Russell Driver (Local Government Member, City of Wanneroo)
Cr Frank Cvitan JP (Local Government Member, City of Wanneroo)

Officers in attendance

Mr Alex Campbell (Department of Planning, Lands and Heritage)
Mr Andrew Cook (Department of Planning, Lands and Heritage)
Mr Chris Leigh (City of Joondalup)
Mr Tom Geddes (City of Joondalup)
Mr Mitchell Hoad (City of Wanneroo)

Minute Secretary

Ms Linda Easson (City of Wanneroo)

Applicants and Submitters

Mr Michael Kevill (TPG Town Planning, Urban Design and Heritage)

Members of the Public / Media

Nil

1. Declaration of Opening

The Presiding Member declares the meeting open and acknowledges the past and present traditional owners and custodians of the land on which the meeting is being held.

2. Apologies

Mr John Syme (Specialist Member)



3. Members on Leave of Absence

Panel member, Mr John Syme has been granted leave of absence by the Director General for the period of 25 October 2017 to 24 November 2017 inclusive.

4. Noting of Minutes

Minutes of meeting no. 189 held on 30 October 2017 and meeting no. 190 held on 1 November 2017 were not available at time of agenda preparation.

5. Declarations of Due Consideration

Any member who is not familiar with the substance of any report or other information provided for consideration at the DAP meeting must declare that fact before the meeting considers the matter.

6. Disclosure of Interests

Nil

7. Deputations and Presentations

Nil

8. Form 1 – Responsible Authority Reports – DAP Applications

8.1a	Property Location:	Various Lots
	Application Details:	Public Utility (underground pipeline, supporting infrastructure and two recharge stations)
	Applicant:	TPG Town Planning, Urban Design and Heritage
	Owner:	Various Landowners
	Responsible Authority:	Department of Planning, Lands and Heritage
	DAP File No:	DAP/17/01228

8.1b	Property Location:	Various Lots
	Application Details:	Public Utility (underground pipeline, supporting infrastructure and two recharge stations)
	Applicant:	TPG Town Planning, Urban Design and Heritage
	Owner:	Various Landowners
	Responsible Authority:	Department of Planning, Lands and Heritage
	DAP File No:	DAP/17/01228

9. Form 2 – Responsible Authority Reports – Amending or cancelling DAP development approval

Nil

10. Appeals to the State Administrative Tribunal

Nil



11. General Business / Meeting Closure

In accordance with Section 7.3 of the DAP Standing Orders 2017 only the Presiding Member may publicly comment on the operations or determinations of a DAP and other DAP members should not be approached to make comment.



Form 1 – Responsible Authority Report (Regulation 12)

Property Location:	Various Lots
Development Description:	Public Utility (underground pipeline, supporting infrastructure and two recharge stations)
DAP Name:	Metro North-West Joint Development Assessment Panel
Applicant:	TPG Town Planning, Urban Design and Heritage
Owner:	Various Landowners
Value of Development:	\$21 million
LG Reference:	City of Joondalup: DA17/0560 City of Wanneroo: DA2017/665
Responsible Authority:	Department of Planning, Lands and Heritage
Authorising Officer:	A/Assistant Director General, Land Use Planning
DAP File No:	DAP/17/01228
Report Due Date:	27 October 2017
Application Receipt Date:	6 June 2017
Application Process Days:	116 Days
Attachment(s):	Attachment 1 - Development Plans Attachment 2 - Location Plan Attachment 3 - Metropolitan Region Scheme Map Attachment 4 - Minister for Environment Statement No. 1065

Officer Recommendation:

That the Metro North West Joint Development Assessment Panel resolves to:

1. **Approve** DAP Application reference number DAP/17/01228 and accompanying plans (**Attachment 1**) date-stamped 14 September 2017 by the Department of Planning, Lands and Heritage, on behalf of the Western Australian Planning Commission, in accordance with Clause 30(1) of the *Metropolitan Region Scheme*, subject to the following conditions:

Conditions

1. This decision constitutes planning approval only and is valid for a period of two years from the date of approval. If the subject development is not substantially commenced within the two year period, the approval shall lapse and be of no further effect.
2. This development relates specifically to the Public Utility (underground pipeline, supporting infrastructure and two recharge stations) associated with Stage 2 of the Water Corporation Ground Water Replenishment Scheme as indicated on the attached plans date stamped 14 September 2017 by the Department of Planning, Lands and Heritage.

3. Disturbed landscape shall be returned to its pre-excavation condition as far as practical.
4. The Water Corporation entering into a Deed of Indemnity with the Western Australian Planning Commission (WAPC) indemnifying the WAPC against any and all claims arising from the use of the WAPC's land for construction purposes.
5. All stormwater shall be collected and retained on site and erosion shall be managed so that sand is not deposited on road reserves.
6. The proponent shall ensure that any damage to a local government owned or managed asset is remediated, to the specification of the City of Joondalup or the City of Wanneroo as applicable.
7. Where the proposed Groundwater Pipeline is located outside of existing easement boundaries or road reserves, easements in accordance with Sections 195 and 196 of the Land Administration Act 1997, for the benefit of the Water Corporation, are to be placed on the certificate(s) of title. The easement(s) shall specify access rights, and be included on the diagram or plan of survey (deposited plan).
8. A work site traffic management plan being submitted to and approved by the City of Joondalup prior to the commencement of development. The management plan shall detail the following:
 - a) construction work sites;
 - b) barrier treatments; and
 - c) road closures and detours.

The plan shall be submitted to the City of Joondalup for approval a minimum of two weeks prior to the commencement of construction activities.

Advice Notes

1. ATCO Gas Australia has High Pressure gas mains and Medium Pressure gas mains within the area of this development application. ATCO Gas must be notified of any works within 15 metres of High Pressure gas infrastructure before those works begin. Construction, excavation and other activities may be restricted in this zone. No pavements (including crossovers) are to be constructed over the pipeline without consent from ATCO Gas Australia. Various pipeline safety tests may apply. The applicant is advised to contact ATCO on 9499 5272 in this regard.

Anyone proposing to carry out construction or excavation works must contact 'Dial Before You Dig' (Ph 1100) to determine the location of buried gas infrastructure.

2. The proposal is located within the Perth Groundwater Area proclaimed under the Rights in Water and Irrigation Act 1914 where a licence to take water for dewatering and construction purposes may be required. The proponent is therefore encouraged to contact the Department of Water and Environmental Regulation's Business Support Unit on 1800 508 885 to discuss licensing options.
3. The proposed development is to be carried out in accordance with the implementation conditions and procedures outlined in the Minister for Environment Statement No. 1065.
4. The City of Joondalup requests copies of the following details prior to the commencement of construction works:
 - Confirmation that approvals under the Environmental Protection Act 1986 and the Environmental Protection and Biodiversity Act 1999 have been obtained; and
 - The Acid Sulphate Soils and Dewatering Management Plan, Rehabilitation Plans and the Construction Environmental Management Framework and Plans are provided to the City.
5. With respect to local government owned or managed assets, the City of Joondalup requests the details of reinstatement standards and construction practices, including but not limited to:
 - The details of the road pavement finish, concrete kerbing, compaction and bitumen resurfacing, to be in accordance with relevant Australian Standards and City of Joondalup guidelines;
 - Construction drawings outlining the location of the proposed pipeline alignment, road carriageway, kerbing, road drainage systems, traffic islands, roundabouts and road pavement markings. The extent of road resurfacing will be required for the approval of the City prior to works commencing.
 - The details of the reinstatement of intersections and road sections including kerbing, road drainage, traffic islands, roundabouts and road pavement markings, to the satisfaction of the City.
 - As-constructed drawings detailing the location of intersection and road carriageway treatments including traffic islands, storm water drainage and road pavement markings.
6. Main Roads Western Australia advise the applicant/landowner to:
 - i. search and check for conflicting service infrastructure before construction commences.
 - ii. be advised that any future relocation or modification to this proposed pipeline as a result of road infrastructure works within a primary or other regional road reserve will be at the cost of the applicant.
 - iii. obtain approval from Main Roads before all works are undertaken within the Mitchell Freeway and Wanneroo Road reservations. The applicant seeking access to the Main Roads network will be required to submit an application as outlined in the "Application Kit and Guidelines" for state roads. Application Kits can be found on the Main Roads website.
 - iv. make good any damage to the existing verge vegetation within the road reserve.

- v. consult with Main Roads Western Australia Infrastructure Delivery Directorate regarding:
 - a) the timing of the works for site access and interfacing with traffic management;
 - b) where the pipeline is within the Wanneroo Road reserve, the pipeline shall be located in the standard services corridor or as close as practical to the road reserve boundary; and
 - c) the exact depth of the horizontal drilling and will undertake all of the service protection requirements necessary to facilitate construction activities along Joondalup Drive and Wanneroo Road.
7. The City of Joondalup has requested that a project communication plan, outlining stakeholder management and resident notification is to be provided to the City prior to works commencing.
8. If archaeological artefacts are discovered, work is to stop, and Heritage Services, Department of Planning, Lands and Heritage is to be contacted for advice.

Details: outline of development application

Zoning	MRS:	Rural, Urban, Public Purpose (Water Authority) Reserve, Parks and Recreation Reserve, Other Regional Road Reserve, Primary Region Road Reserve, Bush Forever (site 299)
Zoning	TPS:	Residential, Special Residential, Urban Development
Use Class:		Public Utility (underground pipeline, supporting infrastructure and two recharge stations)
Strategy Policy:		N/A
Development Scheme:		Metropolitan Region Scheme
Lot Size:		11.24 hectares
Existing Land Use:		Road reserves, bushland, public utility

On 6 June 2017 the Western Australian Planning Commission (Commission) received an application for water pipes and associated service points for Stage Two of the Perth Ground Water Replenishment Scheme (GWRS) (**Attachment 1** - Development Plans). The application was submitted by TPG Town Planning, Urban Design and Heritage on behalf of the Water Corporation. The proposed pipeline is 12.8km in length, beginning at the Beenyup Advanced Water Recycling Plant in Craigie, where it will traverse east under the Mitchel Freeway Regional Road Reserve to the Yellagonga Regional Park before continuing north along the eastern side of Lake Joondalup where it will terminate in Neerabup (**Attachment 2** - Location Plan).

The pipeline will traverse through the suburbs of Woodvale, Wanneroo, Ashby and Neerabup which are located in the municipalities of Joondalup and Wanneroo. The affected land is reserved Public Purpose (Water Authority), Parks and Recreation, Other Regional Roads, Primary Region Roads and zoned Urban and Rural under the MRS (**Attachment 3** - MRS Zoning Plan).

Background

The GWRS is a key component of the Water Corporation's 50 year water source plan for the Integrated Water Supply Scheme which seeks to reduce the reliance on climate dependent water sources such as rainfall. The GWRS is the process by which treated wastewater undergoes advanced treatment to produce recycled water that meets Australian guidelines for drinking water prior to being recharged into an aquifer for later use as a drinking water.

Stage One of the GWRS involved the recharge of approximately 14 gigalitres (GL) per annum of drinking water at the Beenyp Advanced Water Recycling Plant. Stage Two, which is the subject of this application, will enable an additional 14GL per annum of treated waste water to be recharged into the Leederville and Yarragadee aquifers at two separate recharge stations.

The proposal seeks to minimise the impact on landowners by locating the pipeline in road and public reserves where possible, however, there are a number of privately owned landholdings that will also be affected. The signatures of the owners of these lots have not been provided on the Form 1 application however the applicants report has noted that the absence of land owners signatures were the subject of a 2004 Town Planning Appeals Tribunal of WA (TPAT) application ([2004] WATPAT 161) between the Water Corporation and the City of Gosnells. The TPAT found that the *'absence of owners signatures does not operate to defeat the application or to lead to the result that the application be dismissed'*.

Furthermore sections 93 and 94 of the *Water Agencies (Powers) Act 1984* (WAP Act) require the plans and a description of proposed general works to be provided to the owners and occupiers of the land which are likely to be adversely affected. The WAP Act provides the owners and occupiers an opportunity to object or provide comment on the proposed works to the Water Corporation. Given the previous TPAT decision and the consultation requirements of the WAP Act the need for the signatures of all landowners is not considered to be necessary.

Finally, Schedule 2, clause 62(2)(c) of the *Planning and Development (Local Planning Scheme) Regulations 2015*, states that in making a development application, the "owner" is taken to have signed the form if *'a person who is authorised under another written law to make an application for development approval in respect of the land'*. In the context of this application the Water Corporation, through the authority granted to it under the WAP Act, are entitled to sign the application form.

The proposal was submitted to the Minister for Environment for consideration under section 38 of the *Environmental Protection Act 1984* (EP Act). Consequently the Environmental Protection Authority prepared an Environmental Impact Assessment report in May 2017. Following an appeal by the Water Corporation to the recommendations of the report and a subsequent dismissal of the appeal by the Minister in August 2017, the Minister issued approval on 12 October 2017. The approval was subject to environmental conditions set out in Ministerial Statement 1065 (**Attachment 4**). The environmental concerns with regard to the impact on acid sulphate soils, clearing of regionally significant bushland, impact on native flora and fauna and remediation works to be undertaken have been addressed through this environmental approval process. As such, the environmental implications of the

proposal will be managed through the Water Corporation's responsibilities pursuant to the EP Act.

Legislation and Policy:

Legislation

Planning and Development Act 2005

The proposed pipeline constitutes 'public works' under the *Planning and Development Act 2005* (PD Act) as defined under the *Public Works Act 1902*. The development is considered to satisfy the definition of public works as it relates to *works for or in connection with the supply of water to, or for or in connection with the sewerage of, any city, town, or district, including all reticulations*.

Public works are exempt from requiring planning approval under the local planning scheme, however, they are still bound by the provisions of the *Metropolitan Region Scheme* (MRS).

Metropolitan Region Scheme

The proposal covers land that is zoned (Urban and Rural) as well as land that is reserved (Public Purpose (Water Authority), Parks and Recreation, Other Regional Road, Primary Region Road) under the MRS and also impacts on Bush Forever Site 299.

Clause 16 of the MRS outlines the development requirements on reserved land owned or vested in Public Authority, which encompasses the land subject of the proposal that is reserved for Public Purpose (Water Authority). Under Clause 16(1a) *development on reserved land owned by or vested in a public authority may be commenced or carried out without the written approval of the Commission if the development is –*

- (a) *permitted development that does not involve the clearing of regionally significant bushland in a Bush Forever area; or*
- (b) *expressly authorized under an Act to be commenced or carried out without the approval of the Commission.*

With respect to Clause 16 (1a), 'permitted development' means:

works for the purpose of or in connection with the supply of water, electricity or gas, or the drainage or treatment of waste, water or sewerage.

The proposed pipeline is considered permitted development pursuant to clause 16 of the MRS, however, as it involves the clearing of regionally significant bushland in a Bush Forever Area (Bush Forever Site 299) it requires development approval under the MRS.

Clause 18 of the MRS requires approval from the WAPC for development on reserved land that is not vested in a public authority.

Further, clause 24(1) requires development approval for development on land that is zoned under the MRS, this being of relevance given that portions of the land on which the development are proposed is zoned Urban and Rural under this MRS.

Approval is therefore required under the MRS for the proposed works.

State Government Policies

State Planning Policy 2 - Environment and Natural Resources Policy

State Planning Policy 2.8 - Bushland Policy For The Perth Metropolitan Region

State Planning Policy 2.9 - Water Resources

Development Control Policy 5.3 - Use of Land Reserved for Parks and Recreation and Regional Open Space

Consultation:

Public Consultation

There is no specific requirement for public consultation to occur in respect of the application pursuant to the MRS. However, it is understood that the Water Corporation has consulted with all affected land owners and government agencies through the 'Preliminaries to Works' process, which is required under the *Water Agencies (Powers) Act 1984*.

Consultation with other Agencies or Consultants

The application was referred for comment to the City of Joondalup, City of Wanneroo, Main Roads Western Australia, Department of Water and Environmental Regulation, the former Department Parks and Wildlife, State Heritage Office (SHO), Atco Gas, the Infrastructure Land Use Coordination section of the Department of Planning, Lands and Heritage, all of which raised no objections to the proposal subject to conditions. These conditions are recommended to be imposed where they are considered applicable.

Planning Assessment:

Metropolitan Region Scheme

Clause 30 of the MRS requires the decision-maker to have regard to the following factors when determining development applications:

- *the purpose for which the land is zoned or reserved under the MRS;*
- *the orderly and proper planning of the locality; and*
- *the preservation of the amenities of the locality.*

The purpose for which the land is zoned or reserved under the Scheme

The use of the land for public works is considered to be compatible with the Urban and Rural zoning and Primary Regional Road, Other Regional Road and Public Purpose reservations under the MRS. Although the proposed development is not strictly in accordance with the reservation of the land for Park and Recreation, given that the proposed works will be located underground the proposal is considered acceptable.

The orderly and proper planning of the locality

The proposed development is considered to be an appropriate land use in the location proposed and will provide a social, economic and environmental benefit to the wider community. The proposed works are to be located predominantly underground and any environmental implications will be managed through the Water Corporation's responsibilities under the EP Act.

The preservation of the amenities of the locality

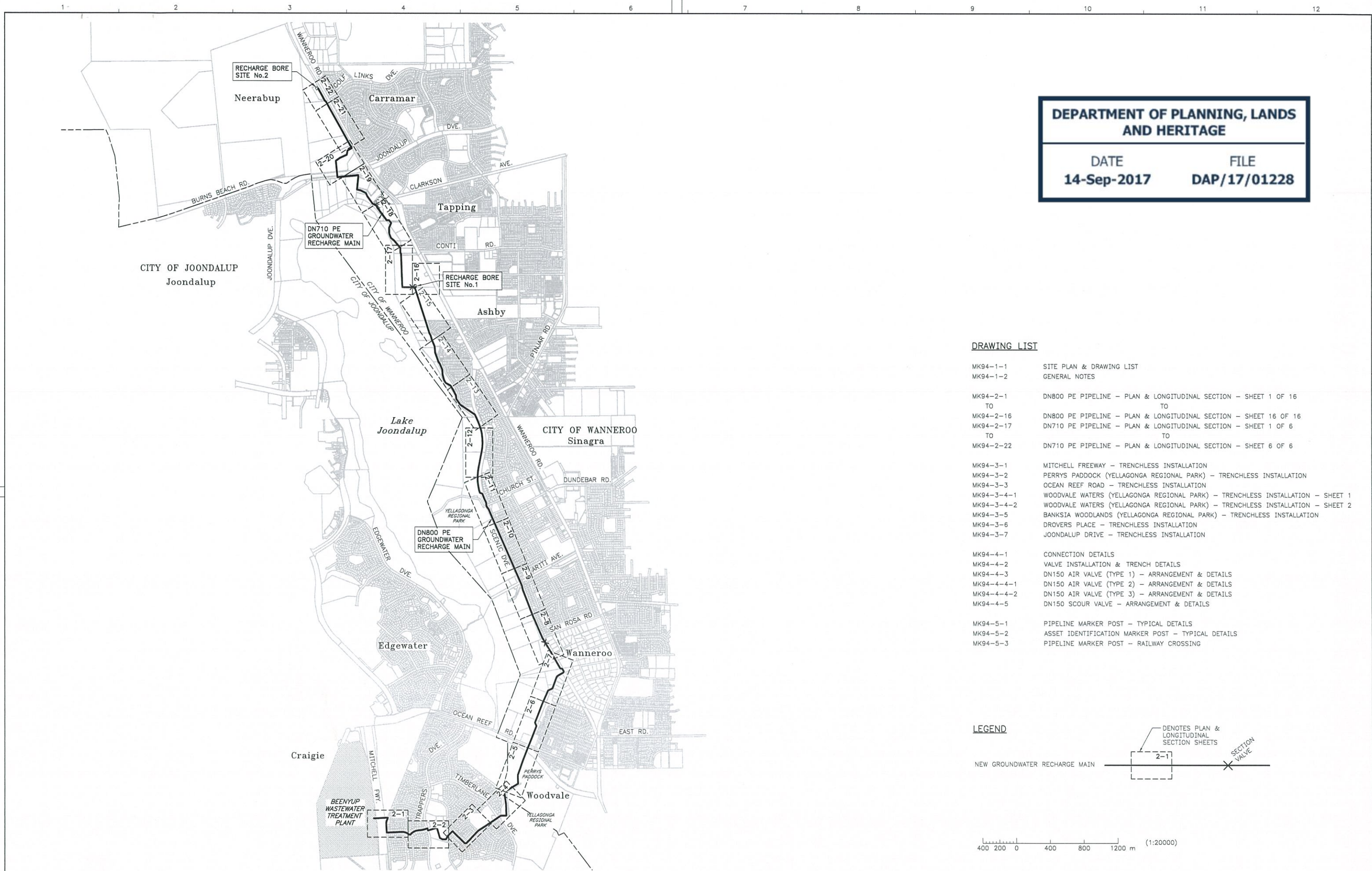
The proposal is for a pipeline that will be located underground for the majority of its 12.8km length. The impact on the amenity to surrounding landowner and the general public is considered negligible and can be supported on this basis. Further, as mentioned above, the environmental implications will be managed through the Water Corporation's responsibilities under the EP Act.

Environmental Considerations

The pipeline will traverse through environmentally sensitive land including Bush Forever Site 299 which is located within the Yellagonga Regional Park. The impact on the existing flora and fauna within these areas will be managed through the recommendations outlined in the Environmental Impact Assessment and in accordance with the conditions set out in the Minister for Environment Ministerial Statement 1065, including the use of environmentally sensitive drilling techniques used to install the pipeline. Where there is a potential to impact on the environment, the pipeline will be constructed through the use of microtunnelling and horizontal directional drilling techniques.

Conclusion:

The proposed works relate to water servicing infrastructure that will predominantly be located underground. The development will not prejudice the purpose for which the affected land is zoned and reserved under the MRS and, given the nature of the proposed works, it is considered to be consistent with the orderly and proper planning of the locality. The proposal is unlikely to have a significant impact on the amenity of the locality and the proposed public works constitute essential infrastructure and will facilitate the growth of the northern corridor to the benefit of the wider community. The application is recommended for approval subject to conditions.



DEPARTMENT OF PLANNING, LANDS
AND HERITAGE

DATE
14-Sep-2017

FILE
DAP/17/01228

DRAWING LIST

MK94-1-1	SITE PLAN & DRAWING LIST
MK94-1-2	GENERAL NOTES
MK94-2-1	DN800 PE PIPELINE - PLAN & LONGITUDINAL SECTION - SHEET 1 OF 16
TO	TO
MK94-2-16	DN800 PE PIPELINE - PLAN & LONGITUDINAL SECTION - SHEET 16 OF 16
MK94-2-17	DN710 PE PIPELINE - PLAN & LONGITUDINAL SECTION - SHEET 1 OF 6
TO	TO
MK94-2-22	DN710 PE PIPELINE - PLAN & LONGITUDINAL SECTION - SHEET 6 OF 6
MK94-3-1	MITCHELL FREEWAY - TRENCHLESS INSTALLATION
MK94-3-2	PERRYS PADDOCK (YELLAGONGA REGIONAL PARK) - TRENCHLESS INSTALLATION
MK94-3-3	OCEAN REEF ROAD - TRENCHLESS INSTALLATION
MK94-3-4-1	WOODVALE WATERS (YELLAGONGA REGIONAL PARK) - TRENCHLESS INSTALLATION - SHEET 1
MK94-3-4-2	WOODVALE WATERS (YELLAGONGA REGIONAL PARK) - TRENCHLESS INSTALLATION - SHEET 2
MK94-3-5	BANKSIA WOODLANDS (YELLAGONGA REGIONAL PARK) - TRENCHLESS INSTALLATION
MK94-3-6	DROVERS PLACE - TRENCHLESS INSTALLATION
MK94-3-7	JOONDALUP DRIVE - TRENCHLESS INSTALLATION
MK94-4-1	CONNECTION DETAILS
MK94-4-2	VALVE INSTALLATION & TRENCH DETAILS
MK94-4-3	DN150 AIR VALVE (TYPE 1) - ARRANGEMENT & DETAILS
MK94-4-4-1	DN150 AIR VALVE (TYPE 2) - ARRANGEMENT & DETAILS
MK94-4-4-2	DN150 AIR VALVE (TYPE 3) - ARRANGEMENT & DETAILS
MK94-4-5	DN150 SCOUR VALVE - ARRANGEMENT & DETAILS
MK94-5-1	PIPELINE MARKER POST - TYPICAL DETAILS
MK94-5-2	ASSET IDENTIFICATION MARKER POST - TYPICAL DETAILS
MK94-5-3	PIPELINE MARKER POST - RAILWAY CROSSING

LEGEND



400 200 0 400 800 1200 m (1:20000)

SITE PLAN
SCALE 1:20000

DESIGN SURVEY GHD 61-34889-V01	VERTICAL DATUM NONE	DES CALC G.EDWARDS	NORTH POINT	RECOMMENDED 6/2/17		INTEGRATED WATER SUPPLY SCHEME IWSS AWRP BEENYUP - RECHARGE PIPELINES DN800/DN710 PE PIPELINE SITE PLAN AND DRAWING LIST	FILE PROJECT C-W03249	PLAN	CAD MK94-1-1	ISSUE A	ORIGINAL SHEET SIZE A1
ASCON SURVEY NONE	DES REF GHD 61-34889	DRN G.EDWARDS	APPROVED 6/2/2017	CONSULTANT PROJECT MANAGER							
		Q.C. CHD J.THOMPSON		CONSULTANT PROJECT DIRECTOR							

GENERAL PIPELINE NOTES

- THE SECTIONS OF THE PIPELINE AND ASSOCIATED FITTINGS HAVE BEEN DESIGNED FOR MAXIMUM WORKING PRESSURES OF 111m HEAD (1110kPa)(DE-RATED FOR TEMPERATURE) FOR THE DN800 PE AND 89m HEAD (890kPa)(DE-RATED FOR TEMPERATURE) FOR THE DN710 PE. REFER TO PLAN AND LONGSECTION DRAWINGS FOR LOCATION.
- THE PIPELINE SHALL BE SET OUT FROM CADASTRAL BOUNDARIES, SURVEYED REFERENCE LINES AND BENCH MARKS AS APPROPRIATE.
- INVERT LEVELS ON LONGITUDINAL SECTIONS SHALL BE ADHERED TO UNLESS SITE CONDITIONS DETERMINE THAT COVER AND/OR GRADE CANNOT BE ACHIEVED.
PIPELINE MINIMUM GRADE TO BE 1 IN 500
PIPELINE MINIMUM COVER — DN800 = 800mm GENERALLY
— DN710 = 750mm GENERALLY
— 1000mm IN PLANTATIONS, UNMADE ROADS & UNDER CREEKS
- EXACT LOCATION OF SCOURS AND AIR VALVES SHALL BE DETERMINED ON SITE.
- PIPE BEDDING AND TRENCH BACKFILL SHALL BE IN ACCORDANCE WITH THE NOTES ON THIS DRAWING AND THE SPECIFICATION.
- BURIED PIPELINE FLANGES, BOLTS, AND VALVE BODY ASSEMBLY BOLTS SHALL BE WRAPPED IN ACCORDANCE WITH DS95
- PIPEWORK "AS CONSTRUCTED" INFORMATION IS TO BE RECORDED PRIOR TO BACKFILLING
- TOPSOIL TO BE STOCKPILED AND REPLACED AFTER PIPELINE CONSTRUCTION WHERE APPLICABLE.
- MARKER POSTS SHALL BE INSTALLED AT MAXIMUM SPACING OF 200 METRES AND AT CHANGE OF PIPELINE DIRECTION, FENCE LINES AND AT SECTION, AIR AND SCOUR AND ISOLATION VALVE LOCATIONS.
- UNDERGROUND FEATURES ESTIMATED ONLY AND NOT EXPOSED DURING SURVEY. PRIOR TO CONSTRUCTION, THE IDENTITY AND LOCATION OF CRITICAL UNDERGROUND FEATURES NEEDS CONFIRMATION BY EXCAVATION.
- DRAWINGS TO BE READ IN CONJUNCTION WITH SPECIFICATION AND ENVIRONMENTAL MANAGEMENT PLAN.
- THE MINIMUM VERTICAL CLEARANCE BETWEEN THE PROPOSED PIPELINE AND OTHER PIPELINES OR UTILITIES SHALL BE:
150mm FOR PIPELINES UP TO DN300 AND
300mm FOR DN400 AND LARGER PIPELINES.
- THE CONTRACTOR SHALL CONFIRM EXISTING PIPE LOCATIONS, LEVELS AND DIAMETERS AT CONNECTIONS, PRIOR TO PROCUREMENT OR FABRICATION OF FITTINGS.

BACKFILL/RESTORATION TIMING

- BACKFILL TO SUBGRADE/UNDERSIDE OF TOPSOIL, OR ROAD SURFACES OF ALL PIPELINE TRENCHES SHALL BE COMPLETED WITHIN ONE (1) WEEK OF COMMENCEMENT OF EXCAVATION OF SUCH TRENCHES.

BEDDING AND BACKFILL NOTES FOR PIPELINE

- UNDERLAY, SIDE SUPPORT AND OVERLAY TO BE A CLEAN GRADED SAND FREE FROM ANY HARD OR SHARP OBJECTS.
- FOR TRENCH CONDITIONS BELOW THE GROUND WATER TABLE, BEDDING MATERIAL MAY BE 14mm NOMINAL SIZE AGGREGATE SURROUNDED BY BIDIM A14 OR APPROVED EQUIVALENT WITH 500mm OVERLAP.
- COMPACTION TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS1289. THE FREQUENCY OF COMPACTION TESTING SHALL BE IN ACCORDANCE WITH THE SPECIFICATION.

BACKFILL AND EARTHWORKS TESTING

- INSITU DENSITY OF BACKFILL AND EARTHWORKS SHALL BE MEASURED USING A NUCLEAR DENSITY METER IN ACCORDANCE WITH AS 1289.5.8.1 OR PERTH SAND PENETROMETER WHERE APPROPRIATE.
- PIPE EMBEDMENT MATERIAL SHALL BE COMPACTED TO A DENSITY RATIO OF NOT LESS THAN 92% MODIFIED DRY DENSITY RATIO AS DETERMINED BY AS 1289.5.2.1, 5.4.1 AND 5.8.1 AND IN ACCORDANCE WITH WATER CORP. STANDARD DRGS. EG20-1-1 AND EG20-1-2 IN DS60.

TRENCH FILL FOR NON-TRAFFICABLE AREAS SHALL BE COMPACTED TO A DENSITY RATIO OF NOT LESS THAN 92% MODIFIED DRY DENSITY RATIO AS DETERMINED BY AS 1289.5.2.1, 5.4.1 AND 5.8.1 AND IN ACCORDANCE WITH WATER CORP. STANDARD DRGS. EG20-1-1 AND EG20-1-2 IN DS60.

TRENCH FILL FOR TRAFFICABLE AREAS SHALL BE COMPACTED TO A DENSITY RATIO OF NOT LESS THAN 95% MODIFIED DRY DENSITY RATIO AS DETERMINED BY AS 1289.5.2.1, 5.4.1 AND 5.8.1 AND IN ACCORDANCE WITH WATER CORP. STANDARD DRGS. EG20-1-1 AND EG20-1-2 IN DS60.
- THIS STANDARD REQUIRES THE LABORATORY DRY DENSITY/MOISTURE CONTENT RELATIONSHIP TO BE DETERMINED AT EACH SITE TESTED FOR FIELD DENSITY DETERMINATION.

USE OF PERTH SAND PENETROMETER

- WHEN THE PERTH SAND PENETROMETER CAN BE CALIBRATED AND IS SUITABLE FOR THE PARTICULAR SOILS ON THE SITE, IT SHALL BE USED AS THE TEST FOR THE PURPOSE OF CONFORMANCE JUDGEMENT OF BULK EARTHWORKS, SUBGRADE AND TRENCH BACKFILL (SAND).
- THE METHOD USED TO DETERMINE THE PENETRATION RESISTANCE OF THE SOIL USING A PERTH SAND PENETROMETER SHALL BE IN ACCORDANCE WITH AS 1289.6.3.3.
- PRIOR TO THE USE OF THE PENETROMETER, THE CONTRACTOR SHALL SUBMIT TO THE SUPERINTENDENT THE RESULTS OF SITE CALIBRATION TESTING PERFORMED BY A NATA REGISTERED LABORATORY SHOWING THE CORRELATION BETWEEN INSITU DENSITY EXPRESSED AS A PERCENTAGE OF THE MAXIMUM DRY DENSITY AND THE NUMBER OF BLOWS PER 300MM PENETRATION OF THE INSITU COMPACTED BACKFILL/FILL LAYERS BY THE PENETROMETER ROD FOR THE VARIOUS DIFFERENT BACKFILL MATERIAL TYPES ON THE SITE.

PRESSURE TESTING

- ALL PIPELINES SHALL BE SUBJECTED TO AN OFFICIAL PRESSURE TEST.
- THE PIPELINE TO BE TESTED SHALL BE PHYSICALLY ISOLATED FROM THE 'LIVE' SYSTEM.
- OFFICIAL PRESSURE TESTS SHALL BE CARRIED OUT BY THE CONTRACTOR AND WITNESSED BY THE WATER CORPORATION.
- THE WATER CORPORATION SHALL BE NOTIFIED AT LEAST 5 WORKING DAYS IN ADVANCE OF ALL OFFICIAL PRESSURE TESTS. WHEREVER POSSIBLE, PRIOR NOTICE OF THE CANCELLATION OF A TEST SHALL BE GIVEN. IF NO NOTICE OF CANCELLATION IS GIVEN, IT WILL BE TREATED AS A FAILED TEST.
- ANY VISIBLE OR DETECTED LEAK SHALL BE RECTIFIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION AND TO THE APPROVAL OF THE WATER CORPORATION.
- THE USE OF SEALANT OR SIMILAR PRODUCTS TO CORRECT LEAKAGE AS A RESULT OF MATERIAL OR CONSTRUCTION FAULTS IS NOT PERMITTED.
- THE DETAILS OF ALL OFFICIAL PRESSURE TESTS SHALL BE RECORDED ON THE PRESSURE TEST RECORD SHEET. FURTHER TESTS, IF REQUIRED, SHALL BE CARRIED OUT UNTIL THE RESULTS ARE ACCEPTED BY THE WATER CORPORATION'S REPRESENTATIVE. THE RESULTS SHALL BE SIGNED BY THE WATER CORPORATION'S REPRESENTATIVE AND THE RECORD SHEET FORWARDED TO THE CORPORATION.
- PRESSURE TESTING REQUIREMENTS TO BE IN ACCORDANCE WITH THE SPECIFICATION.

AS CONSTRUCTED INFORMATION

- GENERAL
AS CONSTRUCTED INFORMATION FOR WORKS SHALL BE SUPPLIED PRIOR TO THE ISSUE OF EACH OR ANY CERTIFICATE OF PAYMENT. AS CONSTRUCTED INFORMATION SHALL BE ACQUIRED AND PREPARED BY A QUALIFIED ENGINEERING SURVEYOR HAVING EXTENSIVE EXPERIENCE IN THE PROVISION OF AS CONSTRUCTED INFORMATION.
AS CONSTRUCTED INFORMATION SHALL BE SIGNED BY THE APPOINTED ENGINEERING SURVEYOR. ALL WORK REQUIRED FOR ACCURATE SURVEY AND MARKING-UP OF AS CONSTRUCTED INFORMATION SHALL BE CARRIED OUT.
AS CONSTRUCTED INFORMATION QUALITY
AS CONSTRUCTED INFORMATION SHALL BE PROGRESSIVELY MARKED UP IN RED INK ON A SET OF A1 SIZE DRAWINGS.
AS CONSTRUCTED DETAILS INCLUDING CHANGES AS THE CONSTRUCTION OF THE WORKS PROCEEDS SHALL BE ANNOTATED ON THE DRAWINGS.
THE DRAFTING OF AS CONSTRUCTED INFORMATION SHALL BE IN ACCORDANCE WITH DS80.

PE PIPELINE NOTES

- POLYETHYLENE (PE) PIPES AND FITTINGS SHALL BE (PE100) MANUFACTURED TO AS/NZS4130 AND COLOURED BLACK WITH A PURPLE STRIPE.
- ALL PIPES AND FITTINGS SHALL BE LOADED, UNLOADED AND LOWERED INTO THE TRENCH BY LIFTING (BY HAND OR HOIST) IN SUCH A MANNER SO AS TO AVOID SHOCK OR DAMAGE. WEBBING TYPE SLINGS SHALL BE USED TO HANDLE PIPE COILS OR BUNDLES.
- POLYETHYLENE PIPEWORK SHALL BE LAID USING BEDDING AND BACKFILL MATERIALS AND INSTALLATION PROCEDURES IN ACCORDANCE WITH AS2033 AND THE PIPE MANUFACTURERS RECOMMENDATIONS.
- JOINTS BETWEEN PE PIPES SHALL BE BUTT FUSION WELDED. ELECTRO-FUSION SOCKET JOINTS SHALL ONLY BE PERMITTED WHERE IT IS DEMONSTRATED TO THE SUPERINTENDENT THAT BUTT FUSION WELDING IS NOT PRACTICABLE OR WHERE SPECIFICALLY DETAILED ON THE DRAWINGS. ALL JOINTS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS AND THE WATER CORPORATION SPECIFICATION WS-2.
- FITTINGS FOR USE WITH PE PIPE SHALL BE PE BUTT WELD FITTINGS OR ELECTRO-FUSION SOCKET PIPE FITTINGS AND SHALL BE SUITABLE FOR USE WITH PE PIPE MANUFACTURED IN ACCORDANCE WITH AS4130. ALL BENDS SHALL BE SWEPT BENDS UNLESS OTHERWISE NOTED. ALL BENDS & TEES SHALL HAVE A RATED PRESSURE (AFTER FABRICATION DERATING ALLOWANCE) NOT LESS THAN THE RATED PRESSURE OF THE PIPELINE.
- PE STUB FLANGES TO BE INSTALLED WITH GALVANISED STEEL BACKING RINGS, BOLTS, NUTS & WASHERS (U.O.N.)
- PIPE DEFLECTIONS TO BE ACHIEVED USING A MINIMUM BENDING RADIUS OF 50 x PIPE NOMINAL DIAMETER OR IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS, WHICHEVER IS GREATER.
- DETECTABLE METALLIC UNDERGROUND WARNING TAPE FOR LOCATING PIPE AFTER INSTALLATION TO BE INSTALLED ABOVE ALL PE PIPES.

PIPE SLEEVE SPACER NOTES:

- CASING SPACER DESIGN SHALL MEET THE FOLLOWING CRITERIA:
- MINIMUM BEARING WIDTH 90° AROUND BASE OF PIPE.
 - PIPE SPACERS TO BE SPACED ALONG PIPE AT MAXIMUM 1800mm CENTRES.
 - SPACER STRUCTURAL CAPACITY TO BE CAPABLE OF SUPPORTING PIPE EMPTY, FOR BOUYANCY.
 - SPACER STRUCTURAL CAPACITY TO BE CAPABLE OF SUPPORTING FILLED PIPE WITH ONE SPACER FAILED.
 - METALLIC COMPONENTS OF SPACER TO BE STAINLESS STEEL.
 - SUFFICIENT CLEARANCE SHALL BE PROVIDED BETWEEN UPPER SUPPORT ELEMENTS OF SPACER AND SLEEVE TO FACILITATE INSTALLATION AND FUTURE WITHDRAWAL OF THE CARRIER PIPE.

ASBESTOS NOTES

- WORK ON OR WITH ASBESTOS BASED PRODUCTS SHALL COMPLY WITH PART 5, DIVISION 4, SUBDIVISION 1 OF THE OSH REGULATIONS 1996: OSH REGULATION 5.42 TO 5.52 AND WITH THE ASBESTOS CODE OF PRACTICE PUBLISHED BY SAFE WORK AUSTRALIA.
IN ADDITION TO LEGISLATIVE REQUIREMENTS THAT APPLY TO ASBESTOS RELATED WORK, ALL SUCH WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE WATER CORPORATION S131 ASBESTOS IN THE WORKPLACE AND THE "CODE OF PRACTICE FOR THE SAFE REMOVAL OF ASBESTOS" AS PUBLISHED BY THE NATIONAL OCCUPATIONAL HEALTH AND SAFETY COMMISSION.


CLEARING OF VEGETATION

- NO VEGETATION CLEARING SHALL OCCUR WITHOUT PRIOR APPROVAL OF THE SUPERINTENDENT AND ALL CLEARING SHALL BE IN ACCORDANCE WITH THE APPROVED CEMP.

DEPARTMENT OF PLANNING, LANDS
AND HERITAGE

DATE
14-Sep-2017

FILE
DAP/17/01228

ISSUE	DATE	GRID	REVISION	DRN	REC	APPD	DESIGN SURVEY NONE	VERTICAL DATUM NONE	DES CALC G.EDWARDS	NORTH POINT	RECOMMENDED Ka Dh 6/2/17		INTEGRATED WATER SUPPLY SCHEME IWSS AWRP BEENYUP - RECHARGE PIPELINES DN800/DN710 PE PIPELINE GENERAL NOTES	ORIGINAL SHEET SIZE A1	
							ASCON SURVEY NONE	DES REF GHD 61-34889	DRN G.EDWARDS O.C. CHD J.THOMPSON		APPROVED 6/2/2017		FILE PROJECT C-W03249	PLAN MK94-1-2	CAD A

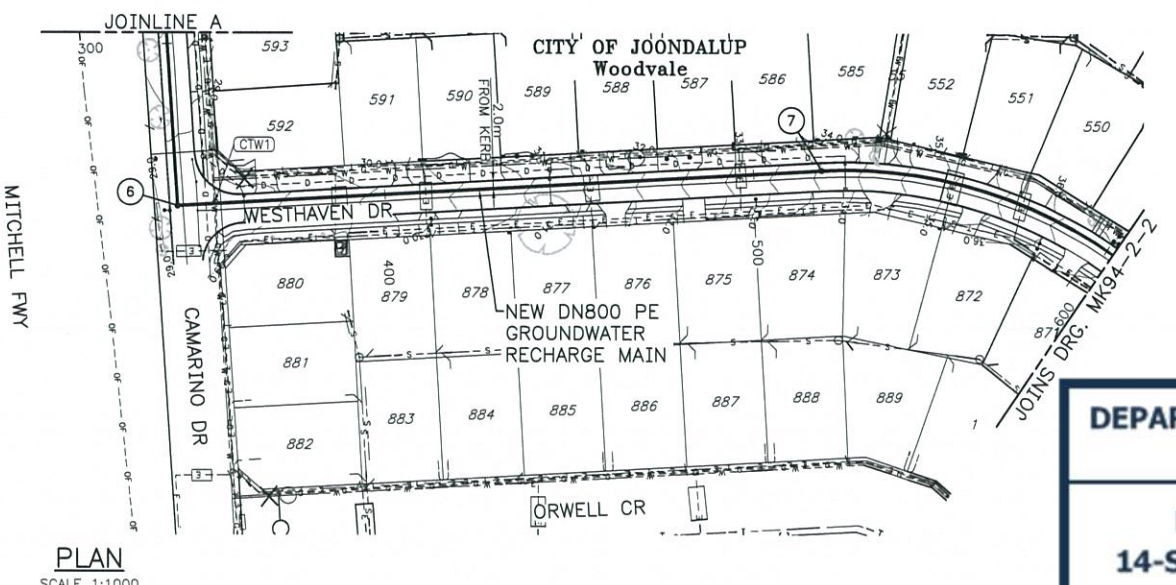
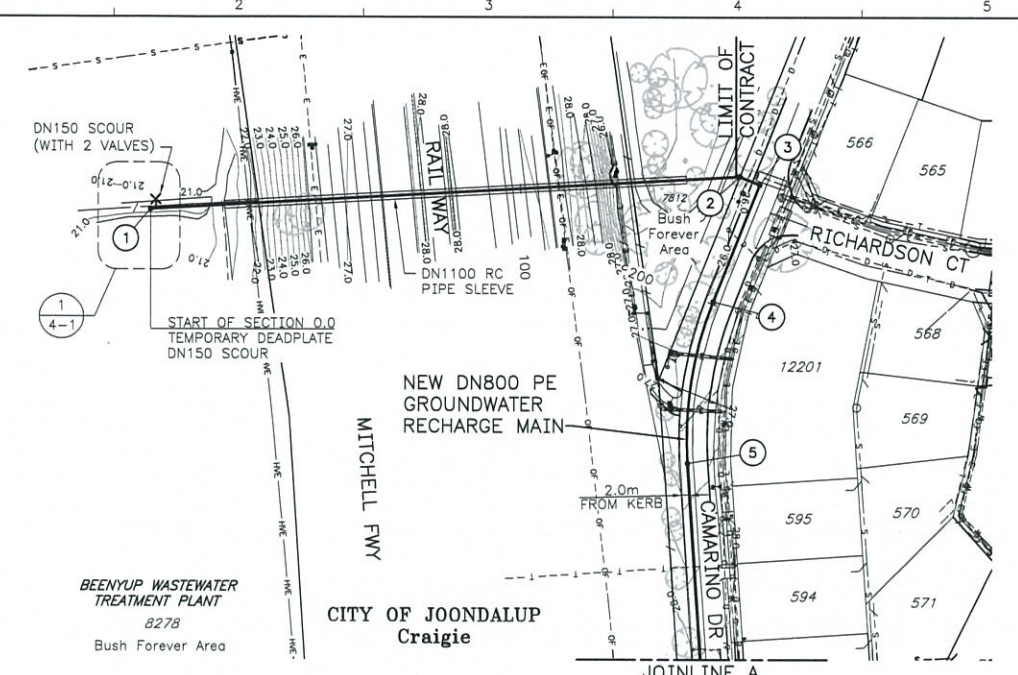
SETOUT POINTS			
POINT	EASTING	NORTHING	COMMENTS
1	384546.021	6482686.898	START OF SECTION
2	384705.275	6482695.774	25° H BEND
3	384710.690	6482693.607	90° H BEND
4	384698.078	6482662.070	TANGENT POINT
5	384691.138	6482618.461	TANGENT POINT
6	384697.616	6482518.643	89° H BEND
7	384871.950	6482528.316	TANGENT POINT

CLEARANCE TO WORKS REQUIRED FROM WATER CORPORATION	
CTW No.	SERVICE - LOCATION
CTW1	DN100 RC WATER - CROSSING

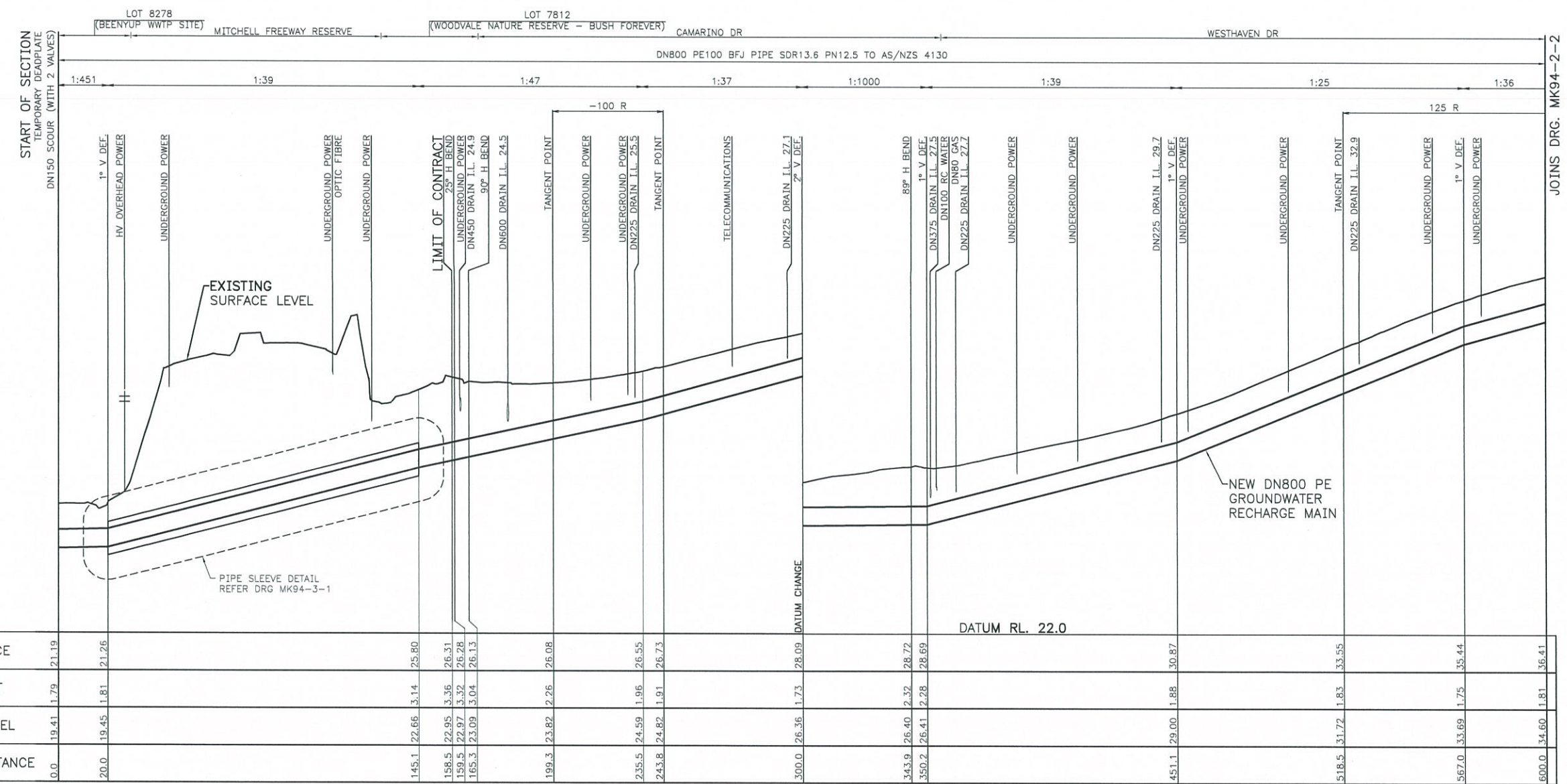
DEPARTMENT OF PLANNING, LANDS
AND HERITAGE

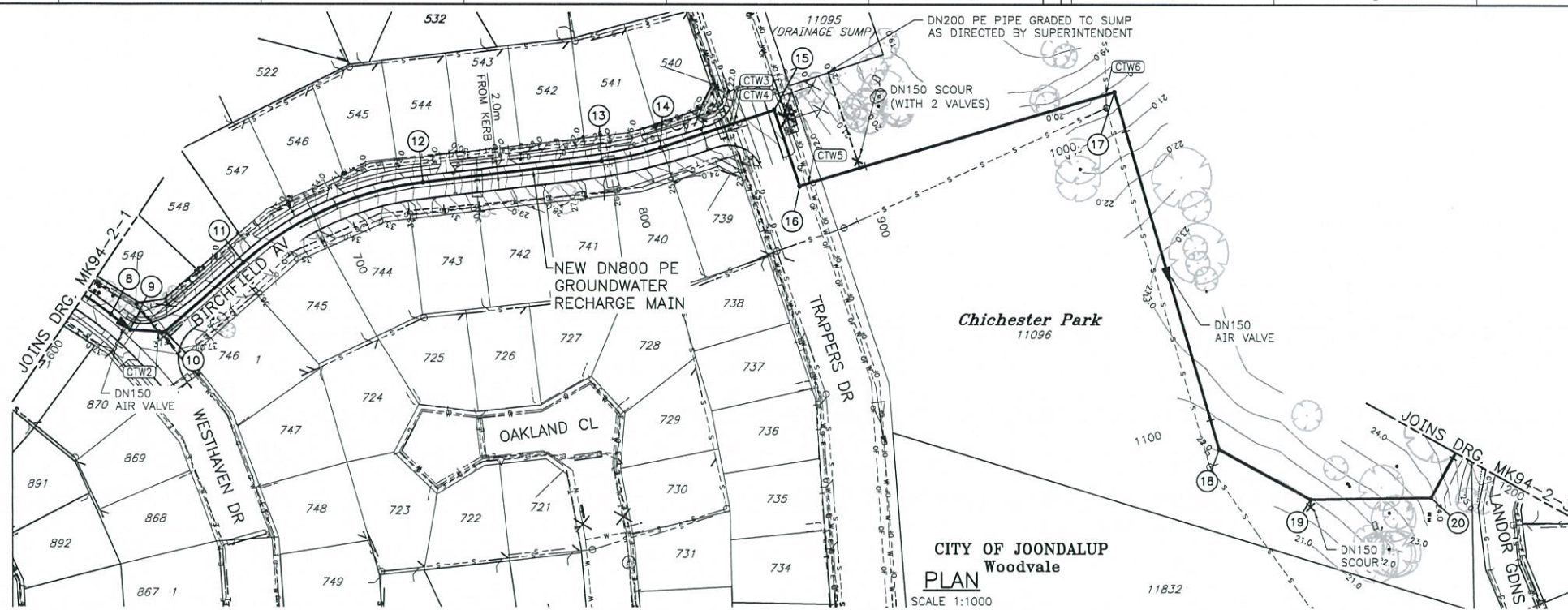
DATE
14-Sep-2017

FILE
DAP/17/01228



PLAN
SCALE 1:1000





SETOUT POINTS			
POINT	EASTING	NORTHING	COMMENTS
8	384956.391	6482501.570	TANGENT POINT
9	384962.869	6482496.449	35° H BEND
10	384974.375	6482495.739	45° H BEND
11	385000.490	6482518.822	TANGENT POINT
12	385060.186	6482545.612	TANGENT POINT
13	385119.721	6482552.782	TANGENT POINT
14	385139.367	6482557.190	TANGENT POINT
15	385177.354	6482569.843	90° H BEND
16	385185.795	6482544.502	88° H BEND
17	385290.655	6482575.843	90° H BEND
18	385325.552	6482457.062	45° H BEND
19	385356.000	6482440.443	30° H BEND
20	385396.079	6482441.185	60° H BEND

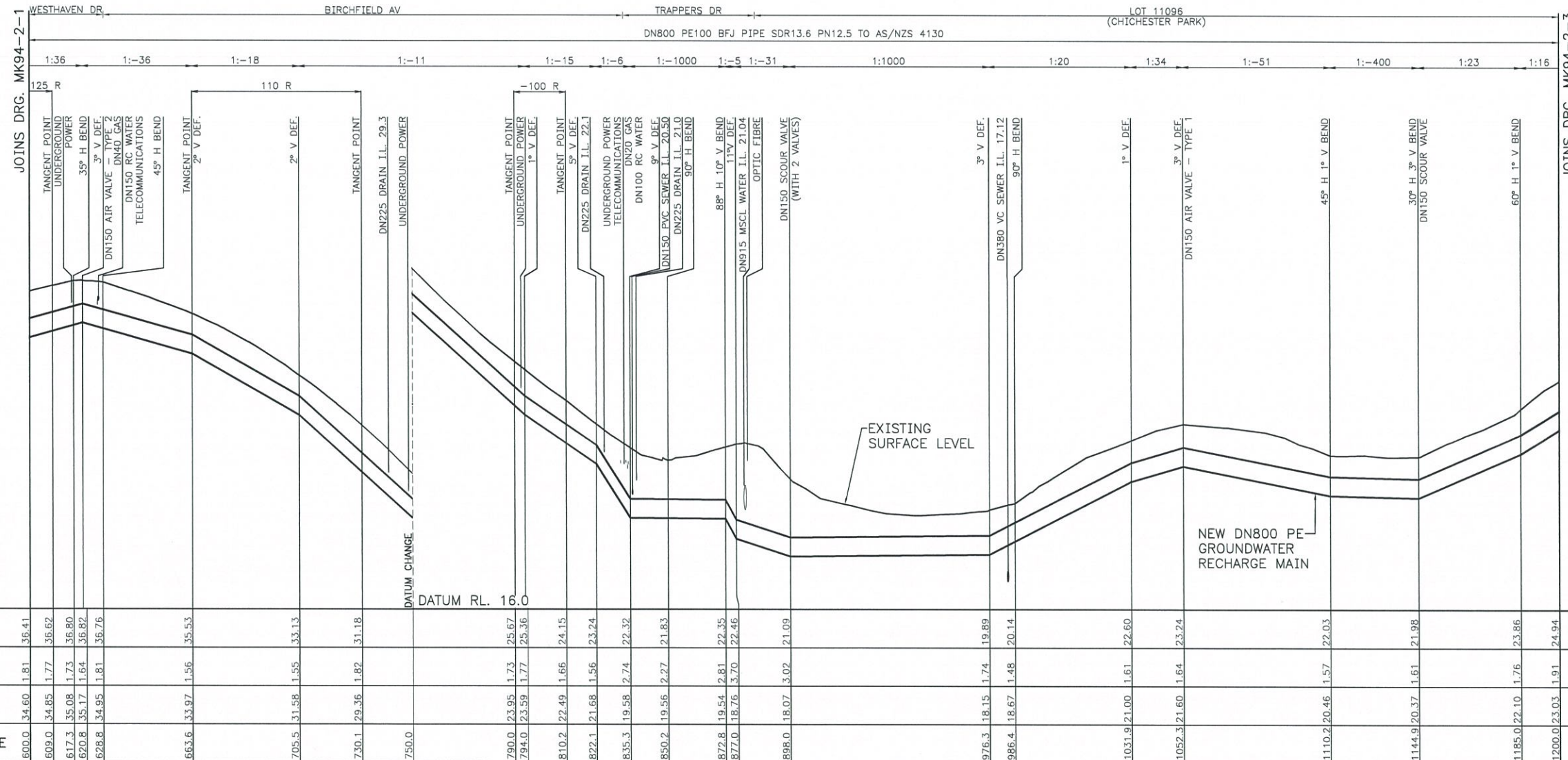
DEPARTMENT OF PLANNING, LANDS
AND HERITAGE

DATE

FILE

14-Sep-2017

DAP/17/01228



WARNING
UNDERGROUND AND OVERHEAD
HIGH/LOW VOLTAGE POWER
AND OPTIC FIBRE IN THE VICINITY

LEGEND

NEW GROUNDWATER RECHARGE MAIN
EXISTING WATER MAIN
EXISTING SEWER PRESSURE MAIN
EXISTING GRAVITY SEWER MAIN
EXISTING DRAIN
EXISTING GAS
EXISTING TELECOMMUNICATION CABLES
EXISTING OPTIC FIBRE
EXISTING LV UNDERGROUND POWER
EXISTING LV OVERHEAD POWER
EXISTING HV OVERHEAD POWER
EXISTING CONTOUR
EXISTING FENCE
EXISTING TREE
PIPELINE SET-OUT POINTS
PIPELINE CHAINAGE

1
1000

GENERAL NOTES REFER DRG. MK94-1-2



NOTE: THE LOCATION OF UTILITIES HAS NOT
NECESSARILY BEEN ESTABLISHED BY SURVEY BUT IS
BASED ON INFORMATION AVAILABLE.

LONGITUDINAL SECTION
HORIZONTAL SCALE 1:1000 VERTICAL SCALE 1:100

ISSUE

DATE

GRID

REVISION

DRN

REC

APPD

DESIGN SURVEY
GHD
61-34889-V01
COORDINATE SYS
MGA94-SO
ASCON SURVEY
NONE
DES REF
GHD 61-34889

VERTICAL DATUM
AHD
COORDINATE SYS
MGA94-SO
DES REF
GHD 61-34889

DES CALC
G.EDWARDS
DES CHD
K.SINKO
DRN
T.BUTTERLY
Q.C. CHD
G.EDWARDS

NORTH POINT

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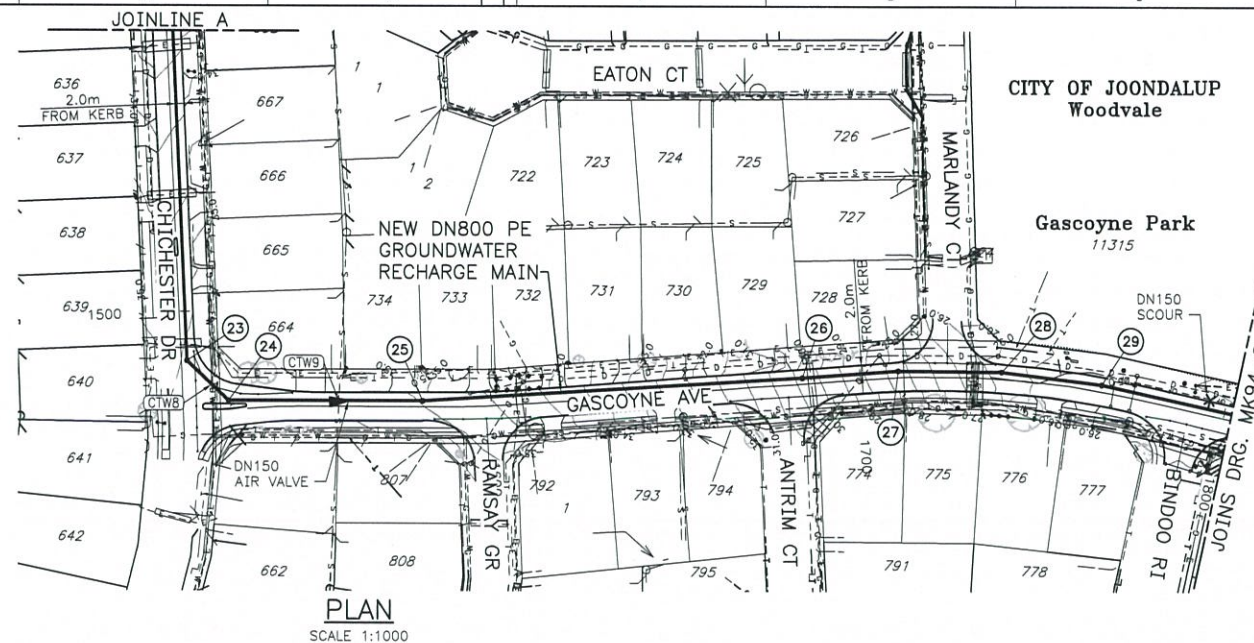
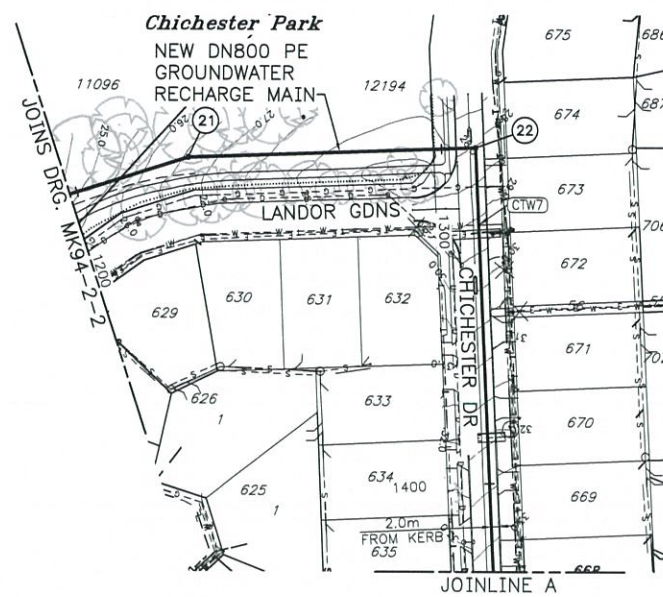
RECOMMENDED
Kor De 6/2/17
CONSULTANT PROJECT MANAGER
APPROVED
6/2/2017
CONSULTANT PROJECT DIRECTOR

INTEGRATED WATER SUPPLY SCHEME IWSS
AWRP BEENYUP - RECHARGE PIPELINES
DN800 PE PIPELINE
PLAN & LONGITUDINAL SECTION - SHEET 2 OF 16
FILE
PROJECT C-W03249

ORIGINAL
SHEET
SIZE
A1
MF

MK94-2-2
A

27/01/2017



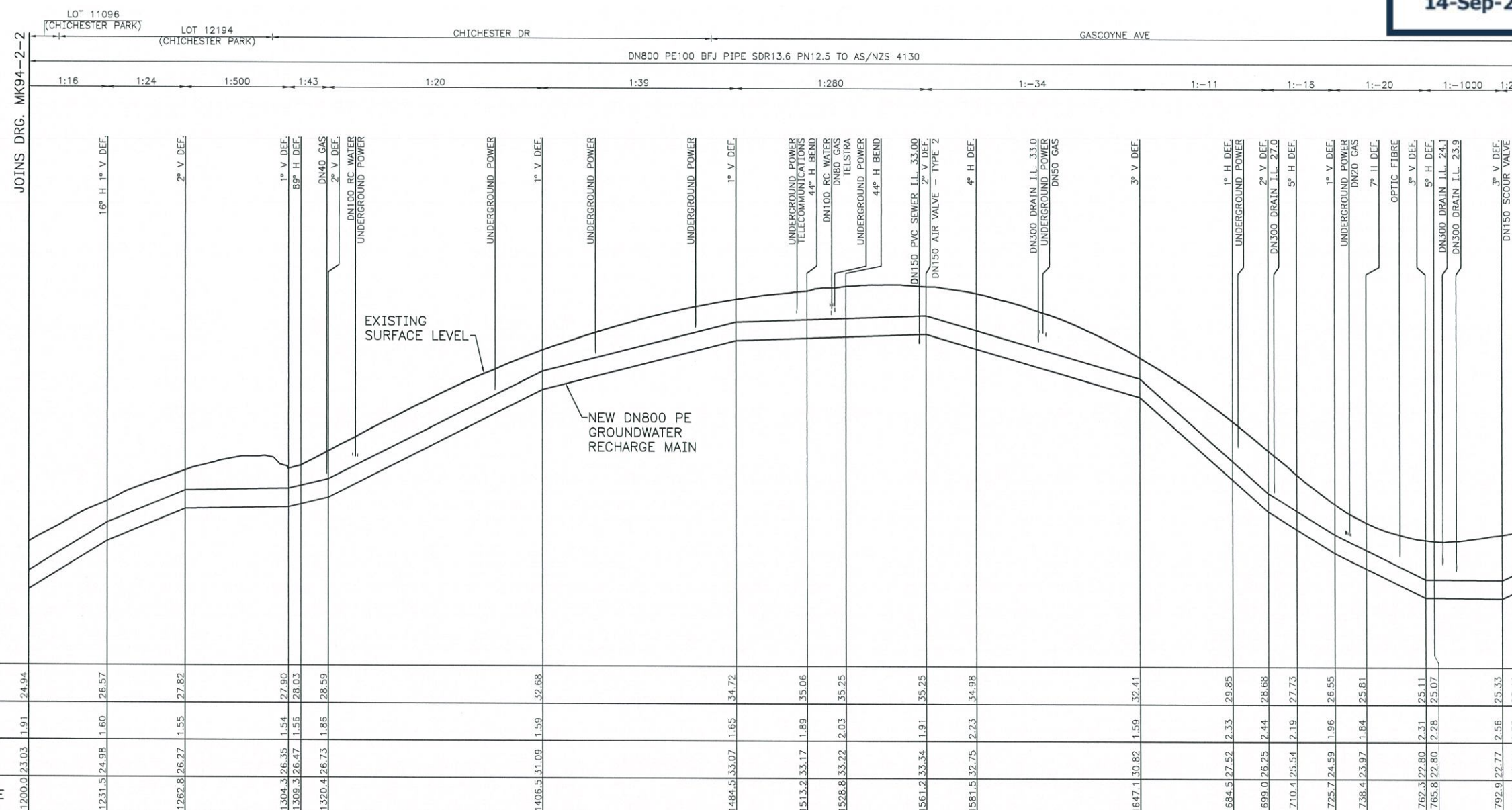
SETOUT POINTS			
POINT	EASTING	NORTHING	COMMENTS
21	385418.590	6482481.900	16° H DEF.
22	385473.271	6482537.287	89° H BEND
23	385619.624	6482395.304	44° H BEND
24	385635.223	6482395.200	44° H BEND
25	385673.476	6482431.333	4° H DEF.
26	385743.878	6482506.620	1° H DEF.
27	385761.316	6482525.785	5° H DEF.
28	385781.848	6482544.785	7° H DEF.
29	385803.891	6482560.953	5° H DEF.

CLEARANCE TO WORKS
REQUIRED FROM WATER CORPORATION
CTW No. SERVICE - LOCATION

DEPARTMENT OF PLANNING, LANDS
AND HERITAGE

DATE
14-Sep-2017

FILE
DAP/17/01228



WARNING
UNDERGROUND AND OVERHEAD
HIGH/LOW VOLTAGE POWER
AND OPTIC FIBRE IN THE VICINITY

LEGEND	
NEW GROUNDWATER RECHARGE MAIN	---
EXISTING WATER MAIN	---
EXISTING SEWER PRESSURE MAIN	---
EXISTING GRAVITY SEWER MAIN	---
EXISTING DRAIN	---
EXISTING GAS	---
EXISTING TELECOMMUNICATION CABLES	---
EXISTING OPTIC FIBRE	---
EXISTING LV UNDERGROUND POWER	---
EXISTING LV OVERHEAD POWER	---
EXISTING HV OVERHEAD POWER	---
EXISTING CONTOUR	---
EXISTING FENCE	---
EXISTING TREE	---
PIPELINE SET-OUT POINTS	---
PIPELINE CHAINAGE	---

GENERAL NOTES REFER DRG. MK94-1-2



NOTE: THE LOCATION OF UTILITIES HAS NOT
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LONGITUDINAL SECTION

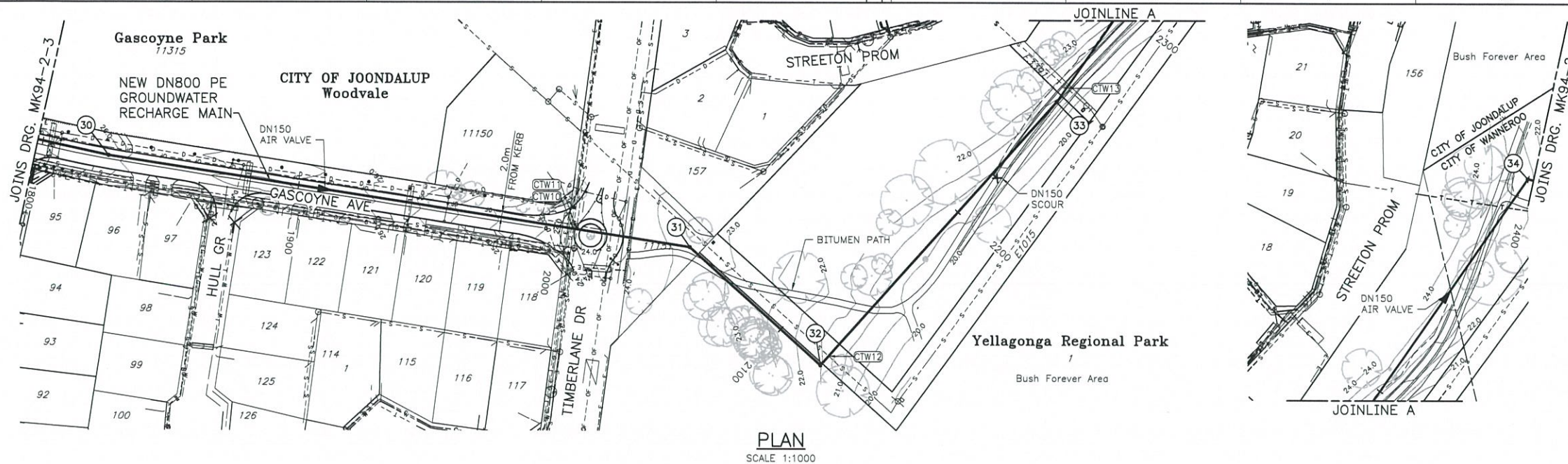
HORIZONTAL SCALE 1:1000 VERTICAL SCALE 1:100

ISSUE	DATE	GRID	REVISION	DRN	REC	APPD	DESIGN SURVEY GHD 61-34889-V01	VERTICAL DATUM AHD	DES CALC G.EDWARDS	NORTH POINT	RECOMMENDED Karl Se 6/2/17	CONSULTANT PROJECT MANAGER	APPROVED 6/2/2017	CONSULTANT PROJECT DIRECTOR	INTEGRATED WATER SUPPLY SCHEME IWSS AWRP BEENYUP - RECHARGE PIPELINES DN800 PE PIPELINE PLAN & LONGITUDINAL SECTION - SHEET 3 OF 16	FILE PROJECT C-W03249	PLAN MK94-2-3	CAD A	ISSUE A	ORIGINAL SHEET SIZE A1
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61\34889\CADD\DRAWINGS\MK94\MK94-002-003-01A 27/01/2017

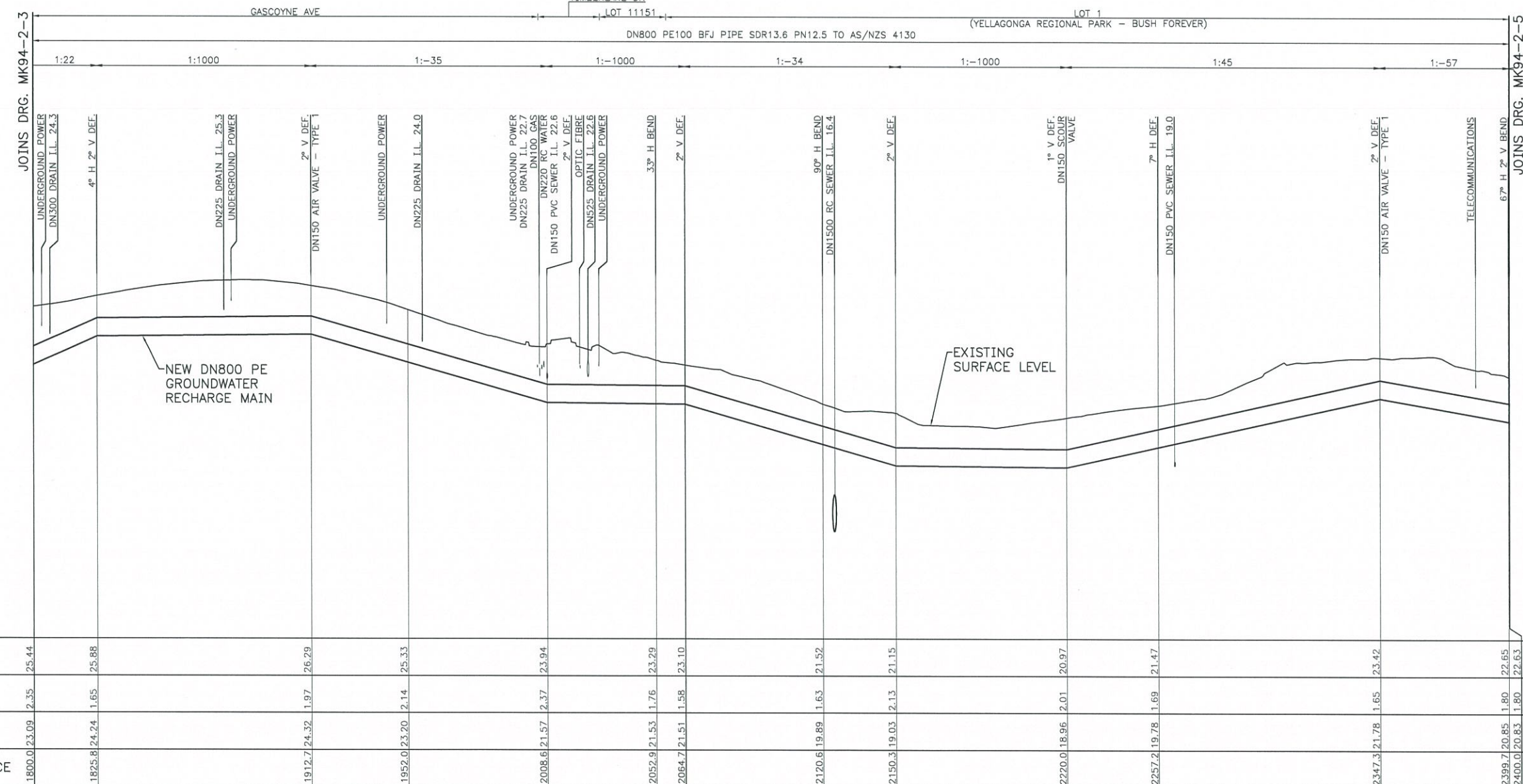


SETOUT POINTS			
POINT	EASTING	NORTHING	COMMENTS
30	385855.367	6482591.848	4° H DEF.
31	386042.531	6482720.488	33° H BEND
32	386110.234	6482722.069	90° H BEND
33	386107.063	6482858.600	7° H DEF.
34	386086.061	6482999.546	67° H BEND

CLEARANCE TO WORKS REQUIRED FROM WATER CORPORATION	
CTW No.	SERVICE - LOCATION
CTW10	DN220 RC WATER - CROSSING
CTW11	DN150 PVC SEWER - CROSSING
CTW12	DN1500 RC SEWER - CROSSING
CTW13	DN150 PVC SEWER - CROSSING

DEPARTMENT OF PLANNING, LANDS AND HERITAGE

DATE **14-Sep-2017** FILE **DAP/17/01228**



WARNING
UNDERGROUND AND OVERHEAD
HIGH/LOW VOLTAGE POWER
AND OPTIC FIBRE IN THE VICINITY

LEGEND	
NEW GROUNDWATER RECHARGE MAIN	---
EXISTING WATER MAIN	--- W --- W ---
EXISTING SEWER PRESSURE MAIN	--- PM --- PM ---
EXISTING GRAVITY SEWER MAIN	--- S --- S ---
EXISTING DRAIN	--- D --- D ---
EXISTING GAS	--- G --- G ---
EXISTING TELECOMMUNICATION CABLES	--- T --- T ---
EXISTING OPTIC FIBRE	--- OF --- OF ---
EXISTING LV UNDERGROUND POWER	--- E --- E ---
EXISTING LV OVERHEAD POWER	--- E --- E ---
EXISTING HV OVERHEAD POWER	--- HVE --- HVE ---
EXISTING CONTOUR	--- 355.00 ---
EXISTING FENCE	---
EXISTING TREE	---
PIPELINE SET-OUT POINTS	①
PIPELINE CHAINAGE	1000

GENERAL NOTES REFER DRG. MK94-1-2



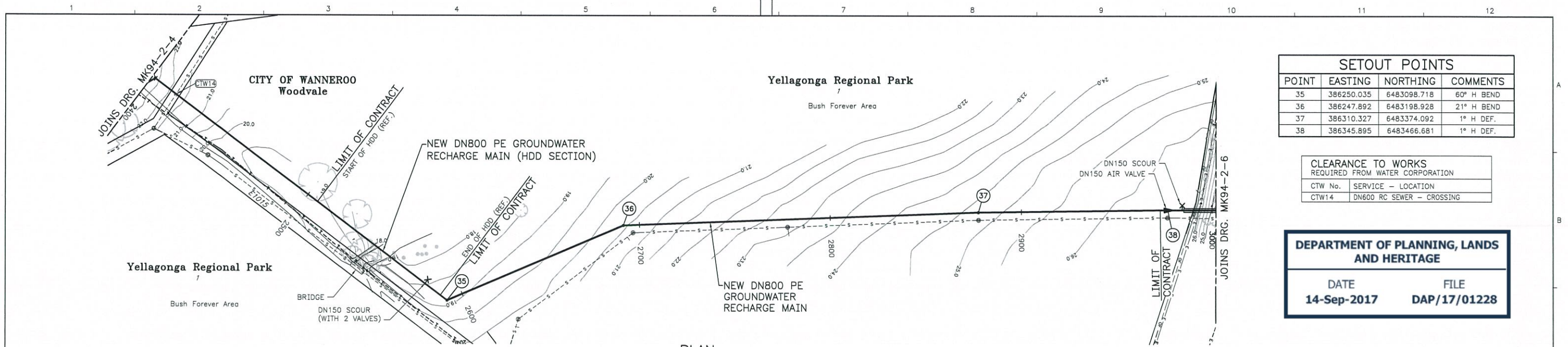
NOTE: THE LOCATION OF UTILITIES HAS NOT NECESSARILY BEEN ESTABLISHED BY SURVEY BUT IS BASED ON INFORMATION AVAILABLE.

LONGITUDINAL SECTION

HORIZONTAL SCALE 1:1000 VERTICAL SCALE 1:100



DESIGN SURVEY GHD 61-34889_V01 ASCON SURVEY NONE	VERTICAL DATUM AHD COORDINATE SYS MGA94-SO DES REF GHD 61-34889	DES CALC G.EDWARDS DES CHD K.SINKO DRN T.BUTTERLY Q.C. CHD G.EDWARDS	NORTH POINT 	GHD Level 10, 999 Hay Street Perth WA 6000 Australia T 61 8 6222 8222 F 61 8 6222 8555 E permail@ghd.com W www.ghd.com	RECOMMENDED 6/2/17 CONSULTANT PROJECT MANAGER 6/2/2017 CONSULTANT PROJECT DIRECTOR	WATER CORPORATION	INTEGRATED WATER SUPPLY SCHEME IWSS AWRP BEENYUP - RECHARGE PIPELINES DN800 PE PIPELINE PLAN & LONGITUDINAL SECTION - SHEET 4 OF 16 FILE PROJECT C-W03249	ORIGINAL SHEET SIZE A1
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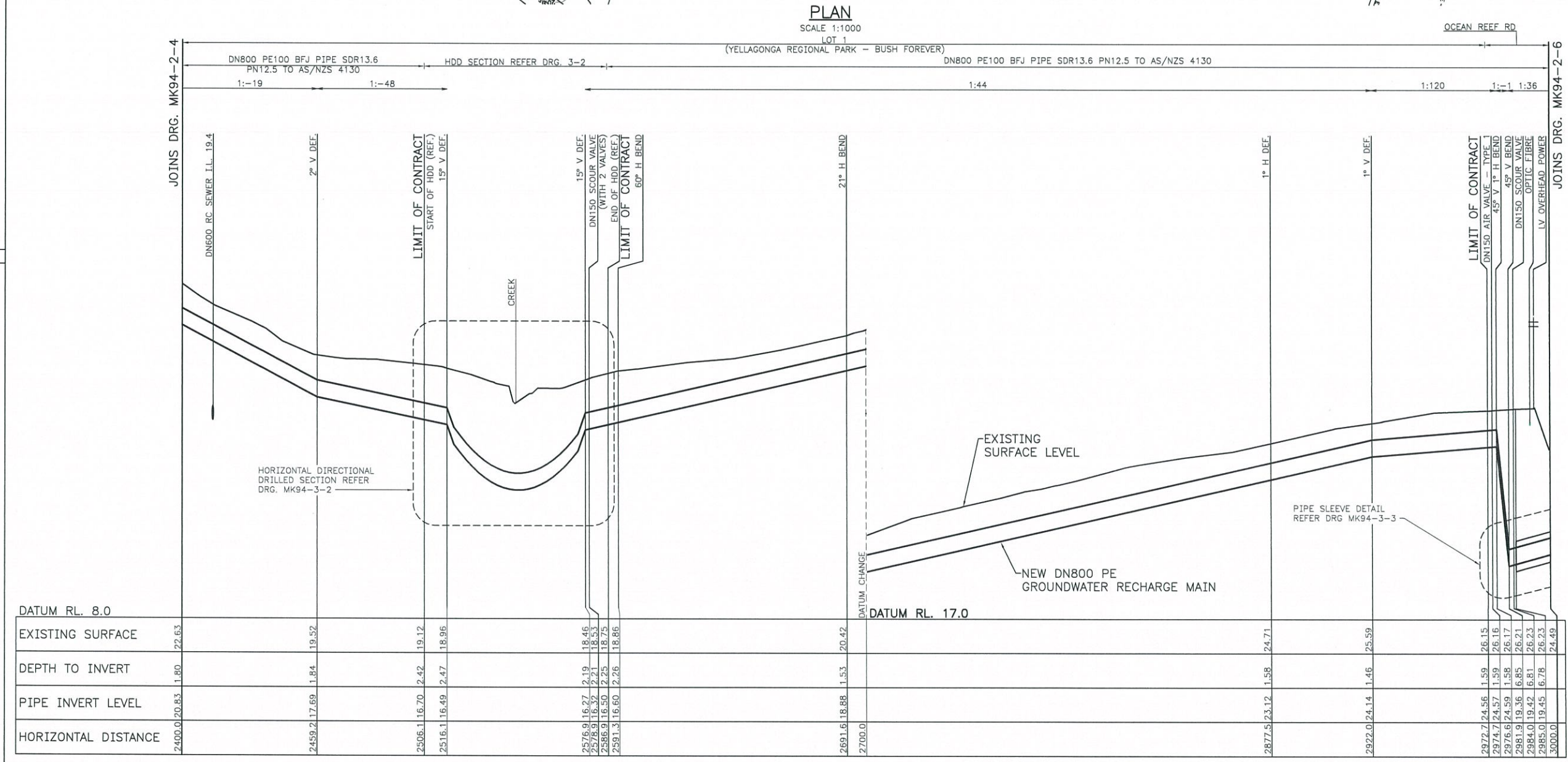
SETOUT POINTS			
POINT	EASTING	NORTHING	COMMENTS
35	386250.035	6483098.718	60° H BEND
36	386247.892	6483198.928	21° H BEND
37	386310.327	6483374.092	1° H DEF.
38	386345.895	6483466.681	1° H DEF.

CLEARANCE TO WORKS REQUIRED FROM WATER CORPORATION	
CTW No.	SERVICE - LOCATION
CTW14	DN600 RC SEWER - CROSSING

DEPARTMENT OF PLANNING, LANDS
AND HERITAGE

DATE
14-Sep-2017

FILE
DAP/17/01228



WARNING
UNDERGROUND AND OVERHEAD
HIGH/LOW VOLTAGE POWER
AND OPTIC FIBRE IN THE VICINITY

LEGEND	
NEW GROUNDWATER RECHARGE MAIN	---
EXISTING WATER MAIN	---
EXISTING SEWER PRESSURE MAIN	---
EXISTING GRAVITY SEWER MAIN	---
EXISTING DRAIN	---
EXISTING GAS	---
EXISTING TELECOMMUNICATION CABLES	---
EXISTING OPTIC FIBRE	---
EXISTING LV UNDERGROUND POWER	---
EXISTING LV OVERHEAD POWER	---
EXISTING HV OVERHEAD POWER	---
EXISTING CONTOUR	---
EXISTING FENCE	---
EXISTING TREE	---
PIPELINE SET-OUT POINTS	---
PIPELINE CHAINAGE	---

GENERAL NOTES REFER DRG. MK94-1-2



NOTE: THE LOCATION OF UTILITIES HAS NOT
NECESSARILY BEEN ESTABLISHED BY SURVEY BUT IS
BASED ON INFORMATION AVAILABLE.

DESIGN SURVEY
GHD
61-34889_V01

VERTICAL DATUM
AHD

DES CALC
G.EDWARDS

NORTH POINT

ASCON SURVEY
NONE

DES REF
GHD 61-34889

DRN
T.BUTTERLY

Q.C. CHD
G.EDWARDS

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E permail@ghd.com W www.ghd.com

RECOMMENDED
K. De 6/2/17
CONSULTANT PROJECT MANAGER

APPROVED
6/2/2017
CONSULTANT PROJECT DIRECTOR

INTEGRATED WATER SUPPLY SCHEME IWSS
AWRP BEENYUP - RECHARGE PIPELINES
DN800 PE PIPELINE
PLAN & LONGITUDINAL SECTION - SHEET 5 OF 16

FILE
PROJECT C-W03249

PLAN
MK94-2-5

CAD
A

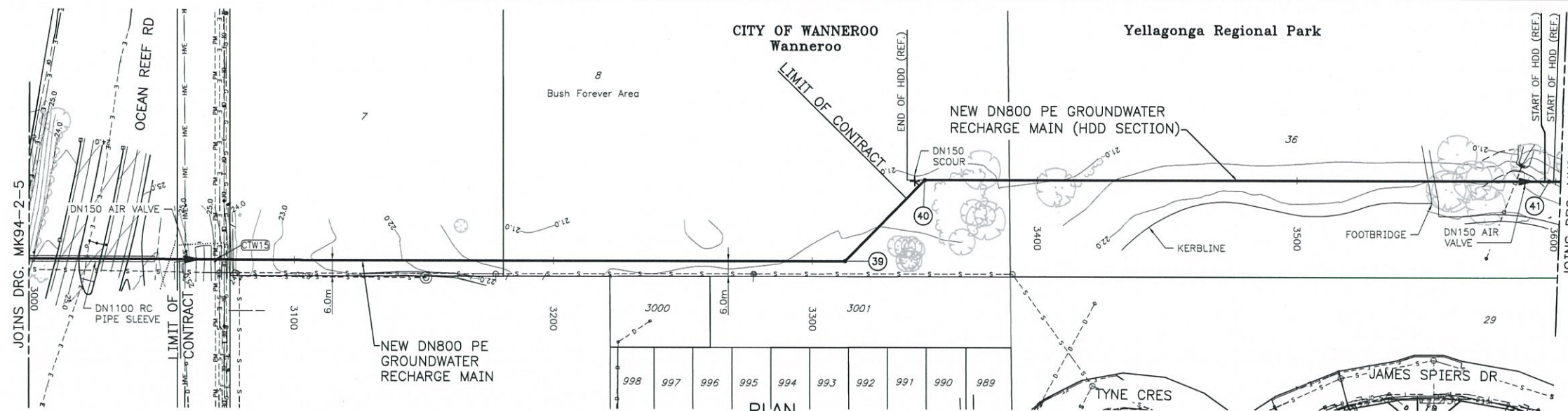
ISSUE
MF

ORIGINAL
SHEET
SIZE
A1

565 810

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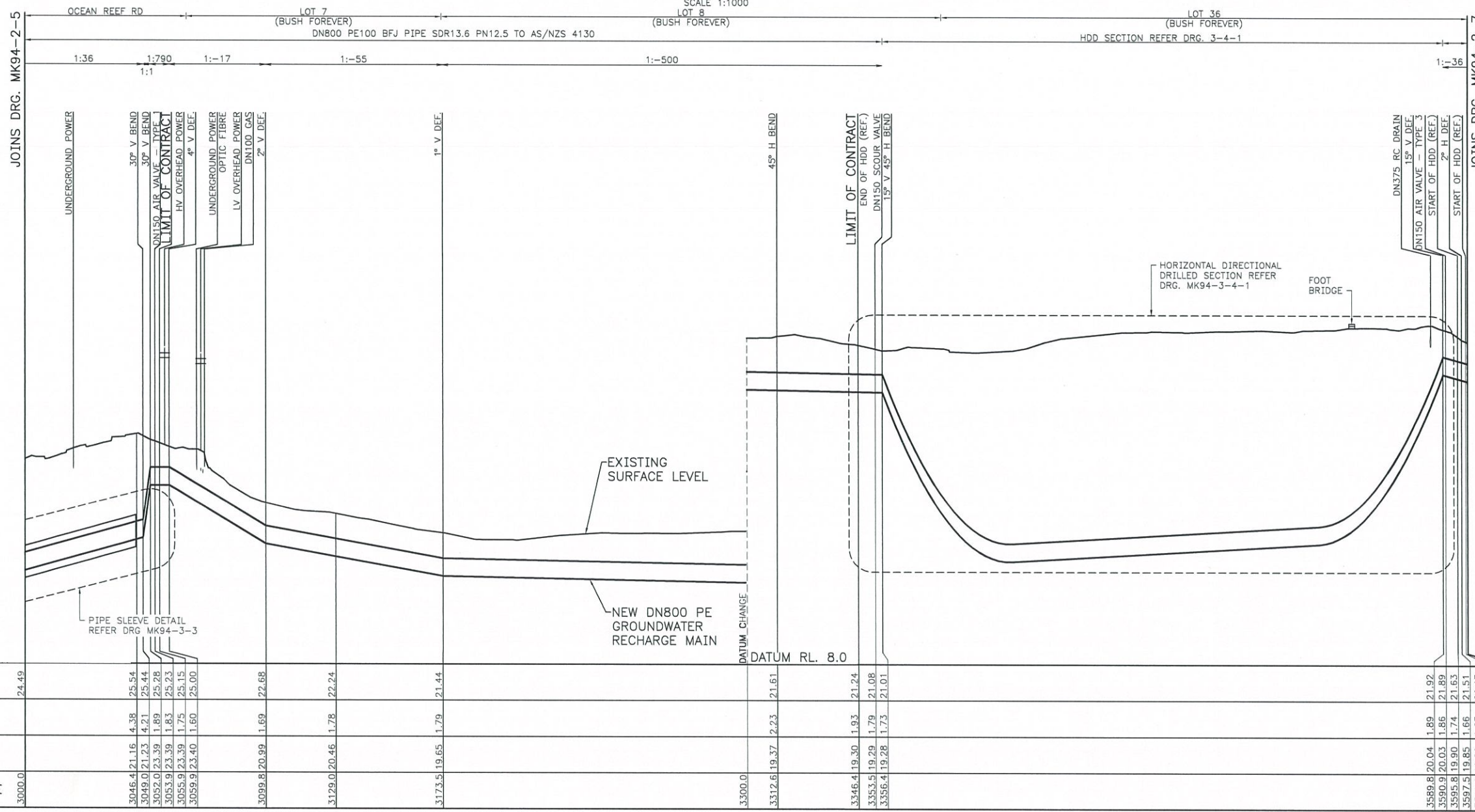
61\34889\CADD\DRAWINGS\MK94\MK94-002-005-01A 27/01/2017



SETOUT POINTS			
POINT	EASTING	NORTHING	COMMENTS
39	386470.764	6483778.462	45° H BEND
40	386453.204	6483818.724	45° H BEND
41	386542.415	6484042.576	2° H DEF.

CLEARANCE TO WORKS REQUIRED FROM WATER CORPORATION	
CTW No.	SERVICE - LOCATION
CTW15	ABANDONED PM - CROSSING

DEPARTMENT OF PLANNING, LANDS AND HERITAGE	
DATE	FILE
14-Sep-2017	DAP/17/01228



WARNING
UNDERGROUND AND OVERHEAD
HIGH/LOW VOLTAGE POWER
AND OPTIC FIBRE IN THE VICINITY

LEGEND	
NEW GROUNDWATER RECHARGE MAIN	— W — W —
EXISTING WATER MAIN	— W — W —
EXISTING SEWER PRESSURE MAIN	— PM — PM —
EXISTING GRAVITY SEWER MAIN	— S — S —
EXISTING DRAIN	— D — D —
EXISTING GAS	— G — G —
EXISTING TELECOMMUNICATION CABLES	— T — T —
EXISTING OPTIC FIBRE	— OF — OF —
EXISTING LV UNDERGROUND POWER	— E — E —
EXISTING LV OVERHEAD POWER	— E — E —
EXISTING HV OVERHEAD POWER	— HVE — HVE —
EXISTING CONTOUR	— 355.00 —
EXISTING FENCE	— F — F —
EXISTING TREE	— T — T —
PIPELINE SET-OUT POINTS	— 1 —
PIPELINE CHAINAGE	— 1000 —

GENERAL NOTES REFER DRG. MK94-1-2



NOTE: THE LOCATION OF UTILITIES HAS NOT
NECESSARILY BEEN ESTABLISHED BY SURVEY BUT IS
BASED ON INFORMATION AVAILABLE.

DATUM RL. 16.0		DATUM RL. 8.0	
EXISTING SURFACE	24.49	25.54	21.44
DEPTH TO INVERT	4.38	1.69	1.79
PIPE INVERT LEVEL	21.16	20.99	20.46
HORIZONTAL DISTANCE	3046.4	3129.0	3173.3

LONGITUDINAL SECTION
HORIZONTAL SCALE 1:1000 VERTICAL SCALE 1:100

DESIGN SURVEY
GHD
61-34889_V01

VERTICAL DATUM
AHD
COORDINATE SYS
MG94-50

DESIGN CALC
G.EDWARDS
DES CHD
K.SINKO

ASCON SURVEY
NONE

DES REF
GHD 61-34889

DRN
T.BUTTERLY
Q.C. CHD
G.EDWARDS

NORTH POINT

GHD
Level 10, 990 Hay Street Perth WA 6000 Australia
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RECOMMENDED
K. De
CONSULTANT PROJECT MANAGER

APPROVED
G. Edwards
CONSULTANT PROJECT DIRECTOR

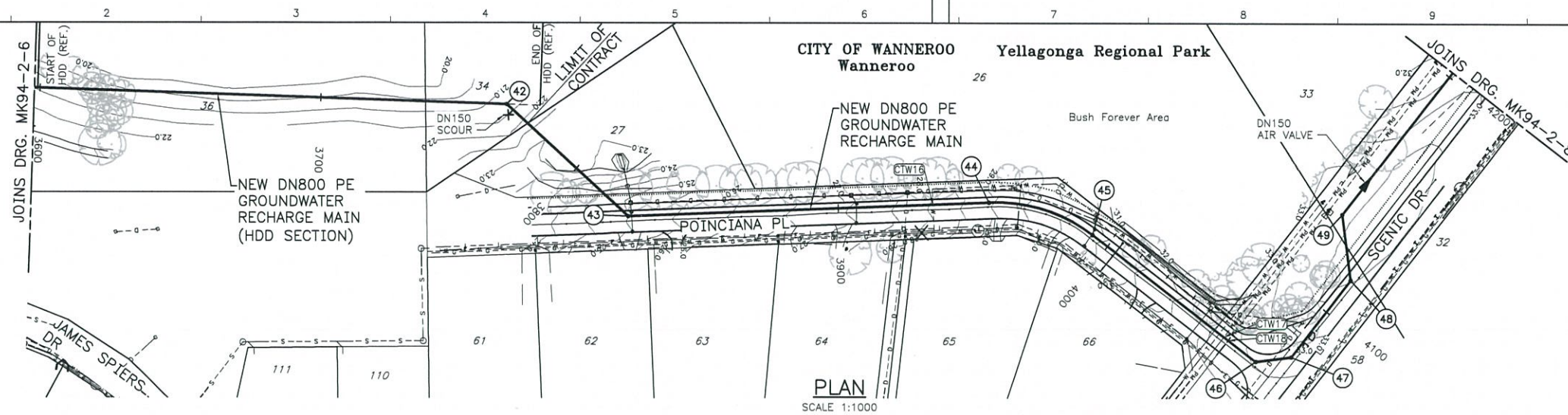
INTEGRATED WATER SUPPLY SCHEME IWSS
AWRP BEENYUP - RECHARGE PIPELINES
DN800 PE PIPELINE
PLAN & LONGITUDINAL SECTION - SHEET 6 OF 16

FILE
PROJECT C-W03249

PLAN
CAD
ISSUE
A

MK94-2-6

ORIGINAL
SHEET
SIZE
A1

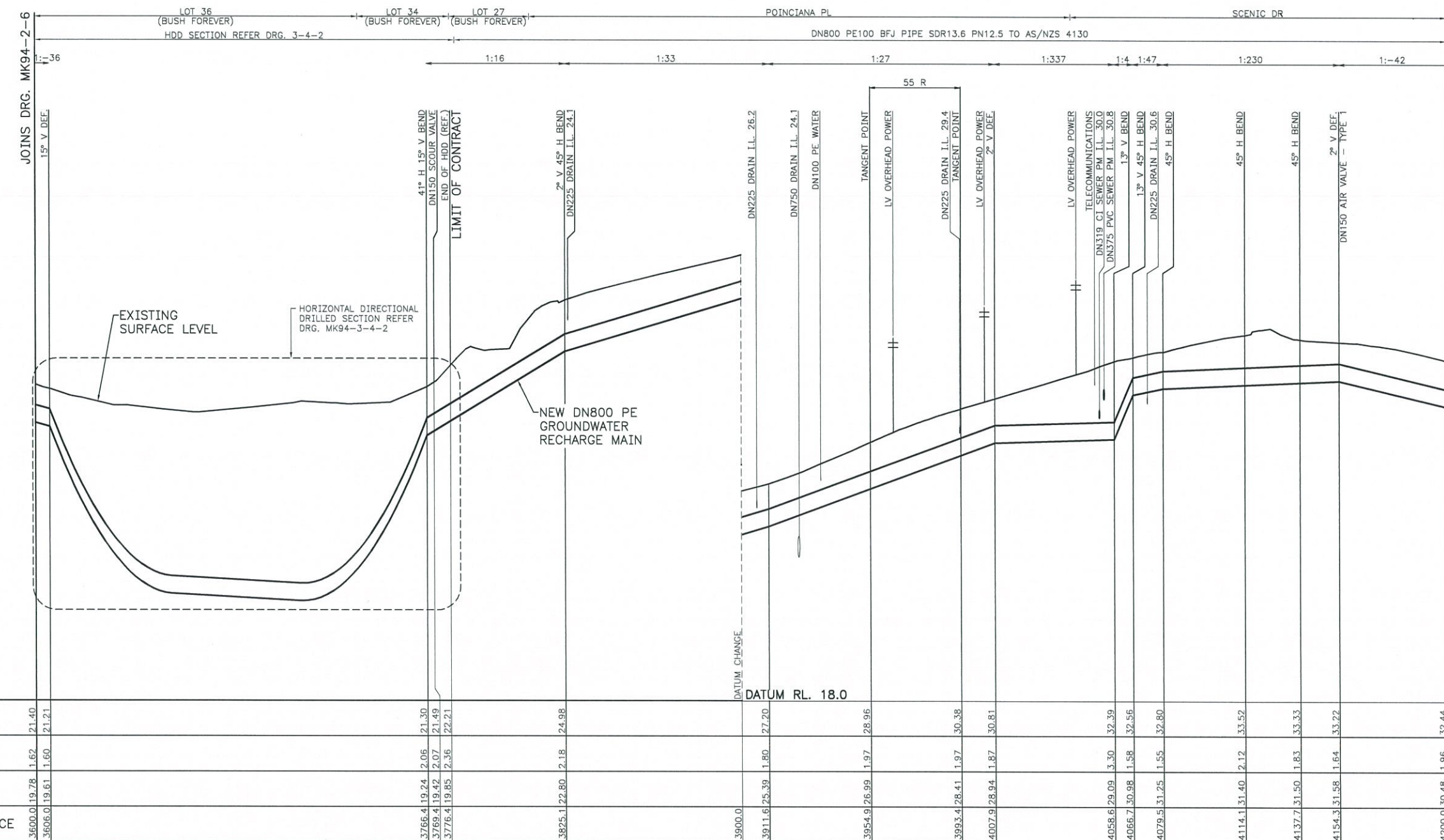


SETOUT POINTS			
POINT	EASTING	NORTHING	COMMENTS
42	386610.398	6484197.236	41° H BEND
43	386663.384	6484222.442	45° H BEND
44	386706.527	6484343.879	TANGENT POINT
45	386730.858	6484373.848	TANGENT POINT
46	386794.081	6484410.938	45° H BEND
47	386797.308	6484423.325	45° H BEND
48	386779.775	6484453.211	45° H BEND
49	386756.966	6484459.153	45° H BEND

CLEARANCE TO WORKS REQUIRED FROM WATER CORPORATION	
CTW No.	SERVICE - LOCATION
CTW16	DN100 PE WATER - CROSSING
CTW17	DN319 CI PM - CROSSING
CTW18	DN375 PVC PM - CROSSING

DEPARTMENT OF PLANNING, LANDS
AND HERITAGE

DATE 14-Sep-2017 FILE DAP/17/01228



WARNING
UNDERGROUND AND OVERHEAD
HIGH/LOW VOLTAGE POWER
AND OPTIC FIBRE IN THE VICINITY

LEGEND	
NEW GROUNDWATER RECHARGE MAIN	---
EXISTING WATER MAIN	---
EXISTING SEWER PRESSURE MAIN	---
EXISTING GRAVITY SEWER MAIN	---
EXISTING DRAIN	---
EXISTING GAS	---
EXISTING TELECOMMUNICATION CABLES	---
EXISTING OPTIC FIBRE	---
EXISTING LV UNDERGROUND POWER	---
EXISTING LV OVERHEAD POWER	---
EXISTING HV OVERHEAD POWER	---
EXISTING CONTOUR	---
EXISTING FENCE	---
EXISTING TREE	---
PIPELINE SET-OUT POINTS	---
PIPELINE CHAINAGE	---

GENERAL NOTES REFER DRG. MK94-1-2



NOTE: THE LOCATION OF UTILITIES HAS NOT
NECESSARILY BEEN ESTABLISHED BY SURVEY BUT IS
BASED ON INFORMATION AVAILABLE.

LONGITUDINAL SECTION
HORIZONTAL SCALE 1:1000 VERTICAL SCALE 1:100

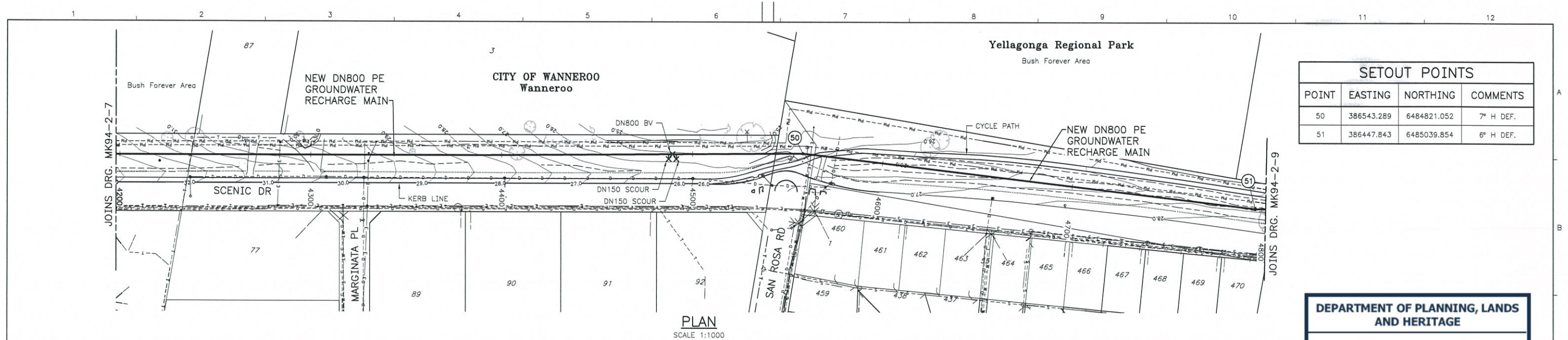
DATUM RL. 8.0		DATUM RL. 18.0	
EXISTING SURFACE	21.40	21.30	21.21
DEPTH TO INVERT	1.62	2.06	2.07
PIPE INVERT LEVEL	19.78	19.24	19.14
HORIZONTAL DISTANCE	3600.0	3766.4	3776.4

DESIGN SURVEY GHD 61-34889-V01 COORDINATE SYS MGA94-50 ASCON SURVEY NONE	VERTICAL DATUM AHD COORDINATE SYS MGA94-50 DES REF GHD 61-34889	DES CALC G.EDWARDS DES CHD K.SINKO DRN T.BUTTERLY Q.C. CHD G.EDWARDS	NORTH POINT 	GHD Level 10, 990 Hay Street Perth WA 6000 Australia T 61 8 6222 8222 F 61 8 6222 8555 E permail@ghd.com W www.ghd.com	RECOMMENDED 6/2/17 CONSULTANT PROJECT MANAGER APPROVED 6/2/2017 CONSULTANT PROJECT DIRECTOR	WATER CORPORATION	INTEGRATED WATER SUPPLY SCHEME IWSS AWRP BEENYUP - RECHARGE PIPELINES DN800 PE PIPELINE PLAN & LONGITUDINAL SECTION - SHEET 7 OF 16 FILE PROJECT C-W03249	ORIGINAL SHEET SIZE A1
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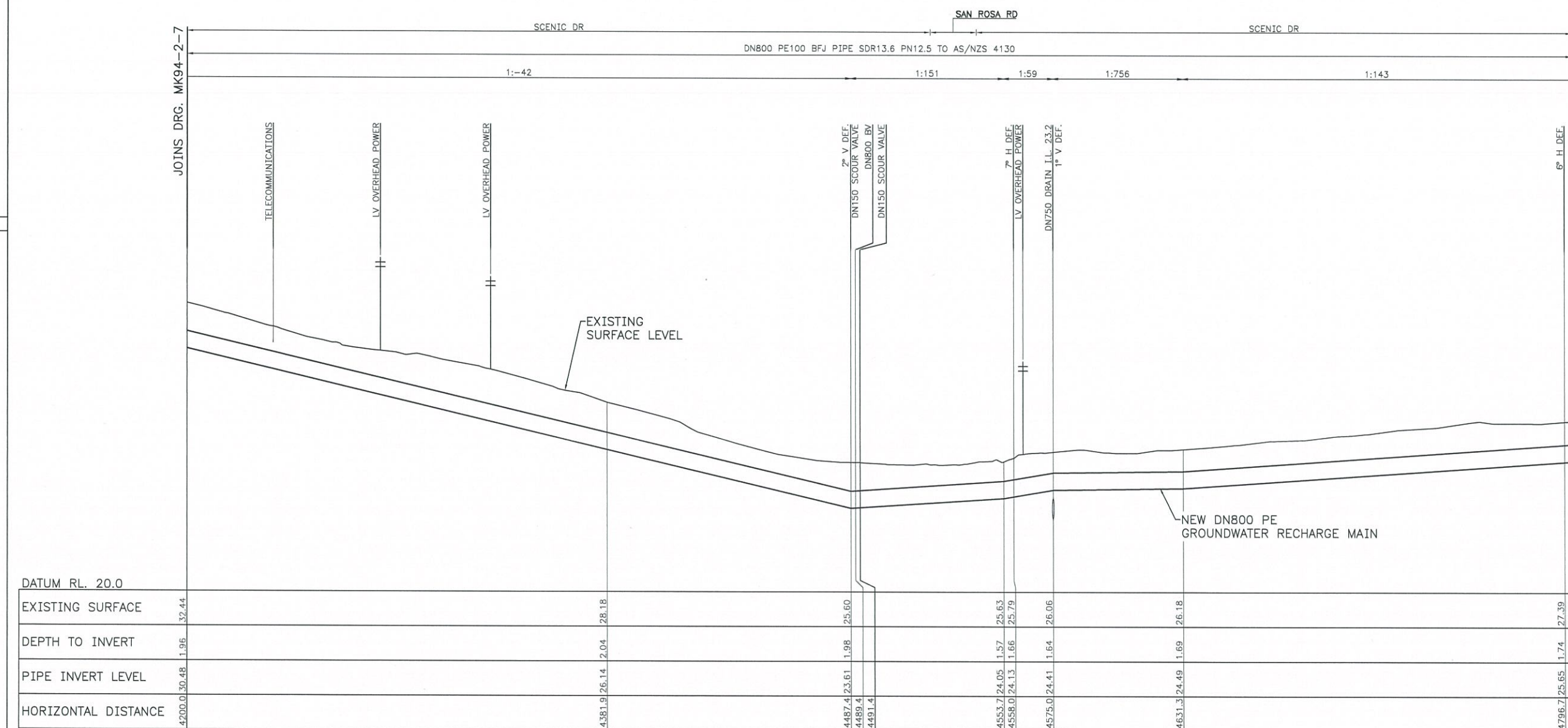
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61\34889\CADD\DRAWINGS\MK94\MK94-002-007-01A 27/01/2017



SETOUT POINTS			
POINT	EASTING	NORTHING	COMMENTS
50	386543.289	6484821.052	7° H DEF.
51	386447.843	6485039.854	6° H DEF.

DEPARTMENT OF PLANNING, LANDS AND HERITAGE	
DATE	FILE
14-Sep-2017	DAP/17/01228






WARNING
UNDERGROUND AND OVERHEAD
HIGH/LOW VOLTAGE POWER
AND OPTIC FIBRE IN THE VICINITY

LEGEND	
NEW GROUNDWATER RECHARGE MAIN	---
EXISTING WATER MAIN	--- W --- W ---
EXISTING SEWER PRESSURE MAIN	--- PM --- PM ---
EXISTING GRAVITY SEWER MAIN	--- S --- S ---
EXISTING DRAIN	--- D --- D ---
EXISTING GAS	--- G --- G ---
EXISTING TELECOMMUNICATION CABLES	--- T --- T ---
EXISTING OPTIC FIBRE	--- OF --- OF ---
EXISTING LV UNDERGROUND POWER	--- E --- E ---
EXISTING LV OVERHEAD POWER	--- E --- E ---
EXISTING HV OVERHEAD POWER	--- HVE --- HVE ---
EXISTING CONTOUR	--- 355.00 ---
EXISTING FENCE	---
EXISTING TREE	---
PIPELINE SET-OUT POINTS	①
PIPELINE CHAINAGE	1000

GENERAL NOTES REFER DRG. MK94-1-2



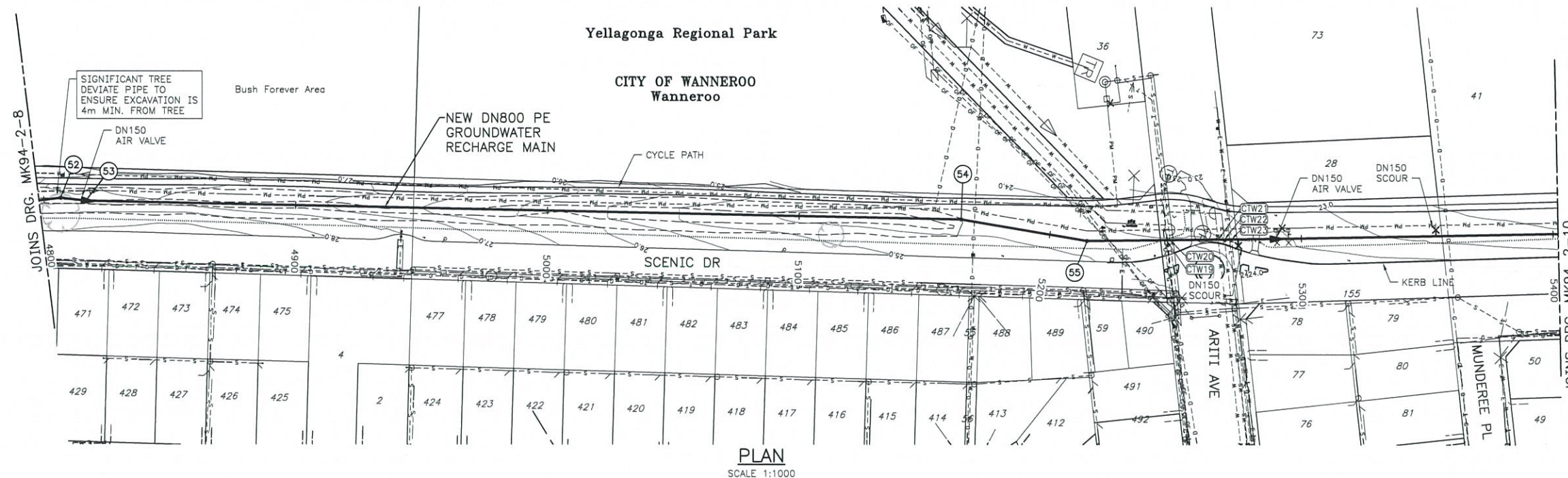
NOTE: THE LOCATION OF UTILITIES HAS NOT NECESSARILY BEEN ESTABLISHED BY SURVEY BUT IS BASED ON INFORMATION AVAILABLE.

LONGITUDINAL SECTION												HORIZONTAL SCALE 1:1000												VERTICAL SCALE 1:100												10 5 0 10 20 30 40 50 60 70 m (1:1000)												10.5 0 1 2 3 4 5 6 7 m (1:100)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
ISSUE		DATE		GRID		REVISION				DRN		REC		APPD		DESIGN SURVEY GHD 61-34889_V01		VERTICAL DATUM AHD		DES CALC G.EDWARDS		NORTH POINT		 Level 10, 999 Hay Street Perth WA 6000 Australia T 61 8 6222 8222 F 61 8 6222 8555 E permail@ghd.com W www.ghd.com				RECOMMENDED <i>Ka Al</i> 6/2/17 CONSULTANT PROJECT MANAGER								INTEGRATED WATER SUPPLY SCHEME IWSS AWRP BEENYUP - RECHARGE PIPELINES DN800 PE PIPELINE PLAN & LONGITUDINAL SECTION - SHEET 8 OF 16								ORIGINAL SHEET SIZE A1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						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Hinde</i> 6/2/2017 CONSULTANT PROJECT DIRECTOR								FILE PROJECT C-W03249				PLAN				CAD				ISSUE 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61\34889\CADD\DRAWINGS\MK94\MK94-002-008-01A 27/01/2017

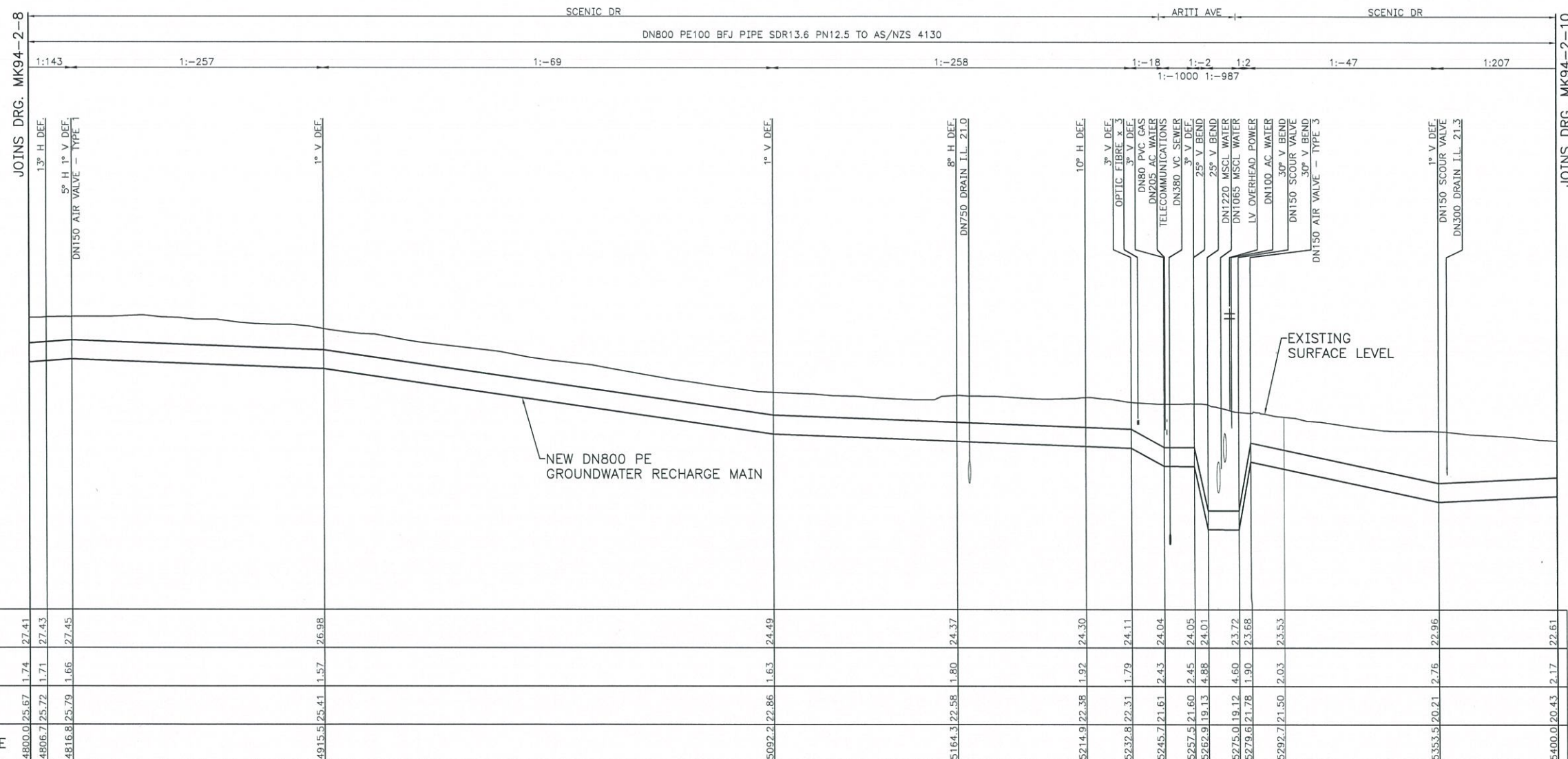


SETOUT POINTS			
POINT	EASTING	NORTHING	COMMENTS
52	386442.928	6485048.621	13° H DEF.
53	386440.116	6485058.302	5° H DEF.
54	386314.256	6485382.163	8° H DEF.
55	386303.051	6485431.578	10° H DEF.

CLEARANCE TO WORKS REQUIRED FROM WATER CORPORATION	
CTW No.	SERVICE - LOCATION
CTW19	DN205 AC WATER - CROSSING
CTW20	DN380 VC SEWER - CROSSING
CTW21	DN1220 MSCL WATER - CROSSING
CTW22	DN1065 MSCL WATER - CROSSING
CTW23	DN100 AC WATER - CROSSING

DEPARTMENT OF PLANNING, LANDS
AND HERITAGE

DATE 14-Sep-2017 FILE DAP/17/01228



WARNING
UNDERGROUND AND OVERHEAD
HIGH/LOW VOLTAGE POWER
AND OPTIC FIBRE IN THE VICINITY

LEGEND	
NEW GROUNDWATER RECHARGE MAIN	---
EXISTING WATER MAIN	---
EXISTING SEWER PRESSURE MAIN	---
EXISTING GRAVITY SEWER MAIN	---
EXISTING DRAIN	---
EXISTING GAS	---
EXISTING TELECOMMUNICATION CABLES	---
EXISTING OPTIC FIBRE	---
EXISTING LV UNDERGROUND POWER	---
EXISTING LV OVERHEAD POWER	---
EXISTING HV OVERHEAD POWER	---
EXISTING CONTOUR	---
EXISTING FENCE	---
EXISTING TREE	---
PIPELINE SET-OUT POINTS	---
PIPELINE CHAINAGE	---

GENERAL NOTES REFER DRG. MK94-1-2

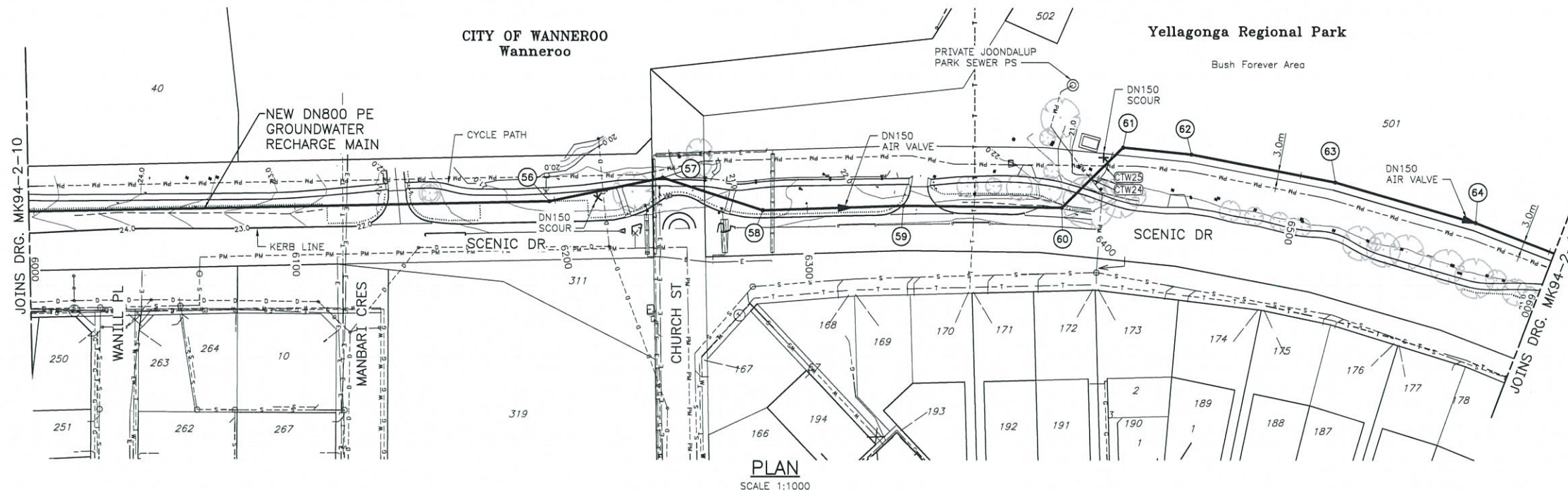


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LONGITUDINAL SECTION

HORIZONTAL SCALE 1:1000 VERTICAL SCALE 1:100

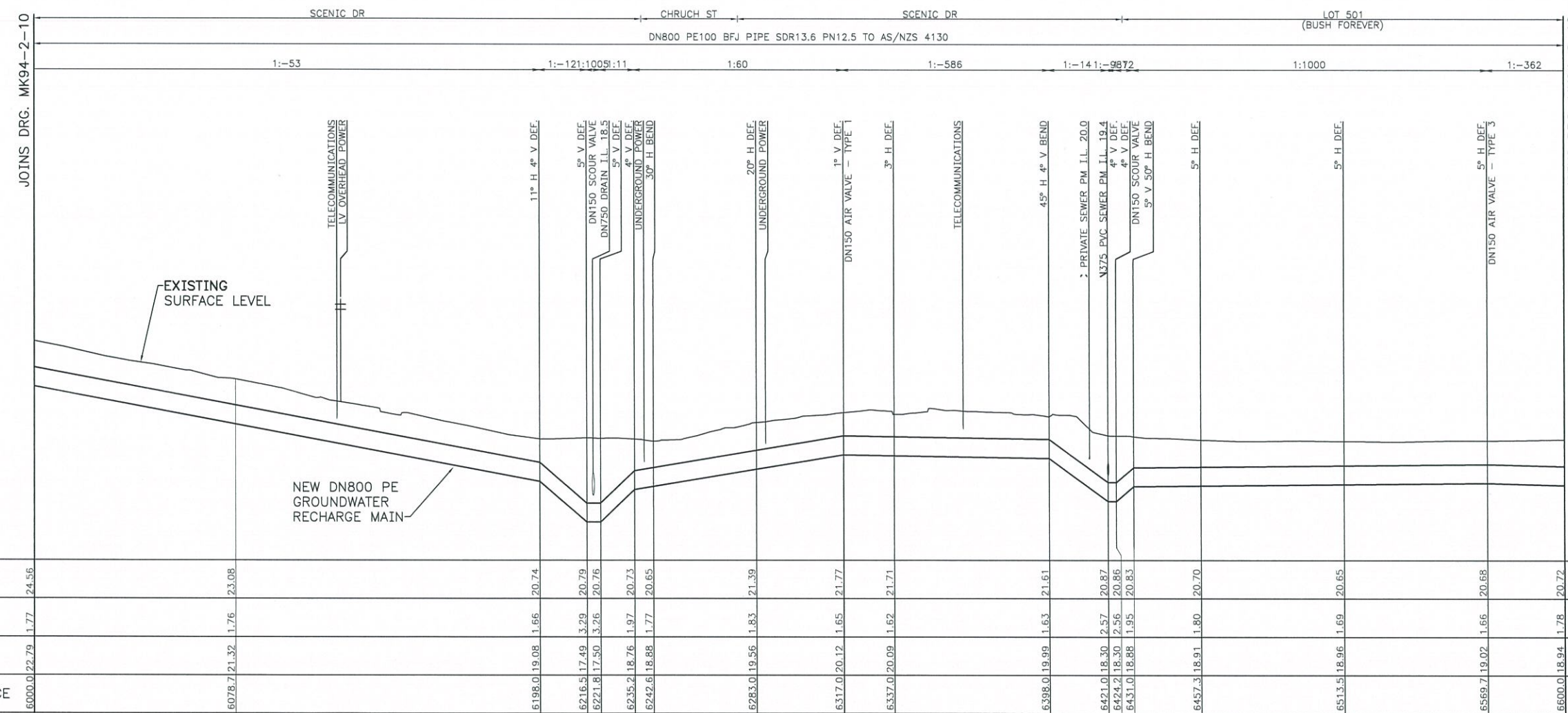
566	ISSUE	DATE	GRID	REVISION	DRN	REC	APPD	DESIGN SURVEY GHD 61-34889-V01	VERTICAL DATUM AHD COORDINATE SYS MGA94-50	DES CALC G.EDWARDS DES CHD K.SINKO	NORTH POINT	RECOMMENDED K. De CONSULTANT PROJECT MANAGER	APPROVED M. Hender CONSULTANT PROJECT DIRECTOR	INTEGRATED WATER SUPPLY SCHEME IWSS AWRP BEENYUP - RECHARGE PIPELINES DN800 PE PIPELINE PLAN & LONGITUDINAL SECTION - SHEET 9 OF 16	ORIGINAL SHEET SIZE A1
810								ASCON SURVEY NONE	DES REF GHD 61-34889	DRN T.BUTTERLY Q.C. CHD G.EDWARDS				PROJECT C-W03249	MK94-2-9



SETOUT POINTS			
POINT	EASTING	NORTHING	COMMENTS
56	385910.948	6486333.054	11° H DEF.
57	385885.869	6486369.873	30° H BEND
58	385882.692	6486410.175	20° H DEF.
59	385860.492	6486459.373	3° H DEF.
60	385837.886	6486516.082	45° H BEND
61	385807.544	6486529.152	50° H BEND
62	385800.019	6486554.332	5° H DEF.
63	385788.771	6486609.392	5° H DEF.
64	385782.459	6486665.214	5° H DEF.

CLEARANCE TO WORKS REQUIRED FROM WATER CORPORATION	
CTW No.	
CTW24	DN50 PVC PRIVATE PM - CROSSING
CTW25	DN375 PVC PM - CROSSING

DEPARTMENT OF PLANNING, LANDS AND HERITAGE	
DATE	FILE
14-Sep-2017	DAP/17/01228



WARNING
UNDERGROUND AND OVERHEAD
HIGH/LOW VOLTAGE POWER
AND OPTIC FIBRE IN THE VICINITY

LEGEND	
NEW GROUNDWATER RECHARGE MAIN	---
EXISTING WATER MAIN	--- W --- W ---
EXISTING SEWER PRESSURE MAIN	--- PM --- PM ---
EXISTING GRAVITY SEWER MAIN	--- S --- S ---
EXISTING DRAIN	--- D --- D ---
EXISTING GAS	--- G --- G ---
EXISTING TELECOMMUNICATION CABLES	--- T --- T ---
EXISTING OPTIC FIBRE	--- OF --- OF ---
EXISTING LV UNDERGROUND POWER	--- E --- E ---
EXISTING LV OVERHEAD POWER	--- E --- E ---
EXISTING HV OVERHEAD POWER	--- HVE --- HVE ---
EXISTING CONTOUR	--- 355.00 ---
EXISTING FENCE	---
EXISTING TREE	---
PIPELINE SET-OUT POINTS	---
PIPELINE CHAINAGE	---

GENERAL NOTES REFER DRG. MK94-1-2



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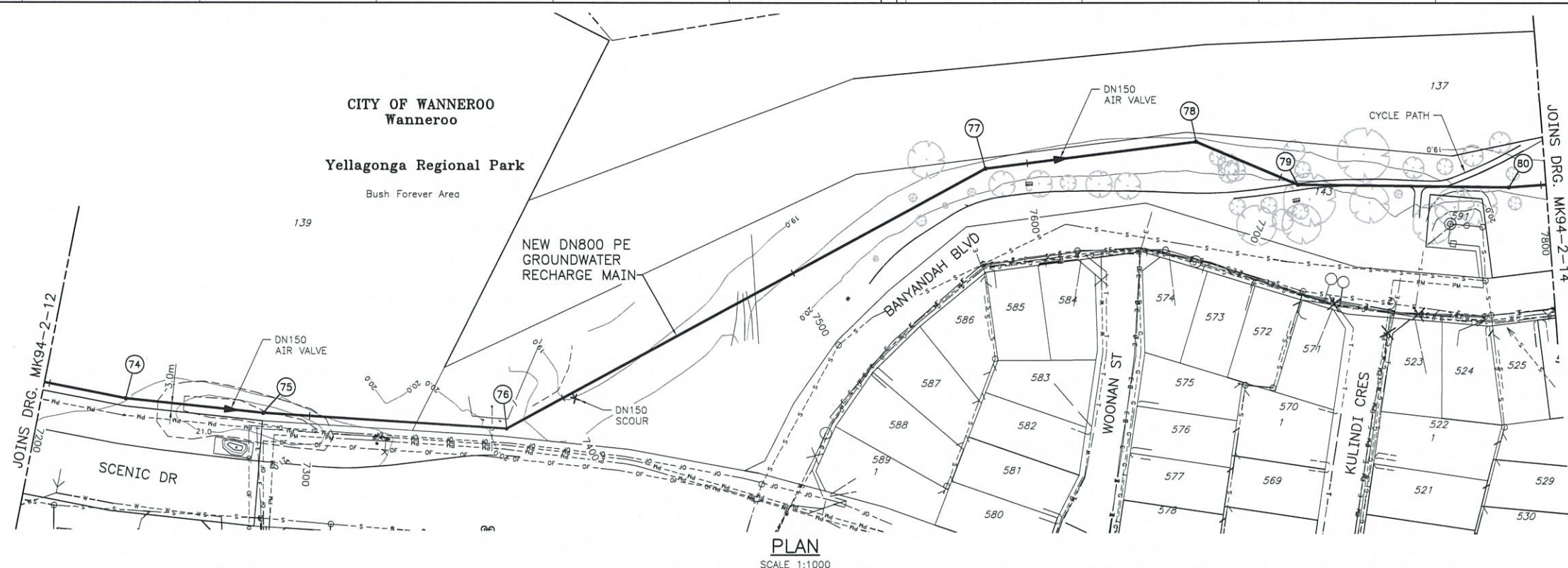
LONGITUDINAL SECTION
HORIZONTAL SCALE 1:1000 VERTICAL SCALE 1:100

ISSUE	DATE	GRID	REVISION	DRN	REC	APPD	DESIGN SURVEY GHD 61-34889_V01	VERTICAL DATUM AHD	DES CALC G.EDWARDS	NORTH POINT	RECOMMENDED K. De 6/2/17	CONSULTANT PROJECT MANAGER	APPROVED J. Church 6/2/2017	CONSULTANT PROJECT DIRECTOR	INTEGRATED WATER SUPPLY SCHEME IWSS AWRP BEENYUP - RECHARGE PIPELINES DN800 PE PIPELINE PLAN & LONGITUDINAL SECTION - SHEET 11 OF 16	FILE PROJECT C-W03249	PLAN	CAD A	ISSUE A	ORIGINAL SHEET SIZE A1
56	810						ASCON SURVEY NONE	DES REF GHD 61-34889	DRN T.BUTTERLY	Q.C. CHD G.EDWARDS										

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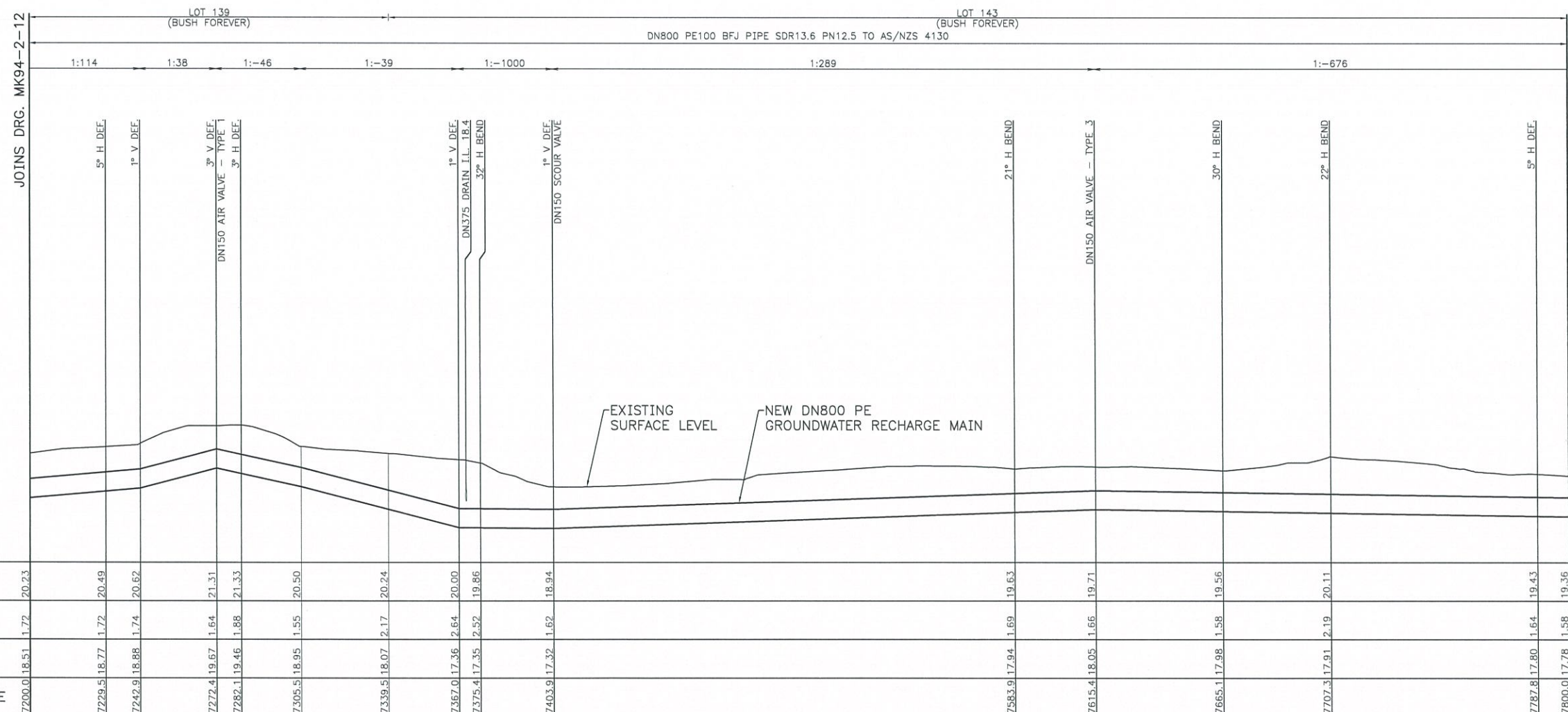
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SETOUT POINTS			
POINT	EASTING	NORTHING	COMMENTS
74	385808.501	6487316.445	5° H DEF.
75	385789.172	6487365.418	3° H DEF.
76	385751.140	6487450.579	32° H BEND
77	385578.126	6487566.871	21° H BEND
78	385531.724	6487633.505	30° H BEND
79	385528.153	6487675.561	22° H BEND
80	385491.649	6487747.354	5° H DEF.

DEPARTMENT OF PLANNING, LANDS AND HERITAGE	
DATE	FILE
14-Sep-2017	DAP/17/01228



LEGEND	
NEW GROUNDWATER RECHARGE MAIN	---
EXISTING WATER MAIN	---
EXISTING SEWER PRESSURE MAIN	---
EXISTING GRAVITY SEWER MAIN	---
EXISTING DRAIN	---
EXISTING GAS	---
EXISTING TELECOMMUNICATION CABLES	---
EXISTING OPTIC FIBRE	---
EXISTING LV UNDERGROUND POWER	---
EXISTING LV OVERHEAD POWER	---
EXISTING HV OVERHEAD POWER	---
EXISTING CONTOUR	---
EXISTING FENCE	---
EXISTING TREE	---
PIPELINE SET-OUT POINTS	---
PIPELINE CHAINAGE	---

GENERAL NOTES REFER DRG. MK94-1-2



NOTE: THE LOCATION OF UTILITIES HAS NOT NECESSARILY BEEN ESTABLISHED BY SURVEY BUT IS BASED ON INFORMATION AVAILABLE.

LONGITUDINAL SECTION

HORIZONTAL SCALE 1:1000 VERTICAL SCALE 1:100

10 5 0 10 20 30 40 50 60 70 m (1:1000)

10.5 0 1 2 3 4 5 6 7 m (1:100)

ISSUE	DATE	GRID	REVISION	DRN	REC	APPD	DESIGN SURVEY GHD 61-34889-V01	VERTICAL DATUM AHD	DES CALC G.EDWARDS	NORTH POINT	RECOMMENDED K. De 6/2/17	CONSULTANT PROJECT MANAGER	APPROVED M. De 6/2/2017	CONSULTANT PROJECT DIRECTOR	INTEGRATED WATER SUPPLY SCHEME IWSS AWRP BEENYUP - RECHARGE PIPELINES DN800 PE PIPELINE PLAN & LONGITUDINAL SECTION - SHEET 13 OF 16	ORIGINAL SHEET SIZE A1
566							ASCON SURVEY NONE	DES REF GHD 61-34889	DES CHD K.SINKO						FILE PROJECT C-W03249	

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CITY OF WANNEROO
Wanneroo

Yellagonga Regional Park
Bush Forever Area

SETOUT POINTS

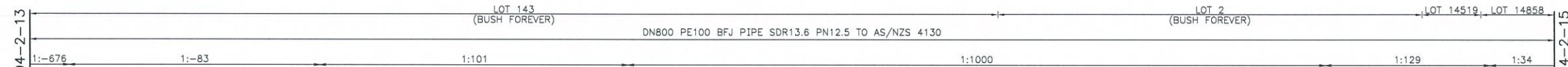
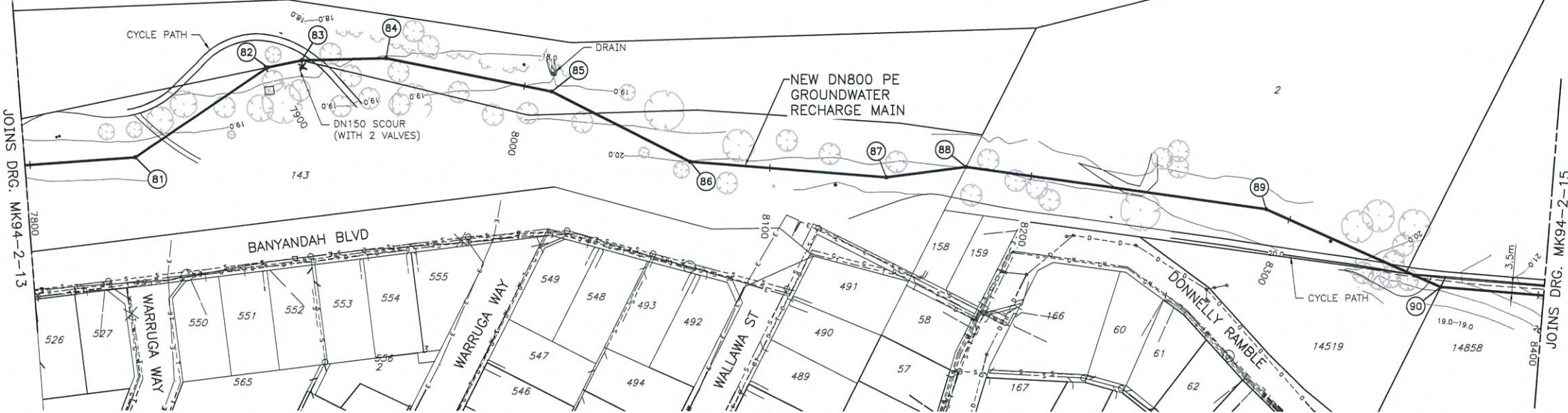
POINT	EASTING	NORTHING	COMMENTS
81	385464.099	6487791.741	30° H BEND
82	385410.397	6487820.504	22° H BEND
83	385402.073	6487830.598	10° H DEF.
84	385386.475	6487858.610	13° H DEF.
85	385368.214	6487920.424	16° H DEF.
86	385367.333	6487979.366	22° H BEND
87	385337.927	6488048.149	12° H DEF.
88	385320.298	6488073.332	15° H DEF.
89	385281.495	6488181.894	16° H DEF.
90	385276.837	6488254.320	19° H DEF.

DEPARTMENT OF PLANNING, LANDS
AND HERITAGE

DATE
14-Sep-2017

FILE
DAP/17/01228

PLAN
SCALE 1:1000



LEGEND

NEW GROUNDWATER RECHARGE MAIN	---
EXISTING WATER MAIN	---
EXISTING SEWER PRESSURE MAIN	---
EXISTING GRAVITY SEWER MAIN	---
EXISTING DRAIN	---
EXISTING GAS	---
EXISTING TELECOMMUNICATION CABLES	---
EXISTING OPTIC FIBRE	---
EXISTING LV UNDERGROUND POWER	---
EXISTING LV OVERHEAD POWER	---
EXISTING HV OVERHEAD POWER	---
EXISTING CONTOUR	---
EXISTING FENCE	---
EXISTING TREE	---
PIPELINE SET-OUT POINTS	---
PIPELINE CHAINAGE	---

GENERAL NOTES REFER DRG. MK94-1-2



NOTE: THE LOCATION OF UTILITIES HAS NOT
NECESSARILY BEEN ESTABLISHED BY SURVEY BUT IS
BASED ON INFORMATION AVAILABLE.

LONGITUDINAL SECTION

HORIZONTAL SCALE 1:1000 VERTICAL SCALE 1:100

10 5 0 10 20 30 40 50 60 70 m (1:1000)

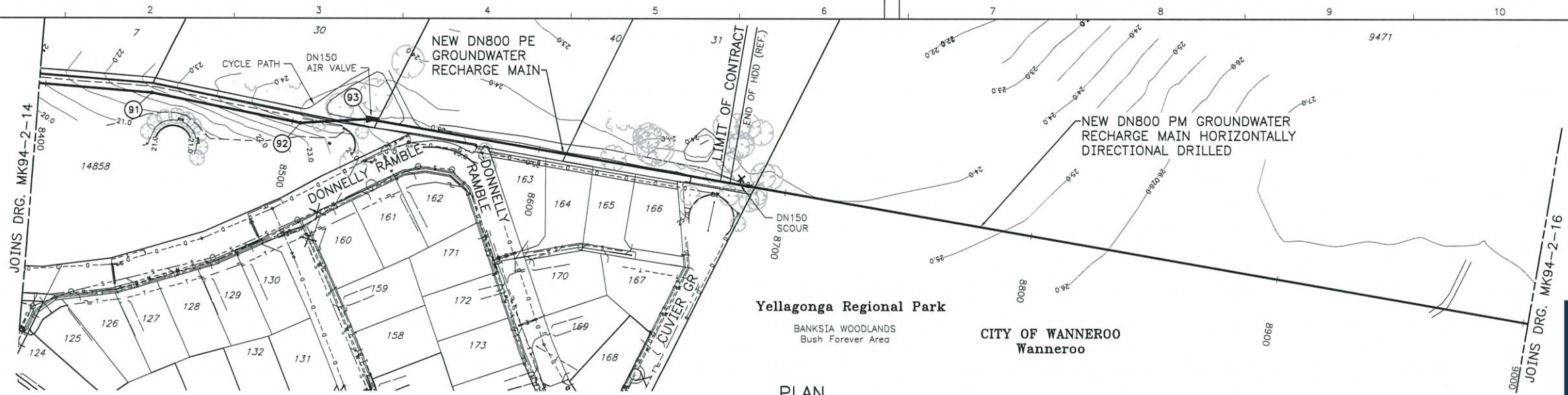
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ISSUE	DATE	GRID	REVISION	DRN	REC	APPD	DESIGN SURVEY GHD 61-34889-V01	VERTICAL DATUM AHD	DES CALC G.EDWARDS	NORTH POINT	RECOMMENDED 6/12/17	CONSULTANT PROJECT MANAGER	INTEGRATED WATER SUPPLY SCHEME IWSS AWRP BEENYUP - RECHARGE PIPELINES DN800 PE PIPELINE PLAN & LONGITUDINAL SECTION - SHEET 14 OF 16	ORIGINAL SHEET SIZE
							ASCON SURVEY NONE	COORDINATE SYS MGA94-50	DES REF GHD 61-34889	DRN T.BUTTERLY	APPROVED 6/12/2017	CONSULTANT PROJECT DIRECTOR	FILE PROJECT C-W03249	A1
									Q.C. CHD G.EDWARDS				CAD A	MF

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61\34889\CADD\DRAWINGS\MK94\MK94-002-014-01A 27/01/2017

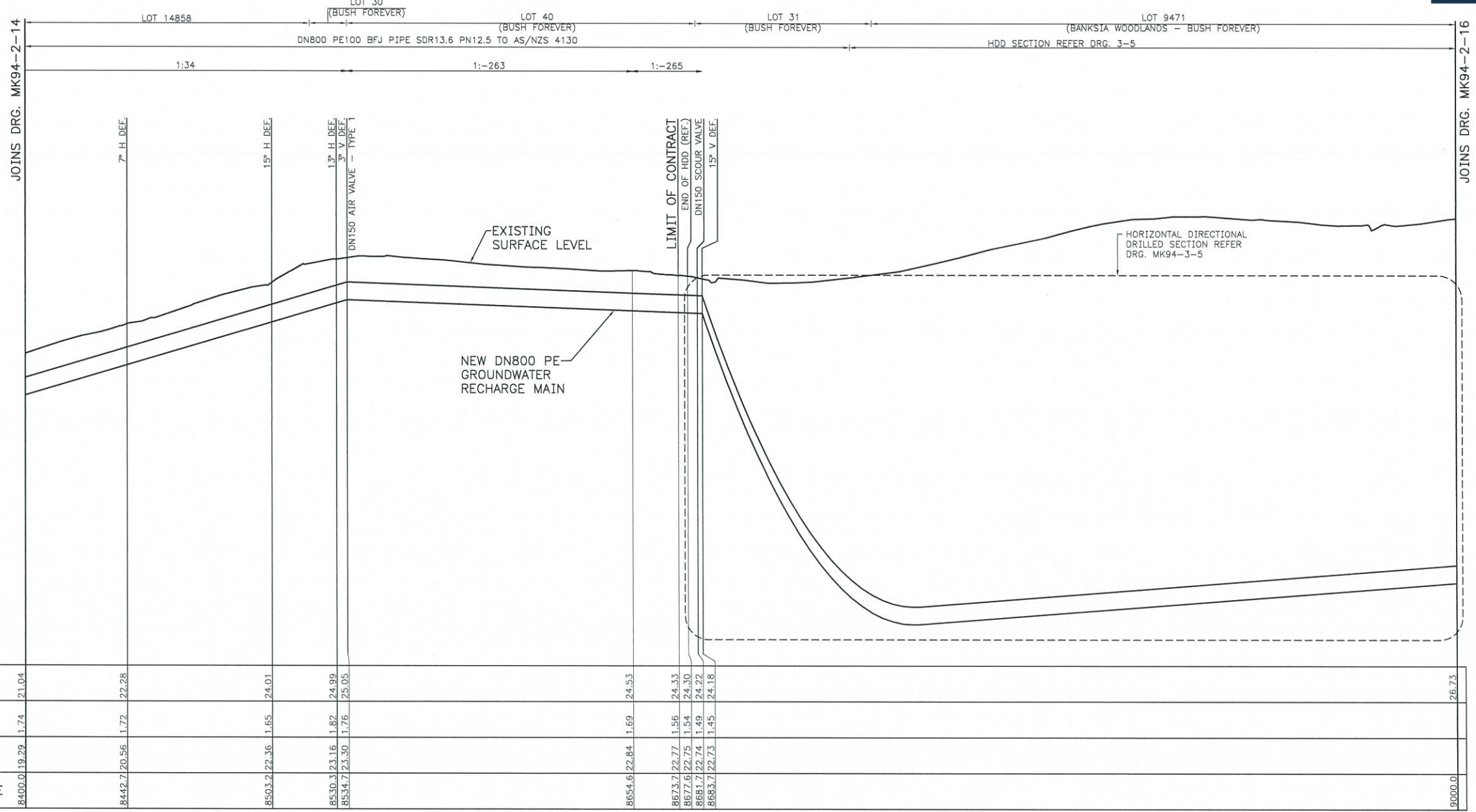


SETOUT POINTS			
POINT	EASTING	NORTHING	COMMENTS
91	385245.787	6488327.821	7° H DEF.
92	385228.944	6488385.901	15° H DEF.
93	385215.011	6488409.117	13° H BEND

DEPARTMENT OF PLANNING, LANDS AND HERITAGE

DATE
14-Sep-2017

FILE
DAP/17/01228



DATUM RL. 8.0			
EXISTING SURFACE	21.04	22.28	24.01
DEPTH TO INVERT	1.74	1.72	1.65
PIPE INVERT LEVEL	19.29	20.56	22.36
HORIZONTAL DISTANCE	8400.0	8442.7	8503.2

LEGEND

NEW GROUNDWATER RECHARGE MAIN
EXISTING WATER MAIN
EXISTING SEWER PRESSURE MAIN
EXISTING GRAVITY SEWER MAIN
EXISTING DRAIN
EXISTING GAS
EXISTING TELECOMMUNICATION CABLES
EXISTING OPTIC FIBRE
EXISTING LV UNDERGROUND POWER
EXISTING LV OVERHEAD POWER
EXISTING HV OVERHEAD POWER
EXISTING CONTOUR
EXISTING FENCE
EXISTING TREE

PIPELINE SET-OUT POINTS
PIPELINE CHAINAGE

1000

GENERAL NOTES REFER DRG. MK94-1-2



NOTE: THE LOCATION OF UTILITIES HAS NOT NECESSARILY BEEN ESTABLISHED BY SURVEY BUT IS BASED ON INFORMATION AVAILABLE.

LONGITUDINAL SECTION
HORIZONTAL SCALE 1:1000 VERTICAL SCALE 1:100



ISSUE DATE GRID REVISION DRN REC APPD

DESIGN SURVEY
GHD
61-34889-V01

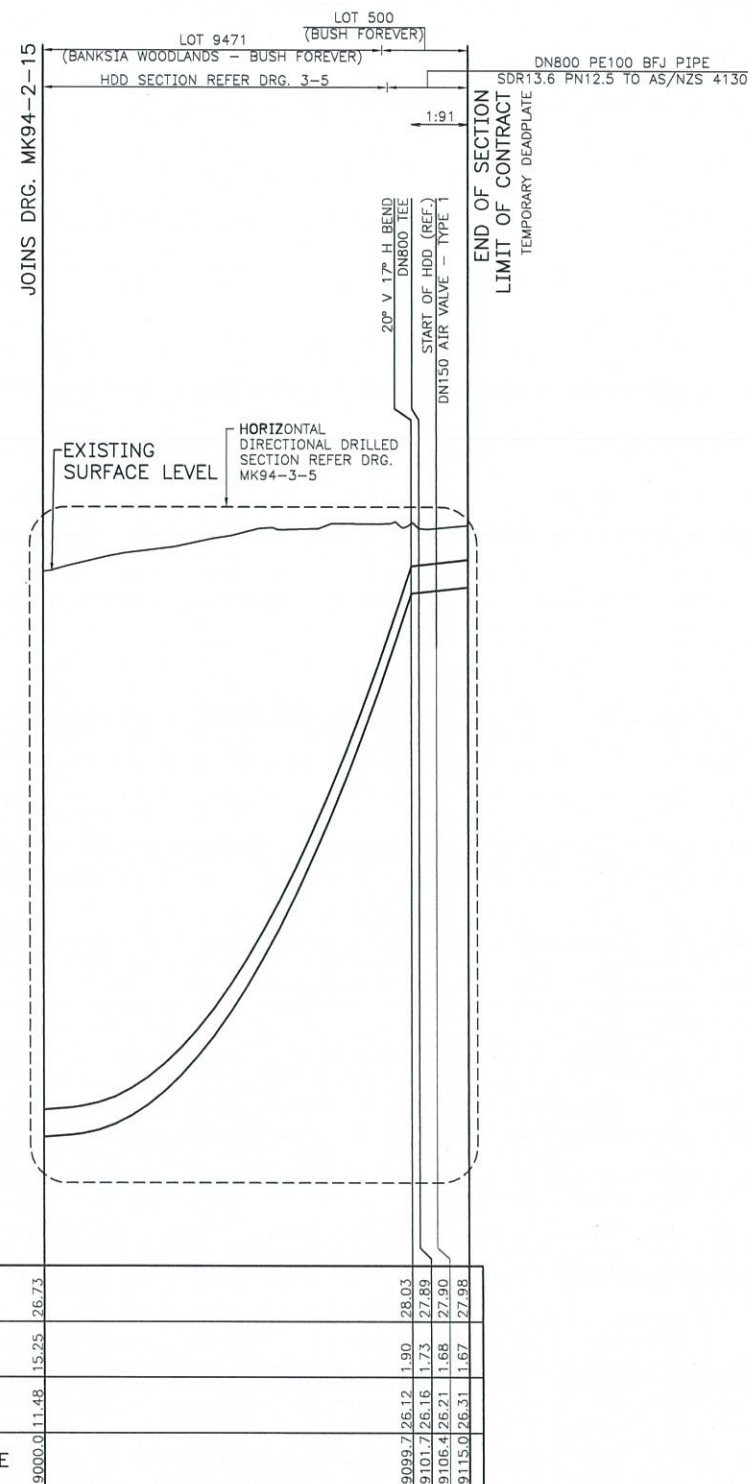
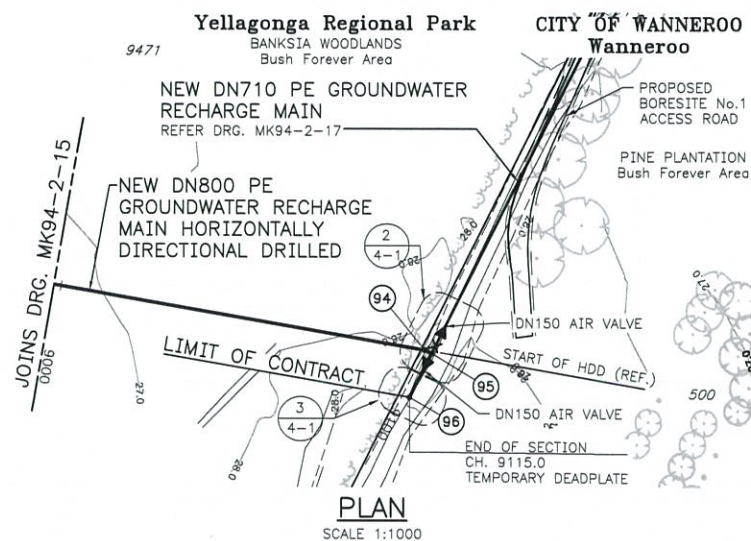
VERTICAL DATUM
AHD

COORDINATE SYS
MGA94-SO

DES REF
GHD 61-34889

DES CALC
G.EDWARDS

 DES CHD K.SINKO | DRN T.BUTTERLY | Q.C. CHD G.EDWARDS | NORTH POINT | GHD Level 10, 999 Hay Street Perth WA 6000 Australia T 61 8 6222 8222 F 61 8 6222 8555 E permail@ghd.com W www.ghd.com | RECOMMENDED 6/2/17 | CONSULTANT PROJECT MANAGER | APPROVED 6/2/2017 | CONSULTANT PROJECT DIRECTOR | INTEGRATED WATER SUPPLY SCHEME IWSS AWRP BEENYUP - RECHARGE PIPELINES DN800 PE PIPELINE PLAN & LONGITUDINAL SECTION - SHEET 15 OF 16 | FILE PROJECT C-W03249 | PLAN MK94-2-15 | CAD A | ISSUE A | ORIGINAL SHEET SIZE A1 |



DATUM RL. 8.0					
EXISTING SURFACE	26.73	28.03	27.89	27.90	27.98
DEPTH TO INVERT	15.25	1.90	1.73	1.68	1.67
PIPE INVERT LEVEL	11.48	26.12	26.16	26.21	26.31
HORIZONTAL DISTANCE	9000.0	9099.7	9101.7	9106.4	9115.0

SETOUT POINTS			
POINT	EASTING	NORTHING	COMMENTS
94	385041.540	6488951.472	17° H BEND
95	385041.514	6488953.472	DN800 TEE
96	385054.794	6488953.647	END OF SECTION

DEPARTMENT OF PLANNING, LANDS
AND HERITAGE

DATE

FILE

14-Sep-2017

DAP/17/01228

LEGEND	
NEW GROUNDWATER RECHARGE MAIN	---
EXISTING WATER MAIN	--- W --- W ---
EXISTING SEWER PRESSURE MAIN	--- PM --- PM ---
EXISTING GRAVITY SEWER MAIN	--- S --- S ---
EXISTING DRAIN	--- D --- D ---
EXISTING GAS	--- G --- G ---
EXISTING TELECOMMUNICATION CABLES	--- T --- T ---
EXISTING OPTIC FIBRE	--- OF --- OF ---
EXISTING LV UNDERGROUND POWER	--- E --- E ---
EXISTING LV OVERHEAD POWER	--- E --- E ---
EXISTING HV OVERHEAD POWER	--- HVE --- HVE ---
EXISTING CONTOUR	--- 355.00 ---
EXISTING FENCE	---
EXISTING TREE	---
PIPELINE SET-OUT POINTS	①
PIPELINE CHAINAGE	1000

GENERAL NOTES REFER DRG. MK94-1-2



NOTE: THE LOCATION OF UTILITIES HAS NOT NECESSARILY BEEN ESTABLISHED BY SURVEY BUT IS BASED ON INFORMATION AVAILABLE.

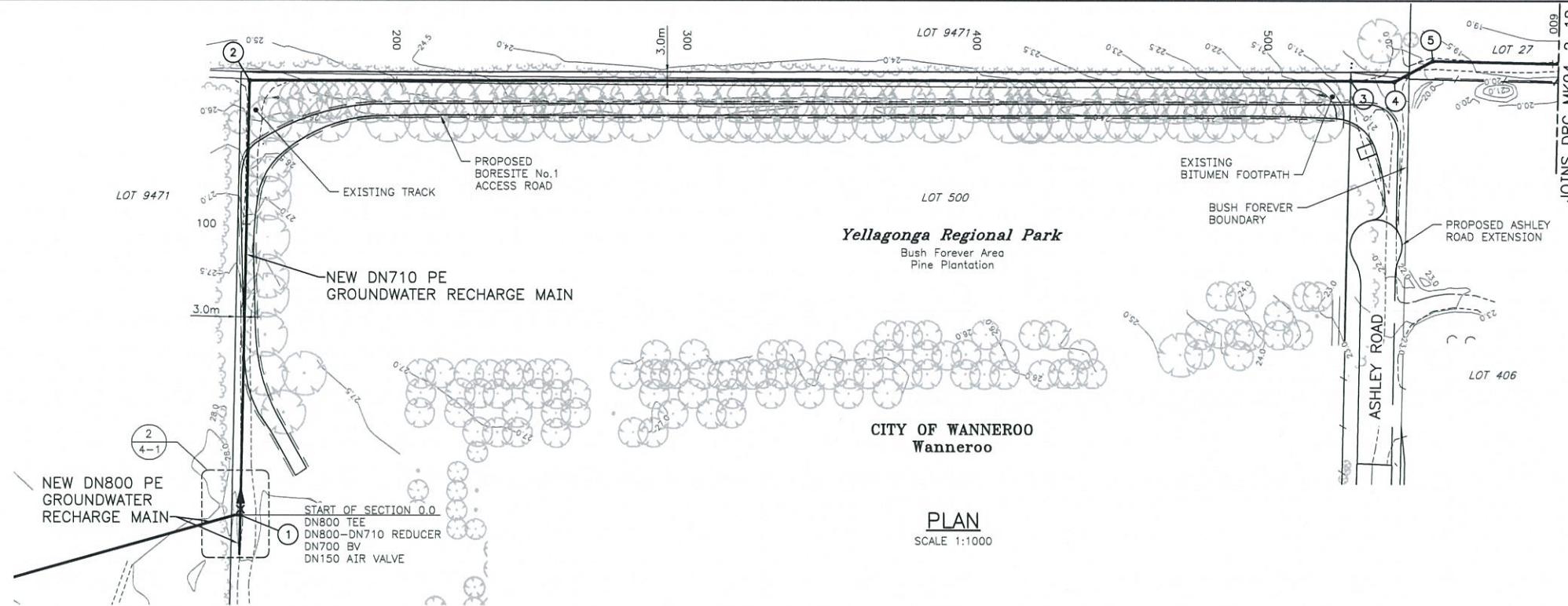
DEPARTMENT OF PLANNING, LANDS
AND HERITAGE

DATE
14-Sep-2017

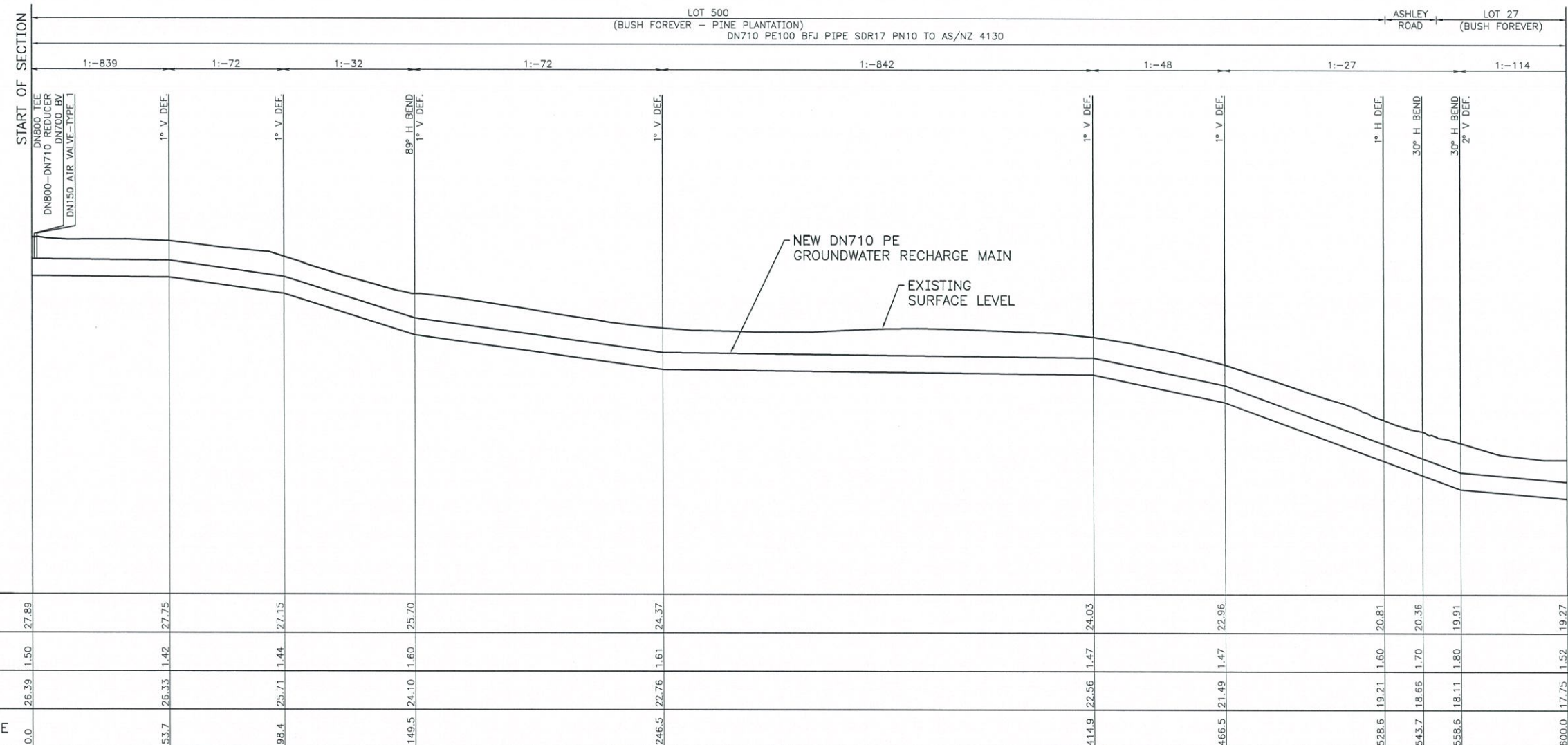
FILE
DAP/17/01228

SETOUT POINTS

POINT	EASTING	NORTHING	COMMENTS
1	385041.501	6488953.472	DN800 TEE
2	384892.029	6488951.507	89° H BEND
3	384878.037	6489330.366	1° H DEF.
4	384877.856	6489345.443	30° H BEND
5	384870.212	6489358.271	30° H BEND
6	384869.419	6489415.817	39° H BEND



PLAN
SCALE 1:1000



LONGITUDINAL SECTION

HORIZONTAL SCALE 1:1000 VERTICAL SCALE 1:100

LEGEND

NEW GROUNDWATER RECHARGE MAIN	---
EXISTING WATER MAIN	---
EXISTING SEWER PRESSURE MAIN	---
EXISTING GRAVITY SEWER MAIN	---
EXISTING DRAIN	---
EXISTING GAS	---
EXISTING TELECOMMUNICATION CABLES	---
EXISTING OPTIC FIBRE	---
EXISTING LV UNDERGROUND POWER	---
EXISTING LV OVERHEAD POWER	---
EXISTING HV OVERHEAD POWER	---
EXISTING CONTOUR	---
EXISTING FENCE	---
EXISTING TREE	---
PIPELINE SET-OUT POINTS	---
PIPELINE CHAINAGE	---

GENERAL NOTES REFER DRG. MK94-1-2



NOTE: THE LOCATION OF UTILITIES HAS NOT NECESSARILY BEEN ESTABLISHED BY SURVEY BUT IS BASED ON INFORMATION AVAILABLE.

DATUM RL. 14.0

EXISTING SURFACE	27.89	27.75	27.15	25.70	24.37	24.03	22.95	20.81	20.36	19.91	19.27
DEPTH TO INVERT	1.50	1.42	1.44	1.60	1.61	1.47	1.47	1.60	1.70	1.80	1.52
PIPE INVERT LEVEL	26.39	26.33	25.71	24.10	22.76	22.56	21.49	19.21	18.66	18.11	17.75
HORIZONTAL DISTANCE	0.0	53.7	98.4	149.5	246.5	414.9	466.5	528.6	543.7	558.6	600.0

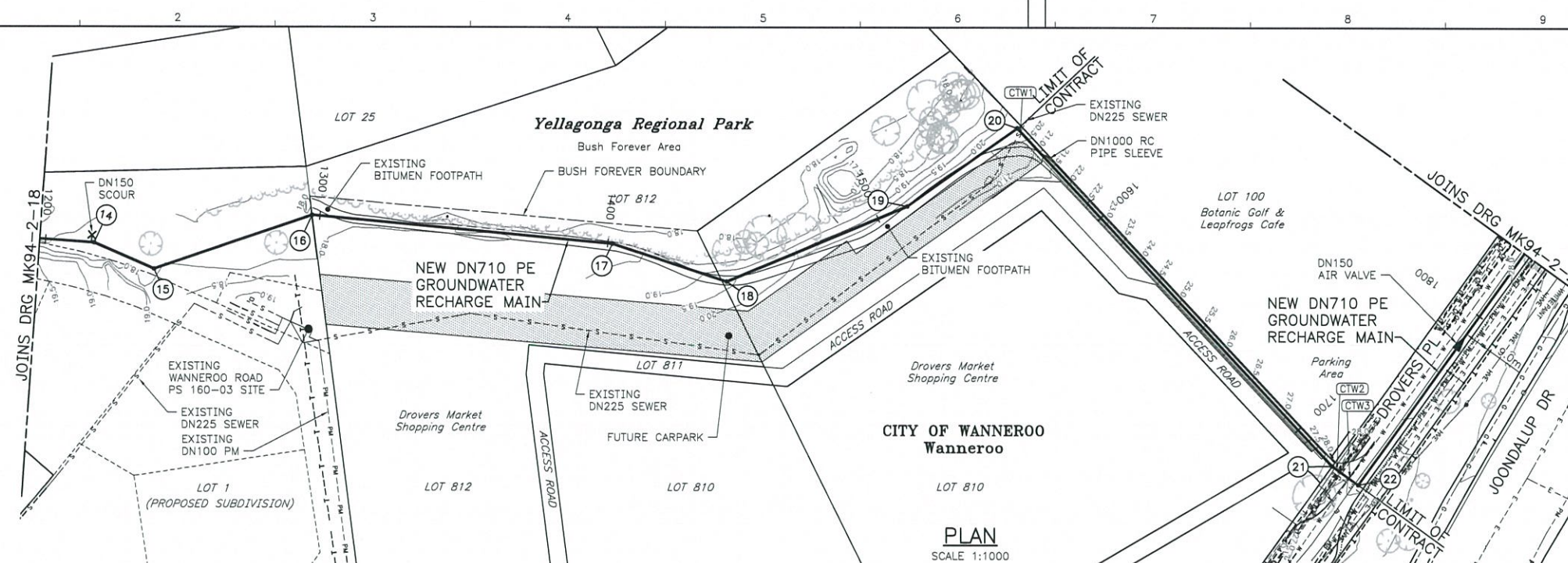
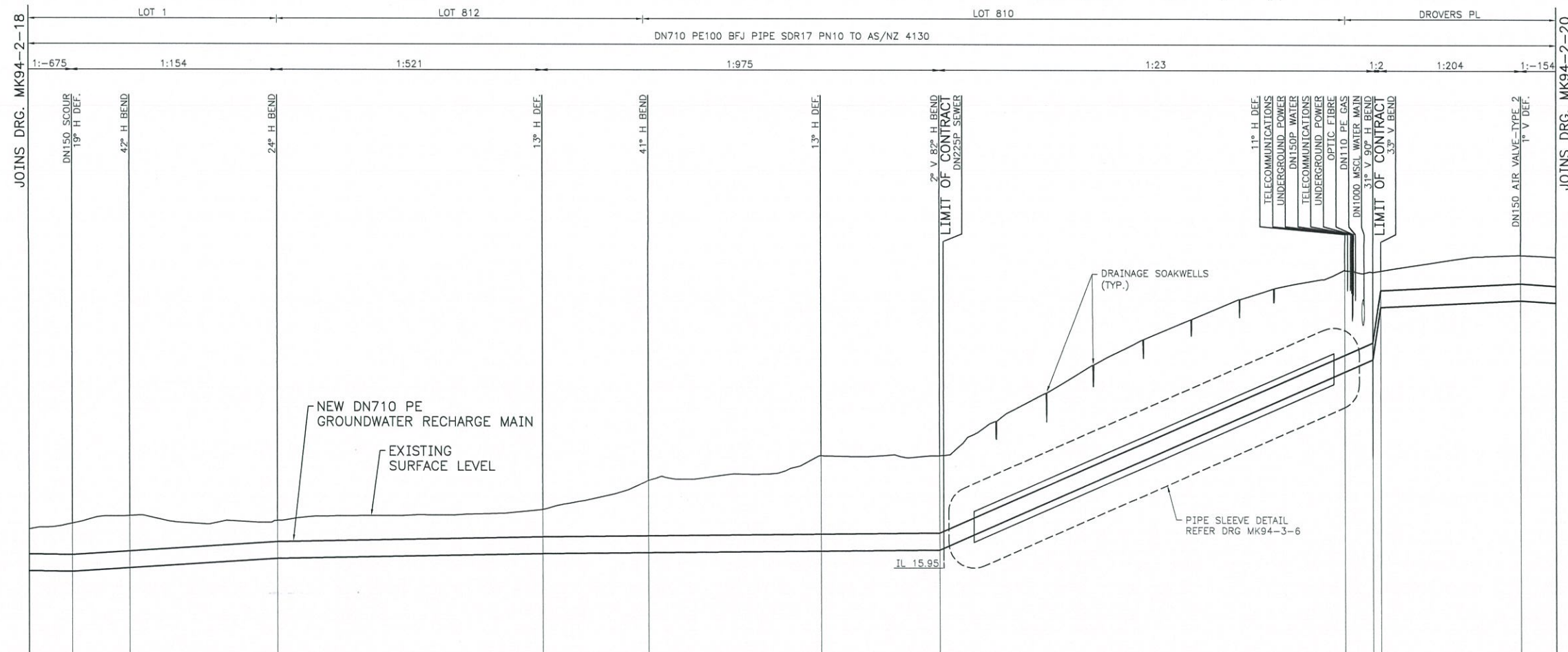
DESIGN SURVEY GHD 61-34889-V01	VERTICAL DATUM AHD COORDINATE SYS MGA94-SO	DES CALC G.EDWARDS DES CHD K.SINKO	NORTH POINT 	RECOMMENDED K. De 6/2/17 CONSULTANT PROJECT MANAGER		INTEGRATED WATER SUPPLY SCHEME IWSS AWRP BEENYUP - RECHARGE PIPELINES DN710 PE PIPELINE PLAN AND LONGITUDINAL SECTION - SHEET 1 OF 6	ORIGINAL SHEET SIZE A1
ASCON SURVEY NONE	DES REF GHD 61-34889	DRN E.WEBB Q.C. CHD G.EDWARDS	APPROVED 6/2/2017 CONSULTANT PROJECT DIRECTOR	PROJECT C-W03249		CAD A	ISSUE A

CLEARANCE TO WORKS
REQUIRED FROM WATER CORPORATION

CTW No.	SERVICE - LOCATION
CTW1	DN225 PVC SEWER - CROSSING
CTW2	DN150 PVC WATER - CROSSING
CTW3	DN1000 MSCL WATER - CROSSING

SETOUT POINTS

POINT	EASTING	NORTHING	COMMENTS
14	384597.026	6489889.801	19° H DEF.
15	384590.080	6489911.298	42° H BEND
16	384540.057	6489940.028	24° H BEND
17	384478.742	6490024.389	13° H DEF.
18	384462.442	6490062.673	41° H BEND
19	384401.559	6490092.502	13° H DEF.
20	384356.176	6490103.150	82° H BEND
21	384371.546	6490261.906	11° H DEF.
22	384370.467	6490272.950	90° H BEND

PLAN
SCALE 1:1000**WARNING**
UNDERGROUND AND OVERHEAD
HIGH/LOW VOLTAGE POWER
AND OPTIC FIBRE IN THE VICINITY

LEGEND

NEW GROUNDWATER RECHARGE MAIN	---
EXISTING WATER MAIN	---
EXISTING SEWER PRESSURE MAIN	---
EXISTING GRAVITY SEWER MAIN	---
EXISTING DRAIN	---
EXISTING GAS	---
EXISTING TELECOMMUNICATION CABLES	---
EXISTING OPTIC FIBRE	---
EXISTING LV UNDERGROUND POWER	---
EXISTING LV OVERHEAD POWER	---
EXISTING HV OVERHEAD POWER	---
EXISTING CONTOUR	---
EXISTING FENCE	---
EXISTING TREE	---
PIPELINE SET-OUT POINTS	---
PIPELINE CHAINAGE	---

GENERAL NOTES REFER DRG. MK94-1-2

NOTE: THE LOCATION OF UTILITIES HAS NOT
NECESSARILY BEEN ESTABLISHED BY SURVEY BUT IS
BASED ON INFORMATION AVAILABLE.

DATUM RL. 12.0

EXISTING SURFACE	17.46	17.68	17.99	17.80	18.25	19.38	20.35	20.35	27.65	27.56	27.61	28.23	28.16
DEPTH TO INVERT	1.64	1.89	2.05	1.49	1.74	2.83	3.73	3.68	3.99	3.42	1.41	1.77	1.79
PIPE INVERT LEVEL	1200.0	1217.0	1239.6	1297.3	1401.6	1443.2	1511.0	1557.6	1717.1	1728.2	1731.3	1786.2	1800.0
HORIZONTAL DISTANCE	1200.0	1217.0	1239.6	1297.3	1401.6	1443.2	1511.0	1557.6	1717.1	1728.2	1731.3	1786.2	1800.0

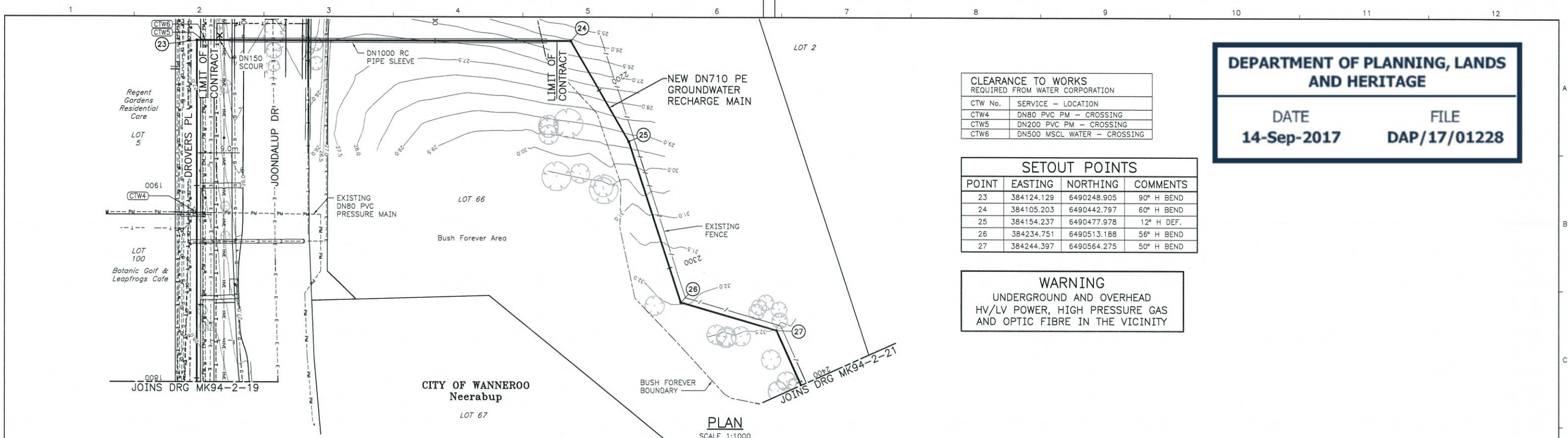
LONGITUDINAL SECTION

HORIZONTAL SCALE 1:1000 VERTICAL SCALE 1:100

10 5 0 10 20 30 40 50 60 70 m (1:1000)

10.0 1 2 3 4 5 6 7 m (1:100)

ISSUE	DATE	GRID	REVISION	DRN	REC	APPD	DESIGN SURVEY GHD 61-34889-V01	VERTICAL DATUM AHD COORDINATE SYS MGA94-50	DES CALC G.EDWARDS DES CHD K.SINKO	NORTH POINT	RECOMMENDED Kla De 6/2/17 CONSULTANT PROJECT MANAGER	APPROVED Runde 6/2/2017 CONSULTANT PROJECT DIRECTOR	INTEGRATED WATER SUPPLY SCHEME IWSS AWRP BEENYUP - RECHARGE PIPELINES DN710 PE PIPELINE PLAN AND LONGITUDINAL SECTION - SHEET 3 OF 6	FILE PROJECT C-W03249	PLAN MK94-2-19	CAD A	ISSUE A	ORIGINAL SHEET SIZE A1
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DEPARTMENT OF PLANNING, LANDS AND HERITAGE

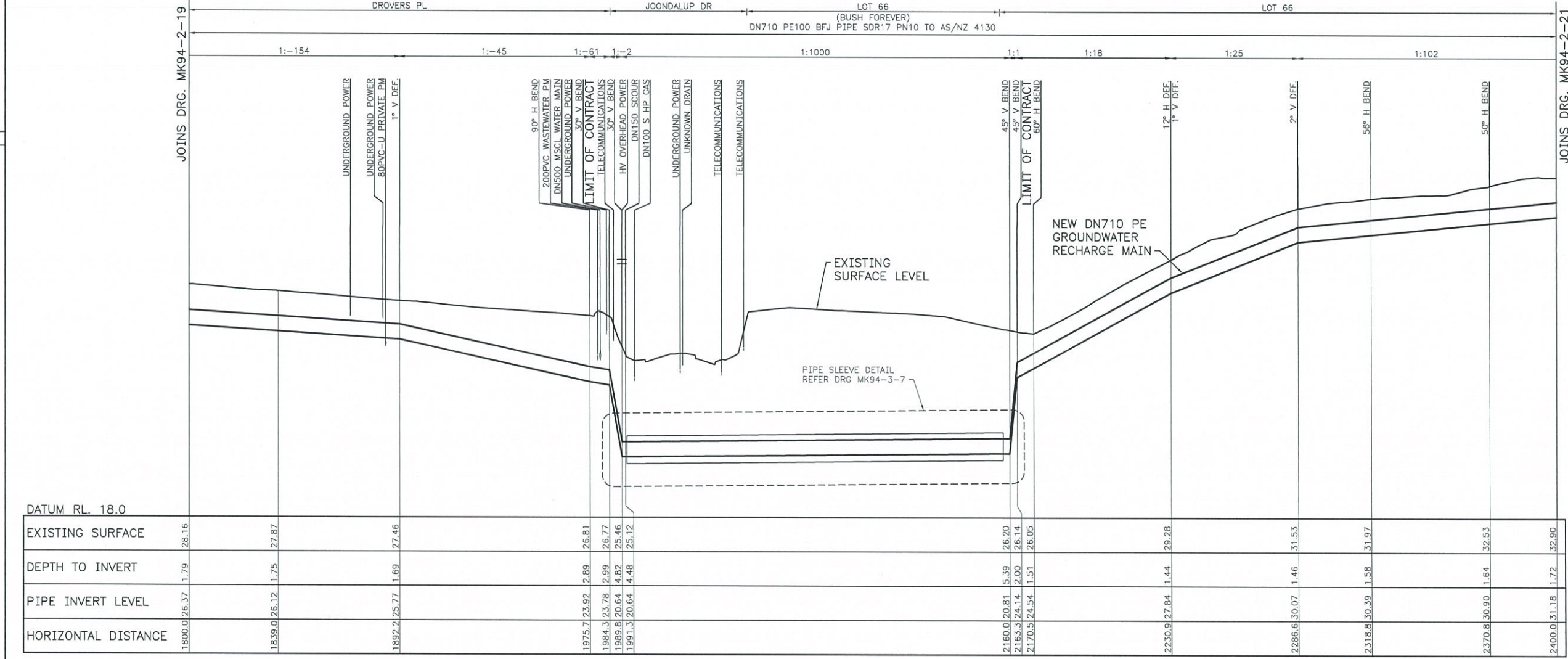
DATE14-Sep-2017FILEDAP/17/01228

CLEARANCE TO WORKS REQUIRED FROM WATER CORPORATION	
CTW No.	SERVICE - LOCATION
CTW4	DN80 PVC PM - CROSSING
CTW5	DN200 PVC PM - CROSSING
CTW6	DN500 MSCL WATER - CROSSING

SETOUT POINTS			
POINT	EASTING	NORTHING	COMMENTS
23	384124.129	6490248.905	90° H BEND
24	384105.203	6490442.797	60° H BEND
25	384154.237	6490477.978	12° H DEF.
26	384234.751	6490513.188	56° H BEND
27	384244.397	6490564.275	50° H BEND

WARNING
UNDERGROUND AND OVERHEAD
HV/LV POWER, HIGH PRESSURE GAS
AND OPTIC FIBRE IN THE VICINITY

PLAN
SCALE 1:1000



LEGEND

NEW GROUNDWATER RECHARGE MAIN

EXISTING WATER MAIN

EXISTING SEWER PRESSURE MAIN

EXISTING GRAVITY SEWER MAIN

EXISTING DRAIN

EXISTING GAS

EXISTING TELECOMMUNICATION CABLES

EXISTING OPTIC FIBRE

EXISTING LV UNDERGROUND POWER

EXISTING LV OVERHEAD POWER

EXISTING HV OVERHEAD POWER

EXISTING CONTOUR

EXISTING FENCE

EXISTING TREE

PIPELINE SET-OUT POINTS

PIPELINE CHAINAGE

1

1000

GENERAL NOTES REFER DRG. MK94-1-2

DIAL BEFORE
YOU DIG

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NOTE: THE LOCATION OF UTILITIES HAS NOT
NECESSARILY BEEN ESTABLISHED BY SURVEY BUT IS
BASED ON INFORMATION AVAILABLE.

DATUM RL. 18.0																																
EXISTING SURFACE	1800.0	26.37	1.79	28.16		27.87		27.46		26.81		26.77		26.46		25.12		26.20		26.14		26.05		29.28		31.53		31.97		32.53		32.90
DEPTH TO INVERT						1.75		1.69		2.89		2.99		4.82		4.48		5.39		2.00		1.51		1.44		1.46		1.58		1.64		1.72
PIPE INVERT LEVEL						26.12		25.77		23.92		23.78		20.64		20.64		20.81		24.14		24.54		27.84		30.07		30.39		30.90		31.18
HORIZONTAL DISTANCE	1800.0				1839.0			1892.2		1975.7		1984.3		1989.8		1991.3		2160.0		2163.3		2170.5		2230.9		2286.6		2318.8		2370.8		2400.0

LONGITUDINAL SECTION
HORIZONTAL SCALE 1:1000 VERTICAL SCALE 1:100

ISSUE DATE GRID REVISION DRN REC APPD

DESIGN SURVEY
GHD
61-34889_V01

VERTICAL DATUM
AHD
COORDINATE SYS
MGA94-50

DES CALC
G.EDWARDS
DES CHD
K.SINKO

DES REF
DRN
E.WEBB

Q.C. CHD
G.EDWARDS

NORTH POINT

GHD

Level 10, 999 Hay Street Perth WA 6000 Australia
T 61 8 6222 8222 F 61 8 6222 8555
E permail@ghd.com W www.ghd.com

RECOMMENDED
K. De 6/2/17
CONSULTANT PROJECT MANAGER

APPROVED
6/2/2017
CONSULTANT PROJECT DIRECTOR

WATER CORPORATION

INTEGRATED WATER SUPPLY SCHEME IWSS
AWRP BEENYUP - RECHARGE PIPELINES
DN710 PE PIPELINE
PLAN AND LONGITUDINAL SECTION - SHEET 4 OF 6

FILE
PROJECT C-W03249

PLAN
MK94-2-20

CAD
A

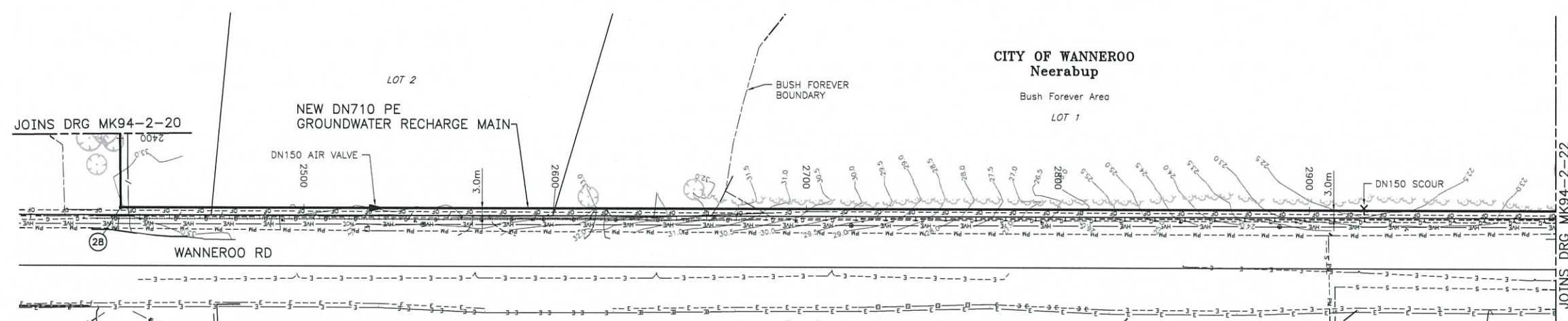
ISSUE
A

ORIGINAL
SHEET
SIZE
A1

810

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61\34889\CADD\DRAWINGS\MK94\MK94-002-020-01A 27/01/2017



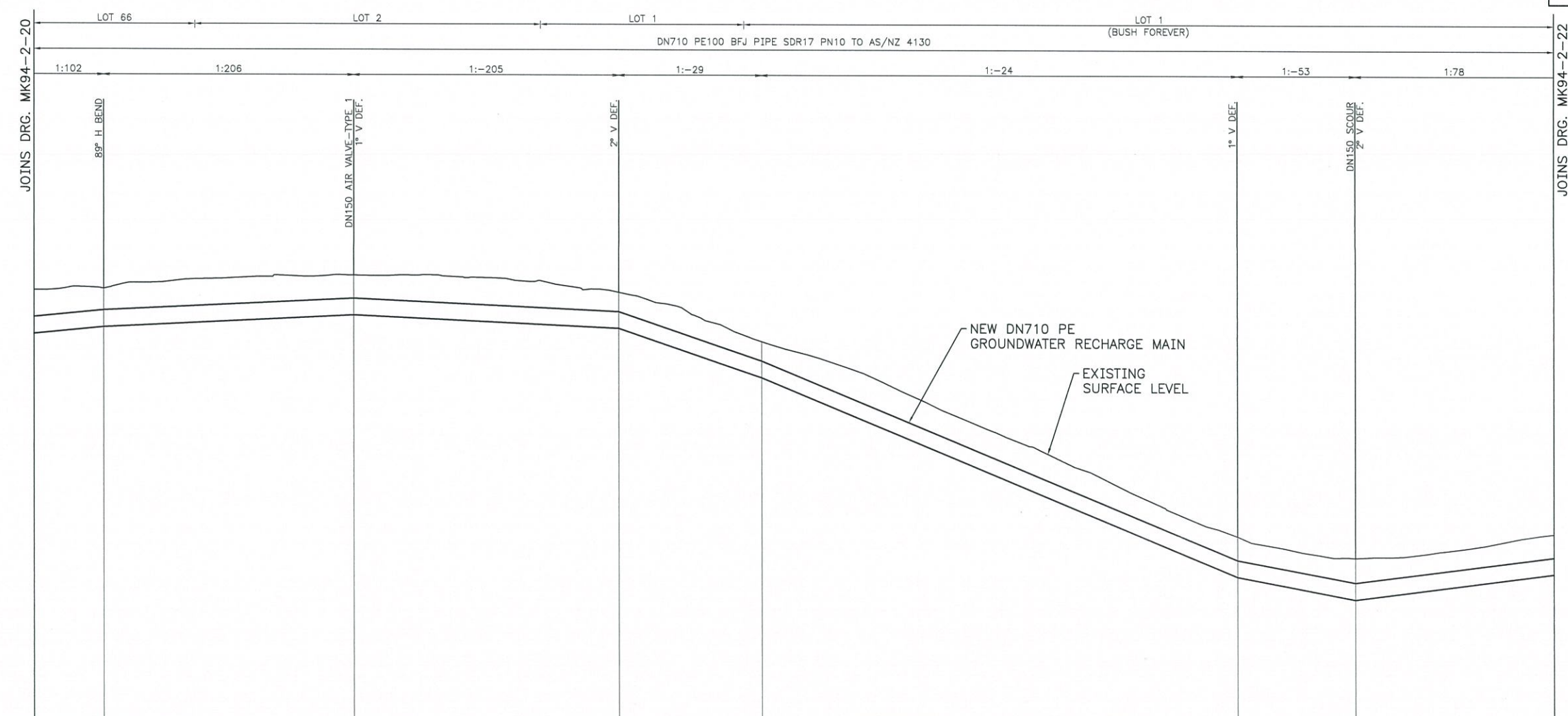
PLAN
SCALE 1:1000

WARNING
UNDERGROUND AND OVERHEAD
HV/LV POWER, HIGH PRESSURE GAS
AND OPTIC FIBRE IN THE VICINITY

**DEPARTMENT OF PLANNING, LANDS
AND HERITAGE**

DATE: 14-Sep-2017 FILE: DAP/17/01228

SETOUT POINTS			
POINT	EASTING	NORTHING	COMMENTS
28	384293.534	6490592.308	89° H BEND



LEGEND

- NEW GROUNDWATER RECHARGE MAIN
- EXISTING WATER MAIN
- EXISTING SEWER PRESSURE MAIN
- EXISTING GRAVITY SEWER MAIN
- EXISTING DRAIN
- EXISTING GAS
- EXISTING TELECOMMUNICATION CABLES
- EXISTING OPTIC FIBRE
- EXISTING LV UNDERGROUND POWER
- EXISTING LV OVERHEAD POWER
- EXISTING HV OVERHEAD POWER
- EXISTING CONTOUR
- EXISTING FENCE
- EXISTING TREE
- PIPELINE SET-OUT POINTS
- PIPELINE CHAINAGE

1:1000

GENERAL NOTES REFER DRG. MK94-1-2



NOTE: THE LOCATION OF UTILITIES HAS NOT
NECESSARILY BEEN ESTABLISHED BY SURVEY BUT IS
BASED ON INFORMATION AVAILABLE.

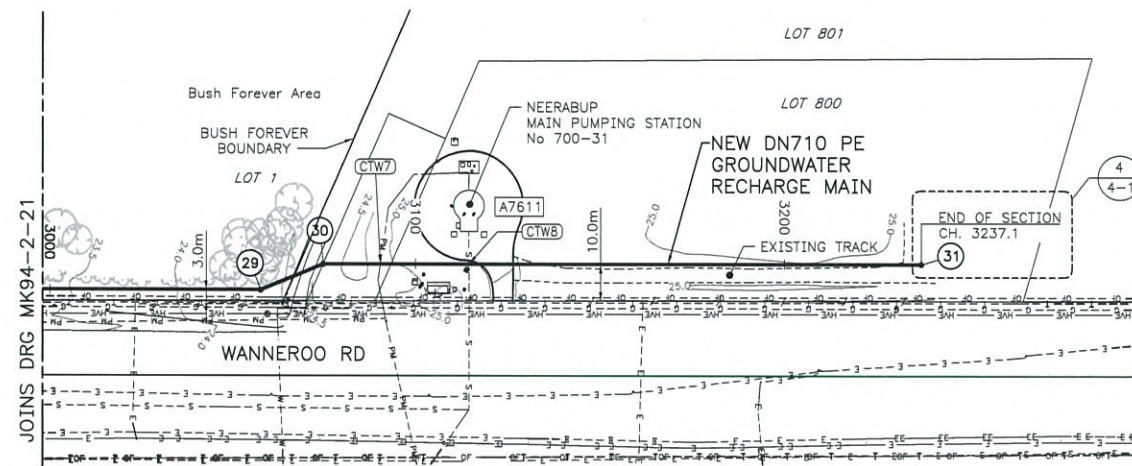
DATUM RL. 16.0			
EXISTING SURFACE	32.90	32.96	33.50
DEPTH TO INVERT	1.72	1.51	1.57
PIPE INVERT LEVEL	2400.0	31.18	31.45
HORIZONTAL DISTANCE	2427.3	2526.2	2630.7

LONGITUDINAL SECTION
HORIZONTAL SCALE 1:1000 VERTICAL SCALE 1:100

ISSUE	DATE	GRID	REVISION	DRN	REC	APPD	DESIGN SURVEY GHD 61-34889-V01	VERTICAL DATUM AHD COORDINATE SYS MGA94-50	DES CALC G.EDWARDS DES CHD K.SINKO	NORTH POINT	RECOMMENDED Ka Sh 6/2/17 CONSULTANT PROJECT MANAGER	APPROVED 6/2/2017 CONSULTANT PROJECT DIRECTOR	INTEGRATED WATER SUPPLY SCHEME IWSS AWRP BEENYUP - RECHARGE PIPELINES DN710 PE PIPELINE PLAN AND LONGITUDINAL SECTION - SHEET 5 OF 6	ORIGINAL SHEET SIZE A1	
566							ASCON SURVEY NONE	DES REF GHD 61-34889	DRN E.WEBB Q.C. CHD G.EDWARDS				FILE PROJECT C-W03249	CAD A	ISSUE A

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61\34889\CADD\DRAWINGS\MK94\MK94-002-021-01A 27/01/2017



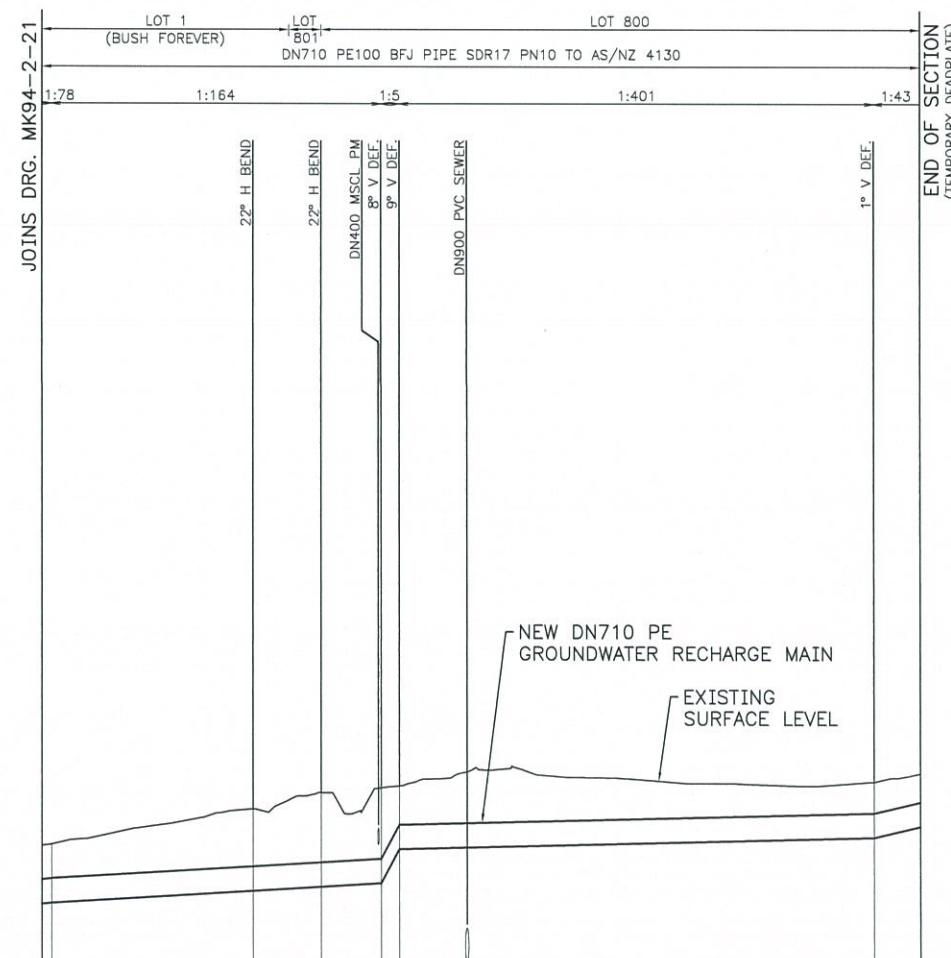
CLEARANCE TO WORKS REQUIRED FROM WATER CORPORATION	
CTW No.	SERVICE - LOCATION
CTW7	DN400 MSCL PM - CROSSING
CTW8	DN900 PVC SEWER - CROSSING

SETOUT POINTS			
POINT	EASTING	NORTHING	COMMENTS
29	383986.984	6491142.018	22° H BEND
30	383972.638	6491153.371	22° H BEND
31	383893.728	6491294.901	END OF SECTION

DEPARTMENT OF PLANNING, LANDS AND HERITAGE

DATE
14-Sep-2017

FILE
DAP/17/01228



DATUM RL. 18.0					
EXISTING SURFACE	23.39	23.43	24.38	24.63	25.12
DEPTH TO INVERT	1.58	1.58	2.20	2.53	1.49
PIPE INVERT LEVEL	21.82	21.85	22.18	22.29	23.63
HORIZONTAL DISTANCE	3000.0	3002.6	3056.7	3075.0	3224.5

LONGITUDINAL SECTION

HORIZONTAL SCALE 1:1000 VERTICAL SCALE 1:100

WARNING
UNDERGROUND AND OVERHEAD
HV/LV POWER, HIGH PRESSURE GAS
AND OPTIC FIBRE IN THE VICINITY

LEGEND

NEW GROUNDWATER RECHARGE MAIN	---
EXISTING WATER MAIN	---
EXISTING SEWER PRESSURE MAIN	---
EXISTING GRAVITY SEWER MAIN	---
EXISTING DRAIN	---
EXISTING GAS	---
EXISTING TELECOMMUNICATION CABLES	---
EXISTING OPTIC FIBRE	---
EXISTING LV UNDERGROUND POWER	---
EXISTING LV OVERHEAD POWER	---
EXISTING HV OVERHEAD POWER	---
EXISTING CONTOUR	---
EXISTING FENCE	---
EXISTING TREE	---
PIPELINE SET-OUT POINTS	---
PIPELINE CHAINAGE	---

GENERAL NOTES REFER DRG. MK94-1-2



NOTE: THE LOCATION OF UTILITIES HAS NOT
NECESSARILY BEEN ESTABLISHED BY SURVEY BUT IS
BASED ON INFORMATION AVAILABLE.

10 5 0 10 20 30 40 50 60 70 m (1:1000)

10 5 0 1 2 3 4 5 6 7 m (1:100)

506
810

ISSUE	DATE	GRID	REVISION	DRN	REC	APPD

DESIGN SURVEY GHD 61-34889_V01	VERTICAL DATUM AHD	DES CALC G.EDWARDS	NORTH POINT
COORDINATE SYS MGA94-50	DES REF GHD 61-34889	DES CHD K.SINKO	
ASCON SURVEY NONE		DRN E.WEBB	
		Q.C. CHD G.EDWARDS	

RECOMMENDED 6/2/17	
CONSULTANT PROJECT MANAGER	
APPROVED 6/2/2017	
CONSULTANT PROJECT DIRECTOR	

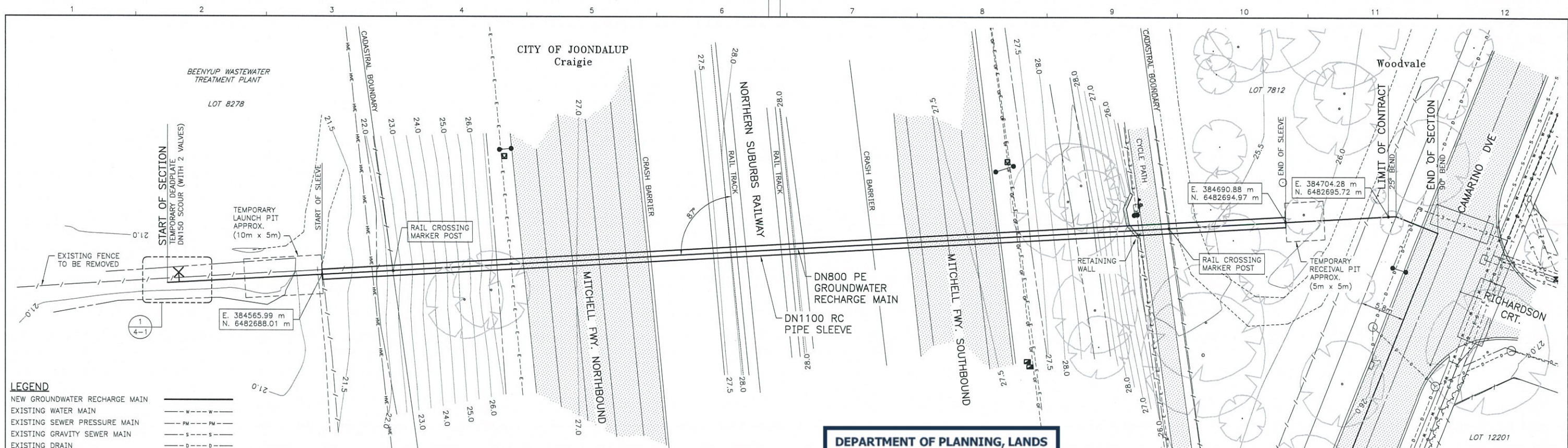
INTEGRATED WATER SUPPLY SCHEME IWSS AWRP BEENYUP - RECHARGE PIPELINES DN710 PE PIPELINE PLAN AND LONGITUDINAL SECTION - SHEET 6 OF 6	
FILE PROJECT C-W03249	
PLAN MK94-2-22	
CAD A	
ISSUE A	

ORIGINAL SHEET SIZE A1

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61\34889\CADD\DRAWINGS\MK94-002-022-01A 27/01/2017



- LEGEND**
- NEW GROUNDWATER RECHARGE MAIN
 - EXISTING WATER MAIN
 - EXISTING SEWER PRESSURE MAIN
 - EXISTING GRAVITY SEWER MAIN
 - EXISTING DRAIN
 - EXISTING GAS
 - EXISTING TELECOMMUNICATION CABLES
 - EXISTING OPTIC FIBRE
 - EXISTING LV UNDERGROUND POWER
 - EXISTING LV OVERHEAD POWER
 - EXISTING HV OVERHEAD POWER
 - EXISTING CONTOUR
 - EXISTING FENCE
 - EXISTING TREE

DESIGNED IN ACCORDANCE WITH A.S. 4799-2000 FIG. 4.1
SIGNED: SCOTT HENDERSON
(GHD PROJECT DIRECTOR)

PLAN
SCALE 1:250

DEPARTMENT OF PLANNING, LANDS
AND HERITAGE

DATE
14-Sep-2017

FILE
DAP/17/01228

WARNING
UNDERGROUND AND OVERHEAD
HIGH/LOW VOLTAGE POWER
AND OPTIC FIBRE IN THE VICINITY



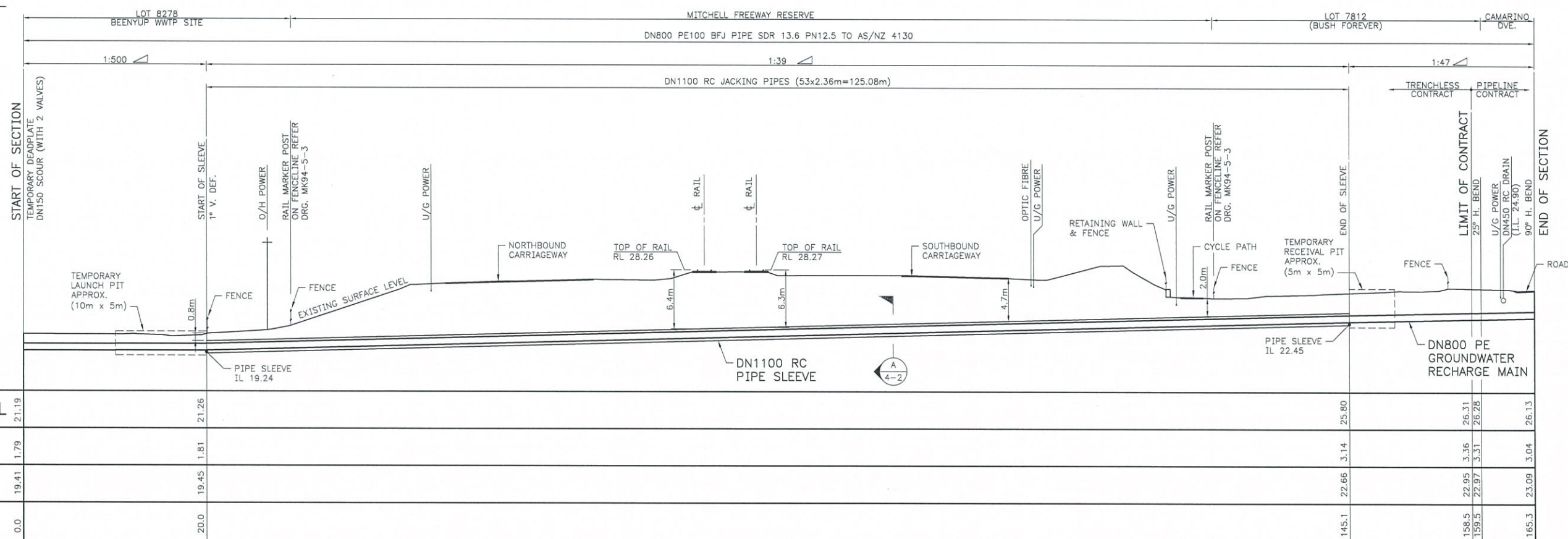
NOTE: THE LOCATION OF UTILITIES
HAS NOT NECESSARILY BEEN
ESTABLISHED BY SURVEY BUT IS
BASED ON INFORMATION AVAILABLE.

NOTES:

- FOR GENERAL PIPEWORK NOTES REFER
DRG. MK94-1-2.

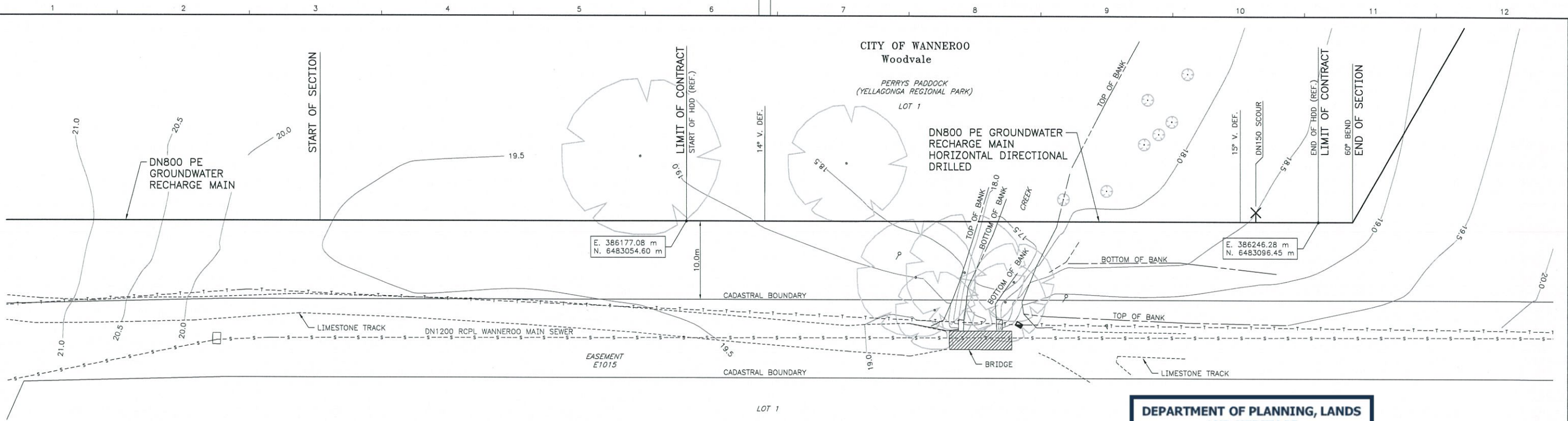
DATUM 15.0m ABOVE AHD

EXISTING SURFACE LEVEL	21.19
DEPTH TO INVERT	1.79
INVERT LEVEL	19.41
HORIZONTAL DISTANCE	0.0



LONGITUDINAL SECTION
SCALE 1:250

ISSUE	DATE	GRID	REVISION	DRN	REC	APPD	DESIGN SURVEY GHD 61-34889-V01	VERTICAL DATUM AHD COORDINATE SYS MGA94-50	DES CALC G.EDWARDS DES CHD K.SINKO	NORTH POINT	GHD Level 10, 999 Hay Street Perth WA 6000 Australia T 61 8 6222 8222 F 61 8 6222 8555 E permail@ghd.com.au W www.ghd.com.au	RECOMMENDED K. De CONSULTANT PROJECT MANAGER APPROVED CONSULTANT PROJECT DIRECTOR	WATER CORPORATION	INTEGRATED WATER SUPPLY SCHEME IWSS AWRP BEENYUP - RECHARGE PIPELINES DN800/DN710 PE PIPELINE MITCHELL FREEWAY - TRENCHLESS INSTALLATION	FILE PROJECT C-W03249	PLAN	CAD MK94-3-1	ISSUE A	ORIGINAL SHEET SIZE A1
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PLAN
SCALE 1:250

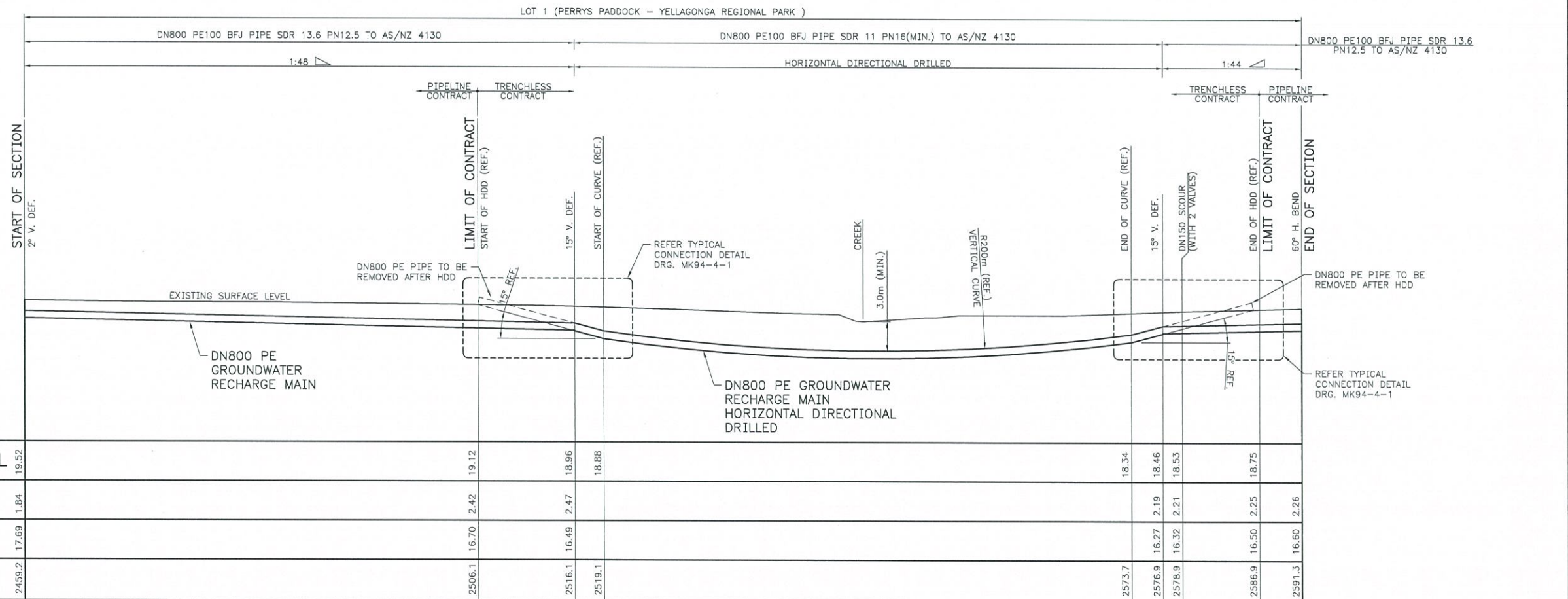
DEPARTMENT OF PLANNING, LANDS
AND HERITAGE
DATE 14-Sep-2017 FILE DAP/17/01228



NOTE: THE LOCATION OF UTILITIES HAS NOT NECESSARILY BEEN ESTABLISHED BY SURVEY BUT IS BASED ON INFORMATION AVAILABLE.

NOTES:

- FOR GENERAL PIPEWORK NOTES REFER DRG. MK94-1-2.
- FOR LEGEND REFER DRG. MK94-2-1



LONGITUDINAL SECTION
SCALE 1:250

DATUM 5.0m ABOVE AHD

EXISTING SURFACE LEVEL	19.52
DEPTH TO INVERT	1.84
INVERT LEVEL	17.69
HORIZONTAL DISTANCE	2459.2



WARNING
UNDERGROUND AND OVERHEAD
HIGH/LOW VOLTAGE POWER
IN THE VICINITY



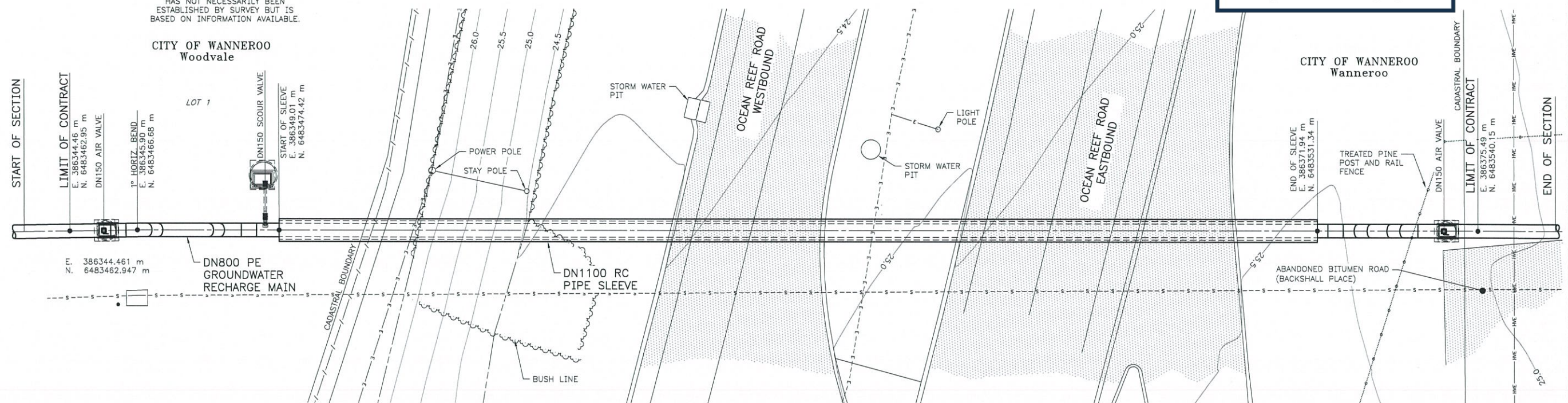
NOTE: THE LOCATION OF UTILITIES
HAS NOT NECESSARILY BEEN
ESTABLISHED BY SURVEY BUT IS
BASED ON INFORMATION AVAILABLE.

CITY OF WANNEROO
Woodvale

DEPARTMENT OF PLANNING, LANDS
AND HERITAGE

DATE
14-Sep-2017

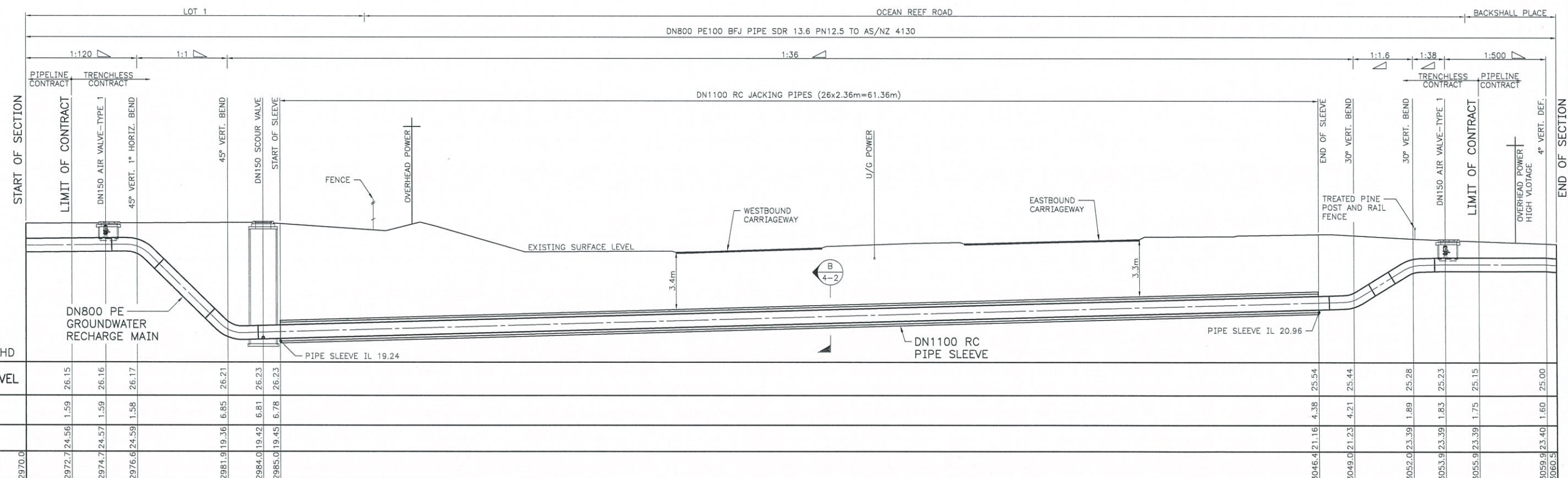
FILE
DAP/17/01228



PLAN
SCALE 1:125

NOTES:

1. FOR GENERAL PIPEWORK NOTES REFER
DRG. MK94-1-2.
2. FOR LEGEND REFER DRG. MK94-2-1

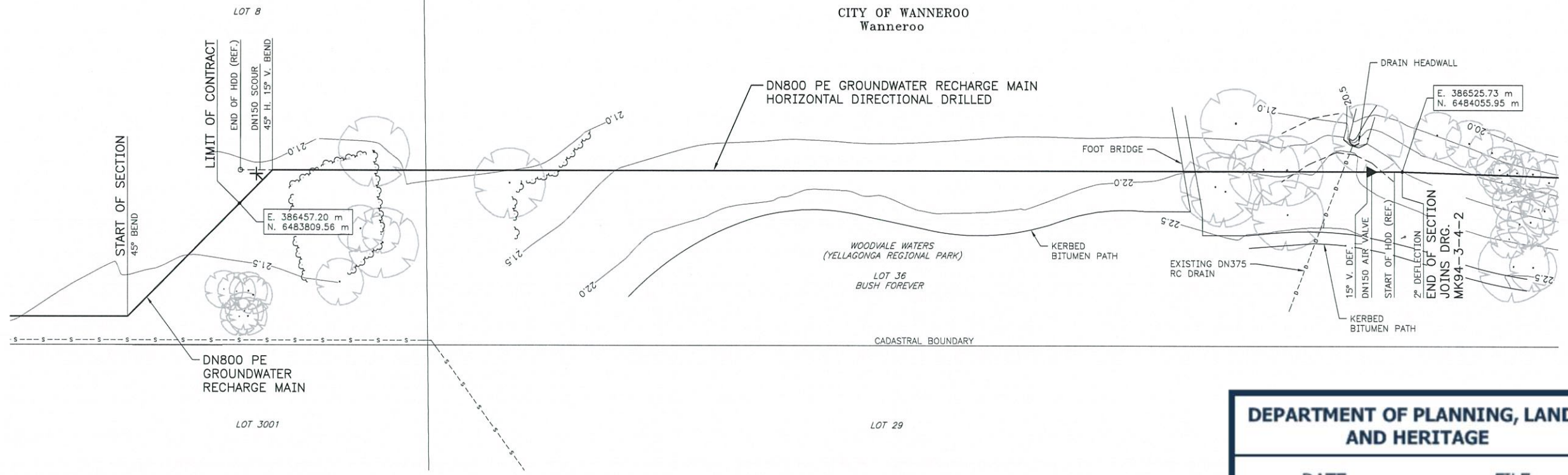


LONGITUDINAL SECTION
SCALE 1:125

DATUM 18.0m ABOVE AHD

EXISTING SURFACE LEVEL	26.15	26.16	26.17	26.21	26.23	26.23	25.54	25.44	25.28	25.23	25.15	25.00
DEPTH TO INVERT	1.59	1.59	1.58	6.85	6.81	6.78	4.38	4.21	1.89	1.83	1.75	1.60
INVERT LEVEL	2972.7	2974.7	2976.6	2981.9	2984.0	2985.0	3046.4	3049.0	3052.0	3053.9	3055.9	3059.9
HORIZONTAL DISTANCE	2970.0	2972.7	2974.7	2976.6	2981.9	2984.0	3046.4	3049.0	3052.0	3053.9	3055.9	3059.9

DESIGN SURVEY GHD 61-34889-V01	VERTICAL DATUM AHD COORDINATE SYS MGA94-50	DES CALC G.EDWARDS DES CHD K.SINKO	NORTH POINT 	RECOMMENDED <i>Kaw De</i> 6/2/17 CONSULTANT PROJECT MANAGER	 Level 10, 900 Hay Street Perth WA 6000 Australia T 61 8 6222 8222 F 61 8 6222 8555 E permail@ghd.com.au W www.ghd.com.au		INTEGRATED WATER SUPPLY SCHEME IWSS AWRP BEENYUP - RECHARGE PIPELINES DN800/DN710 PE PIPELINE OCEAN REEF ROAD - TRENCHLESS INSTALLATION	ORIGINAL SHEET SIZE A1
ASCON SURVEY NONE	DES REF GHD 61-34889	DRN J.THOMPSON Q.C. CHD G.EDWARDS	APPROVED <i>Khudr</i> 6/2/2017 CONSULTANT PROJECT DIRECTOR	FILE PROJECT C-W03249			PLAN MK94-3-3	CAD A



PLAN
SCALE 1:500

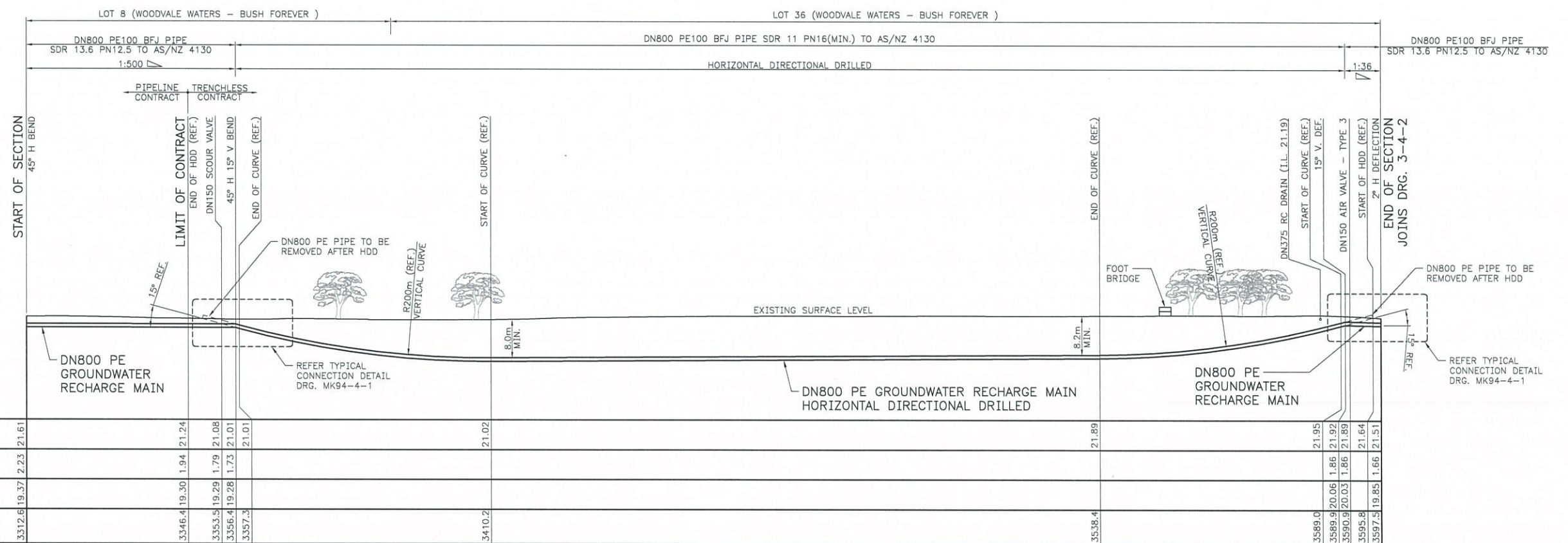
DEPARTMENT OF PLANNING, LANDS AND HERITAGE

DATE **14-Sep-2017** FILE **DAP/17/01228**

DIAL BEFORE YOU DIG
www.1100.com.au

NOTE: THE LOCATION OF UTILITIES HAS NOT NECESSARILY BEEN ESTABLISHED BY SURVEY BUT IS BASED ON INFORMATION AVAILABLE.

- NOTES:
- FOR GENERAL PIPEWORK NOTES REFER DRG. MK94-1-2.
 - FOR LEGEND REFER DRG. MK94-2-1



LONGITUDINAL SECTION
SCALE 1:500

DATUM 0.0m A.H.D.

EXISTING SURFACE LEVEL	3312.6	19.37	2.23	21.61
DEPTH TO INVERT				
INVERT LEVEL				
HORIZONTAL DISTANCE	3312.6	19.37	2.23	21.61

0 5 10 15 20 25 30 35 m (1:500)

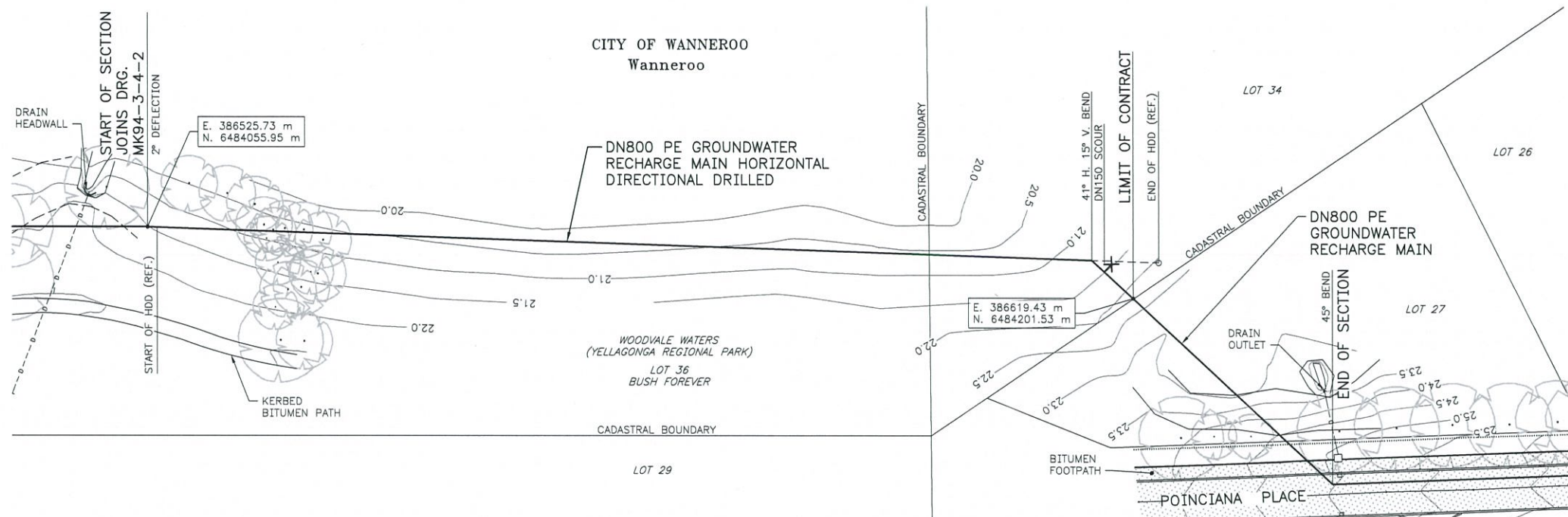
DESIGN SURVEY GHD 61-34889-V01	VERTICAL DATUM AHD COORDINATE SYS MGA94-50	DES CALC G.EDWARDS DES CHD K.SINKO	NORTH POINT	RECOMMENDED 6/2/17		INTEGRATED WATER SUPPLY SCHEME IWSS AWRP BEENYUP - RECHARGE PIPELINES DN800/DN710 PE PIPELINE - WOODVALE WATERS (YELLAGONA REGIONAL PARK) TRENCHLESS INSTALLATION - SHEET 1	ORIGINAL SHEET SIZE A1
ASCON SURVEY NONE	DES REF GHD 61-34889	DRN J.THOMPSON Q.C. CHD G.EDWARDS	<p>Level 10, 899 Hay Street Perth WA 6000 Australia T 61 8 6222 8222 F 61 8 6222 8555 E permail@ghd.com.au W www.ghd.com.au</p>	CONSULTANT PROJECT MANAGER APPROVED CONSULTANT PROJECT DIRECTOR			FILE PROJECT C-W03249

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810 03/02/2017

DEPARTMENT OF PLANNING, LANDS
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DATE 14-Sep-2017 FILE DAP/17/01228



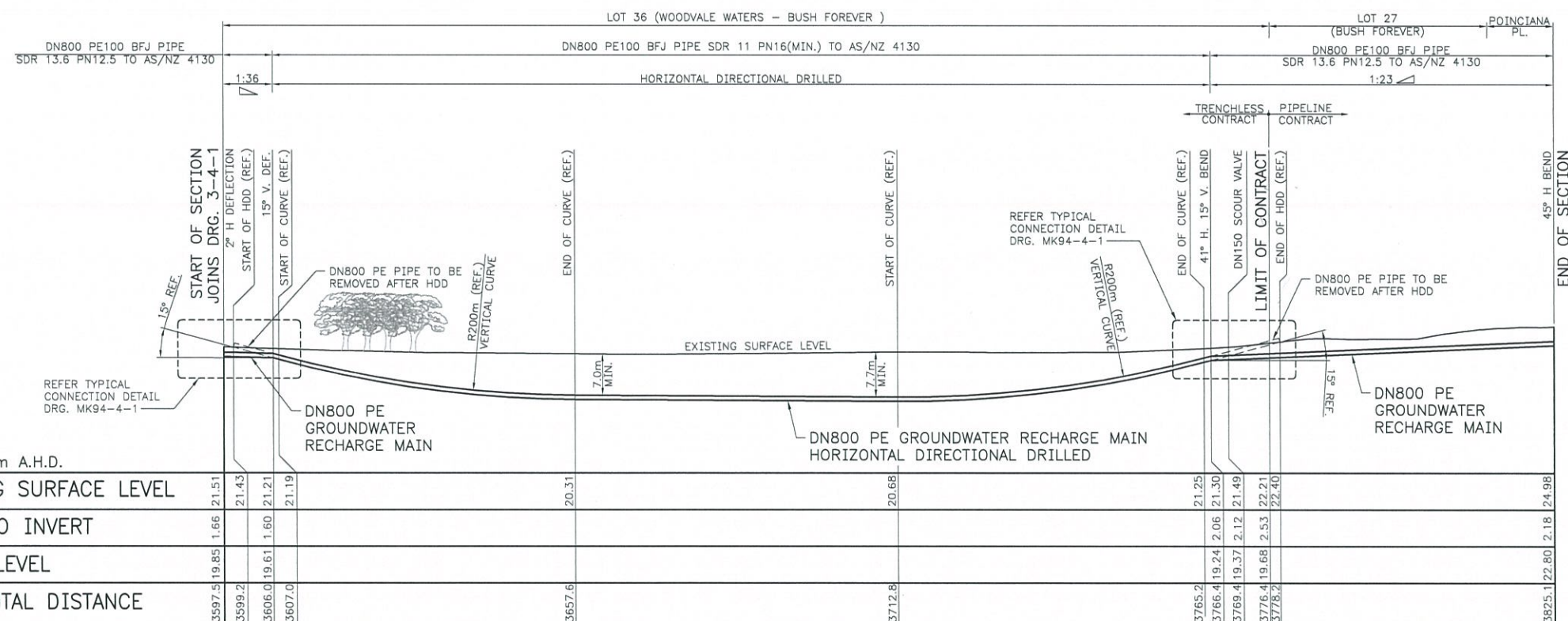
PLAN
SCALE 1:500



NOTE: THE LOCATION OF UTILITIES
HAS NOT NECESSARILY BEEN
ESTABLISHED BY SURVEY BUT IS
BASED ON INFORMATION AVAILABLE.

NOTES:

1. FOR GENERAL PIPEWORK NOTES REFER
DRG. MK94-1-2.
2. FOR LEGEND REFER DRG. MK94-2-1



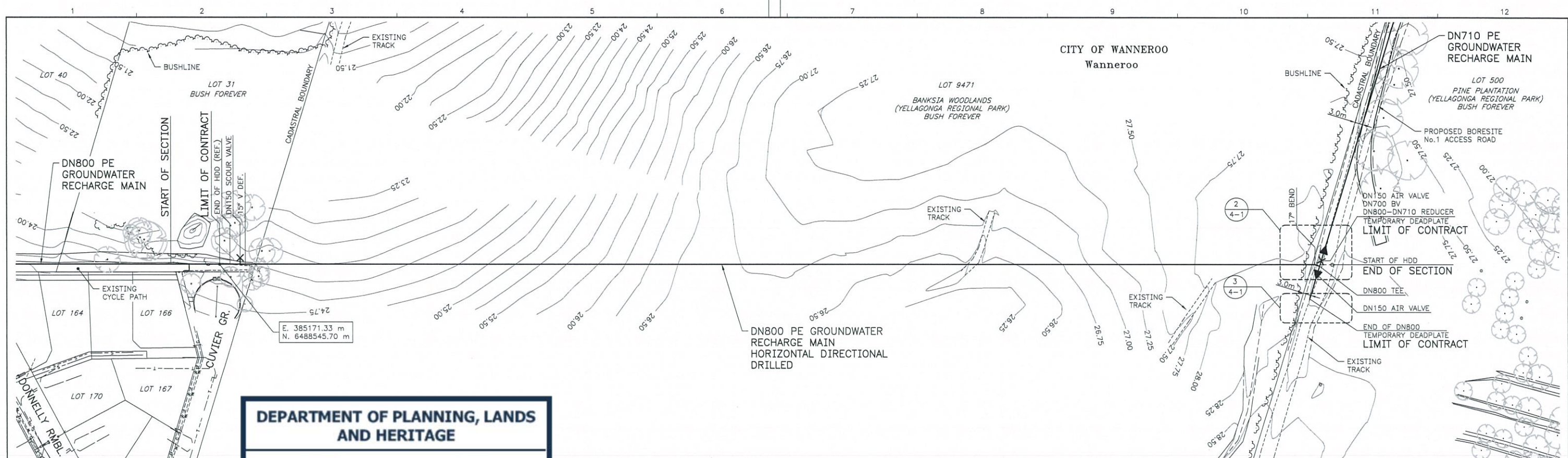
LONGITUDINAL SECTION
SCALE 1:500

5 0 5 10 15 20 25 30 35 m (1:500)

DESIGN SURVEY GHD 61-34889-V01	VERTICAL DATUM AHD COORDINATE SYS MGA94-50	DES. CALC. G. EDWARDS DES. CHD K. SINKO	NORTH POINT	RECOMMENDED 6/2/17 CONSULTANT PROJECT MANAGER		INTEGRATED WATER SUPPLY SCHEME IWSS AWRP BEENYUP - RECHARGE PIPELINES DN800/DN710 PE PIPELINE - WOODVALE WATERS (YELLAGONA REGIONAL PARK) TRENCHLESS INSTALLATION - SHEET 2	ORIGINAL SHEET SIZE A1
ASCON SURVEY NONE	DES. REF GHD 61-34889	DRN J. THOMPSON Q.C. CHD G. EDWARDS		APPROVED 6/2/2017 CONSULTANT PROJECT DIRECTOR		FILE PROJECT C-W03249	CAD MK94-3-4-2 ISSUE A

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61\34889\CADD\DRAWINGS\MK94\MK94-003-004-02A 03/02/2017



DEPARTMENT OF PLANNING, LANDS
AND HERITAGE

DATE 14-Sep-2017 FILE DAP/17/01228

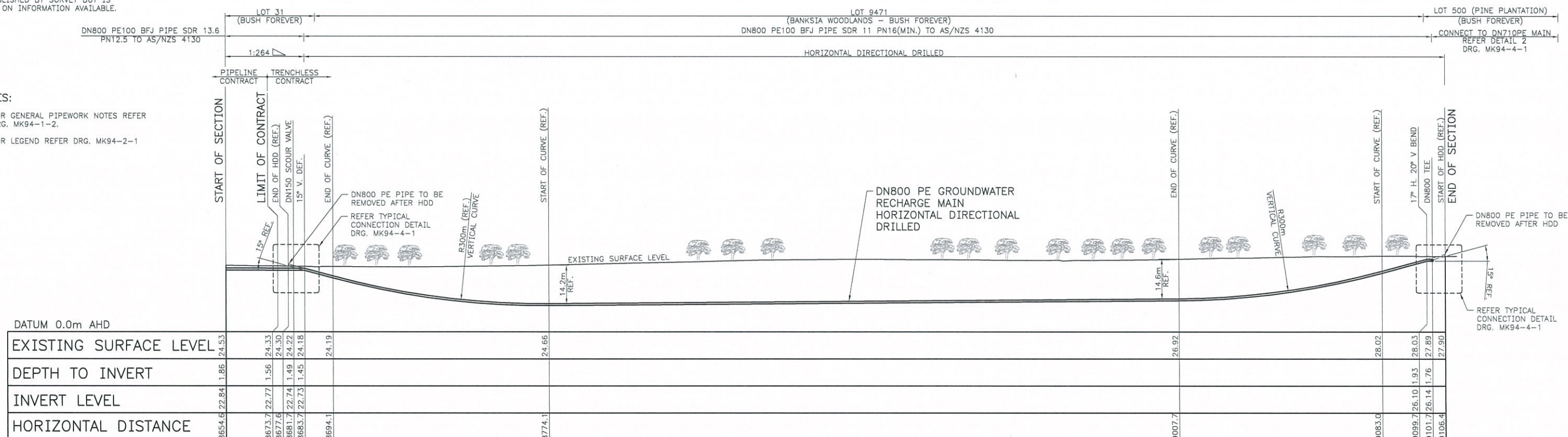
PLAN
SCALE 1:750



NOTE: THE LOCATION OF UTILITIES
HAS NOT NECESSARILY BEEN
ESTABLISHED BY SURVEY BUT IS
BASED ON INFORMATION AVAILABLE.

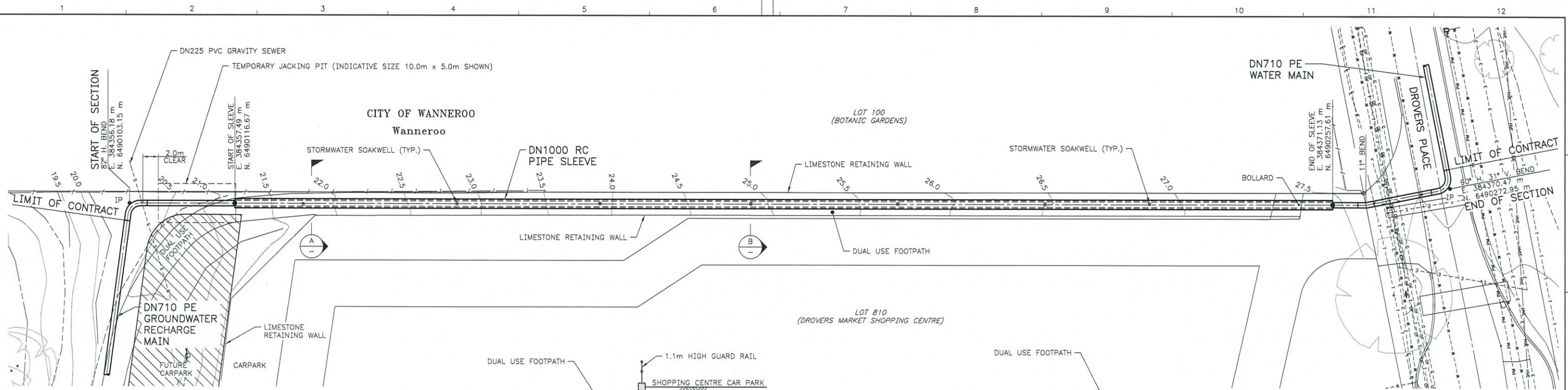
NOTES:

1. FOR GENERAL PIPEWORK NOTES REFER
DRG. MK94-1-2.
2. FOR LEGEND REFER DRG. MK94-2-1



LONGITUDINAL SECTION
SCALE 1:750

ISSUE	DATE	GRID	REVISION	DRN	REC	APPD	DESIGN SURVEY GHD 61-34889-VO	VERTICAL DATUM AHD COORDINATE SYS MGA94-50	DES CALC G.EDWARDS DES CHD K.SINKO	NORTH POINT	GHD Level 10, 900 Hay Street Perth WA 6000 Australia T 61 8 6222 8222 F 61 8 6222 8555 E permail@ghd.com.au W www.ghd.com.au	RECOMMENDED K. De 6/12/17 CONSULTANT PROJECT MANAGER	APPROVED M. De 6/12/17 CONSULTANT PROJECT DIRECTOR	WATER CORPORATION	INTEGRATED WATER SUPPLY SCHEME IWSS AWRP BEENYUP - RECHARGE PIPELINES DN800/DN710 PE PIPELINE - BANKSIA WOODLANDS (YELLAGONGA REGIONAL PARK) - TRENCHLESS INSTALLATION	ORIGINAL SHEET SIZE A1
FILE	PLAN	CAD	ISSUE													
PROJECT C-W03249			A													



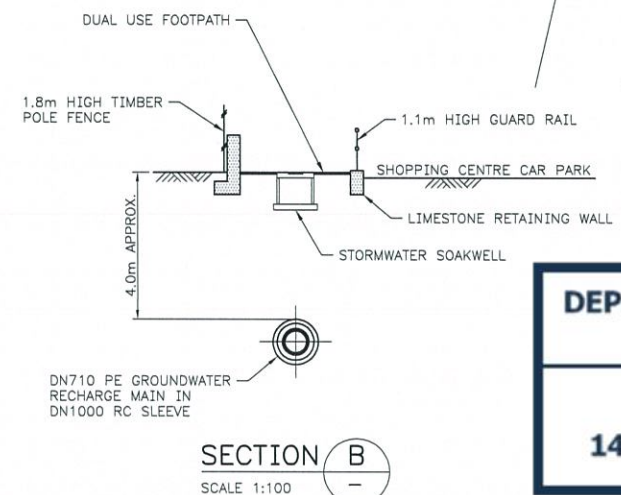
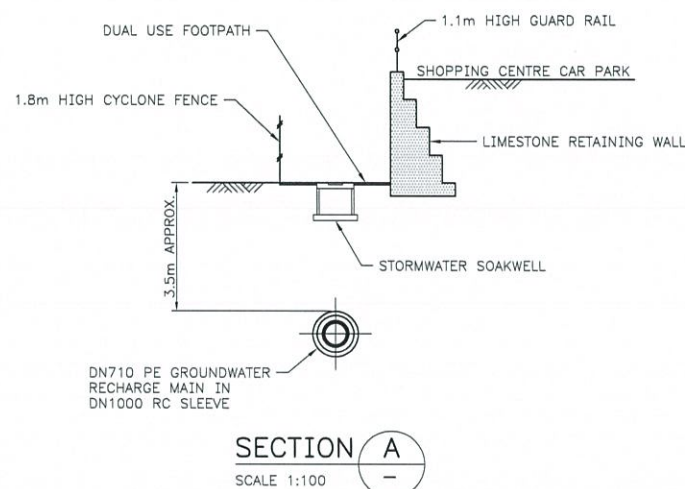
WARNING
UNDERGROUND AND OVERHEAD
HIGH/LOW VOLTAGE POWER
AND OPTIC FIBRE IN THE VICINITY



NOTE: THE LOCATION OF UTILITIES
HAS NOT NECESSARILY BEEN
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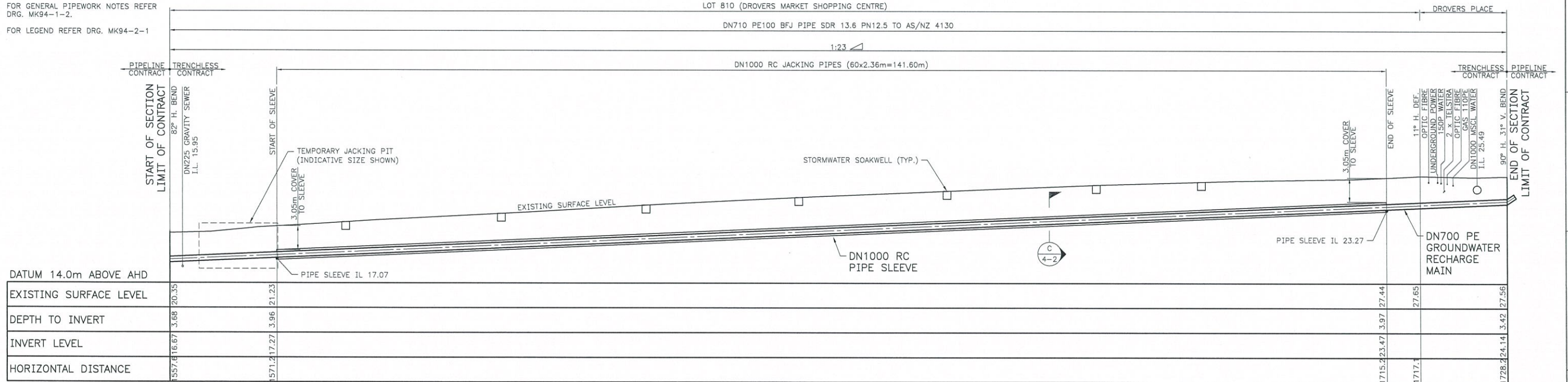
NOTES:

1. FOR GENERAL PIPEWORK NOTES REFER
DRG. MK94-1-2.
2. FOR LEGEND REFER DRG. MK94-2-1



**DEPARTMENT OF PLANNING, LANDS
AND HERITAGE**

DATE **14-Sep-2017** FILE **DAP/17/01228**



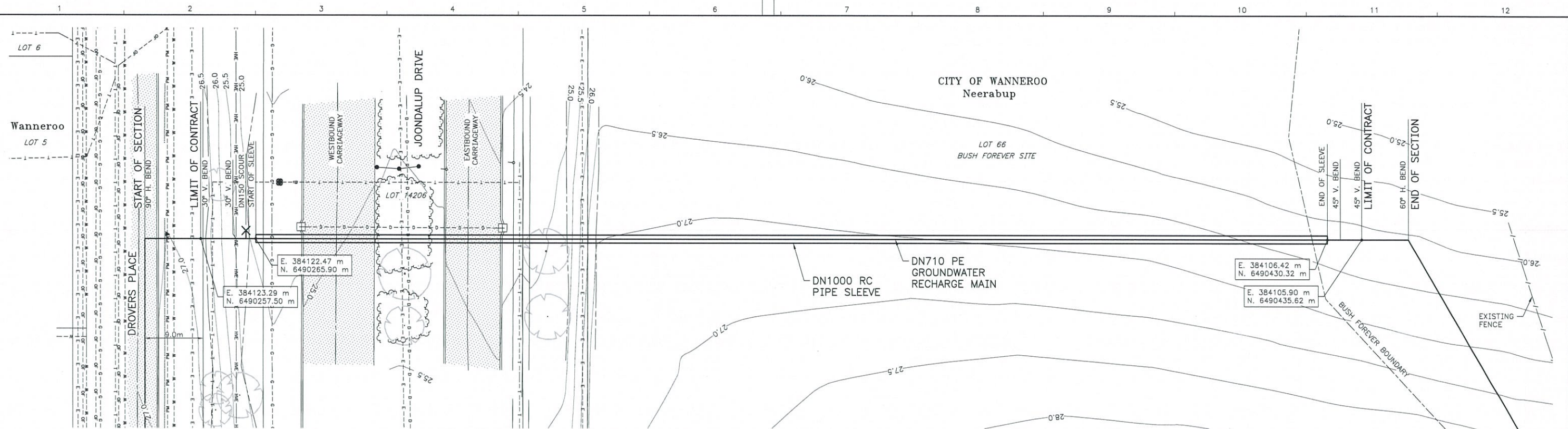
DATUM 14.0m ABOVE AHD

	1557.616.67	1571.217.27	1715.223.47	1717.1	1728.324.14
EXISTING SURFACE LEVEL	20.35	21.23	27.44	27.65	27.56
DEPTH TO INVERT	3.68	3.96	3.97	3.42	3.42
INVERT LEVEL	16.67	17.27	23.47	24.23	24.14
HORIZONTAL DISTANCE	1557.616.67	1571.217.27	1715.223.47	1717.1	1728.324.14

LONGITUDINAL SECTION
SCALE 1:250

DESIGN SURVEY GHD 61-34889-V01 ASCON SURVEY NONE	VERTICAL DATUM AHD COORDINATE SYS MG94-50 DES REF GHD 61-34889	DES CALC G.EDWARDS DES CHD K.SINKO DRN J.THOMPSON Q.C. CHD G.EDWARDS	NORTH POINT 	Level 10, 999 Hay Street Perth WA 6000 Australia T 61 8 6222 8222 F 61 8 6222 8555 E permail@ghd.com.au W www.ghd.com.au	RECOMMENDED 6/2/17 CONSULTANT PROJECT MANAGER APPROVED 6/2/2017 CONSULTANT PROJECT DIRECTOR		INTEGRATED WATER SUPPLY SCHEME IWSS AWRP BEENYUP - RECHARGE PIPELINES DN800/DN710 PE PIPELINE DROVERS PLACE - TRENCHLESS INSTALLATION FILE PROJECT C-W03249	ORIGINAL SHEET SIZE A1
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61\34889\CADD\DRAWINGS\MK94\MK94-003-006-01A 03/02/2017



PLAN
SCALE 1:300

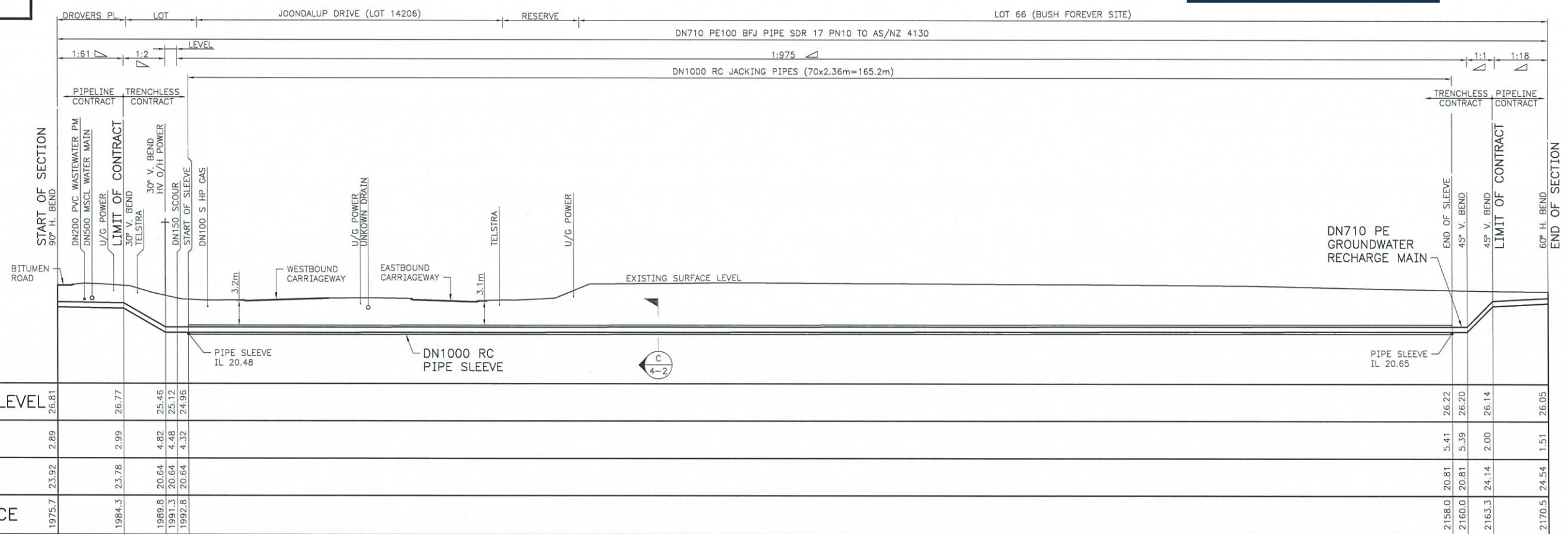
DEPARTMENT OF PLANNING, LANDS
AND HERITAGE
DATE 14-Sep-2017 FILE DAP/17/01228

WARNING
UNDERGROUND AND OVERHEAD
HIGH/LOW VOLTAGE POWER, HIGH
PRESSURE GAS AND OPTIC FIBRE
IN THE VICINITY



NOTE: THE LOCATION OF UTILITIES
HAS NOT NECESSARILY BEEN
ESTABLISHED BY SURVEY BUT IS
BASED ON INFORMATION AVAILABLE.

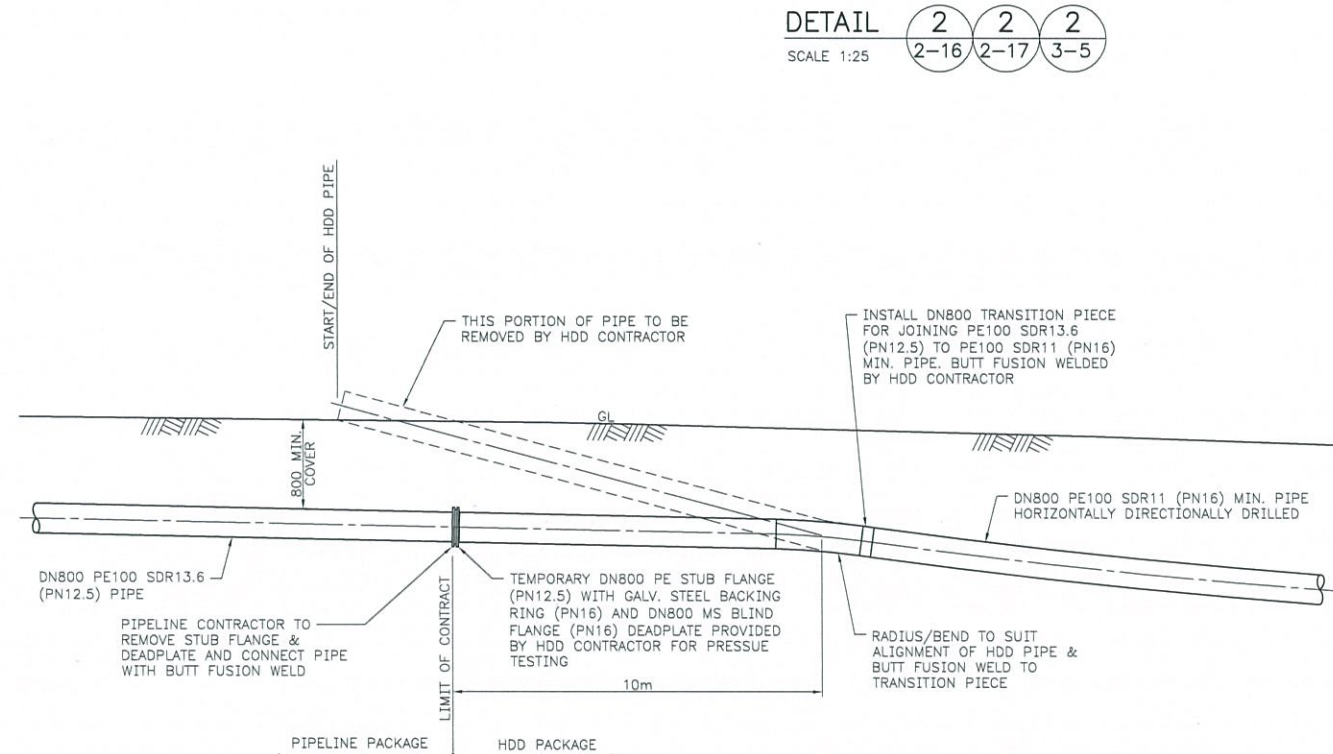
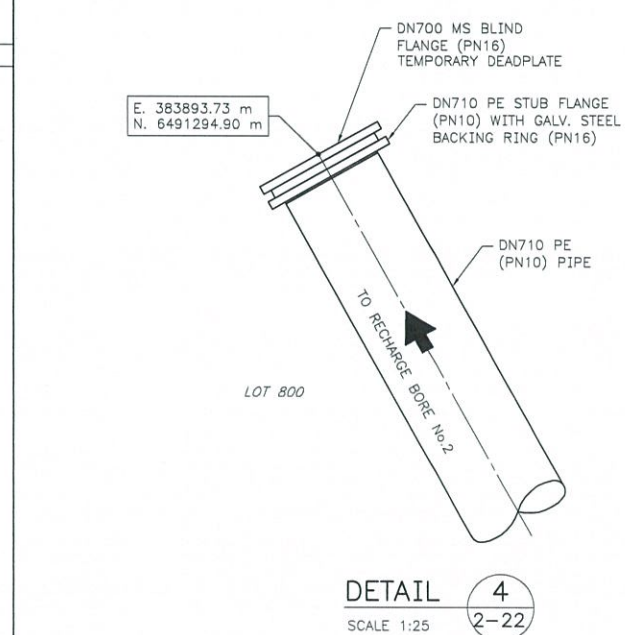
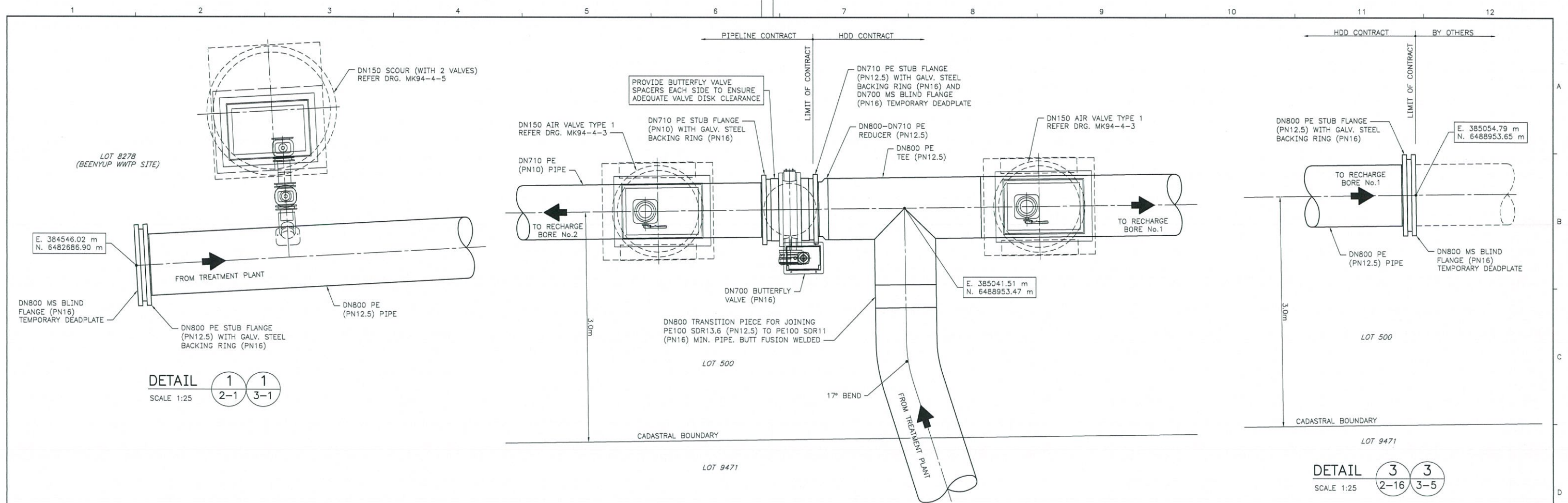
- NOTES:
- FOR GENERAL PIPEWORK NOTES REFER
DRG. MK94-1-2.
 - FOR LEGEND REFER DRG. MK94-2-1



LONGITUDINAL SECTION
SCALE 1:300

DATUM 14.0m ABOVE AHD

EXISTING SURFACE LEVEL	26.81	26.77	25.46	25.12	24.96	26.22	26.20	26.14	26.05
DEPTH TO INVERT	2.89	2.99	4.82	4.48	4.32	5.41	5.39	2.00	1.51
INVERT LEVEL	23.92	23.78	20.64	20.64	20.64	20.81	20.81	24.14	24.54
HORIZONTAL DISTANCE	1975.7	1984.3	1989.8	1991.3	1992.8	2158.0	2160.0	2163.3	2170.5



TYPICAL CONNECTION TO HDD PIPE DETAIL
SCALE 1:100

DEPARTMENT OF PLANNING, LANDS
AND HERITAGE

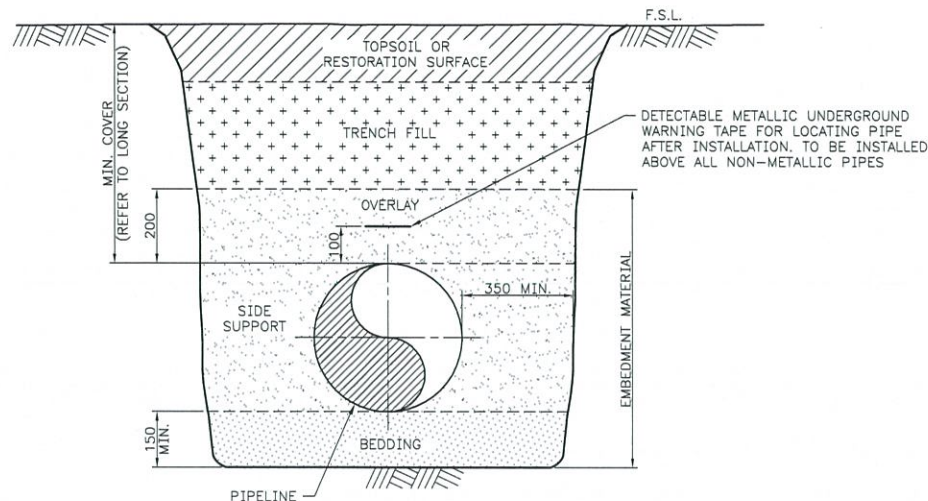
DATE
14-Sep-2017

FILE
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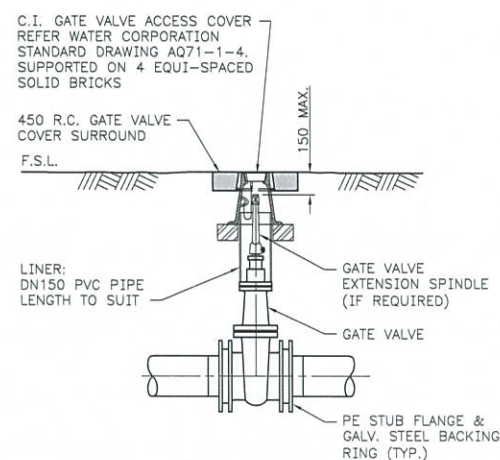
NOTES:
1. FOR GENERAL PIPEWORK NOTES REFER DRG. MK94-1-2.

10.5 0 1 2 3 4 5 6 7 m (1:100)
500 0 500 1000 1500 mm (1:25)

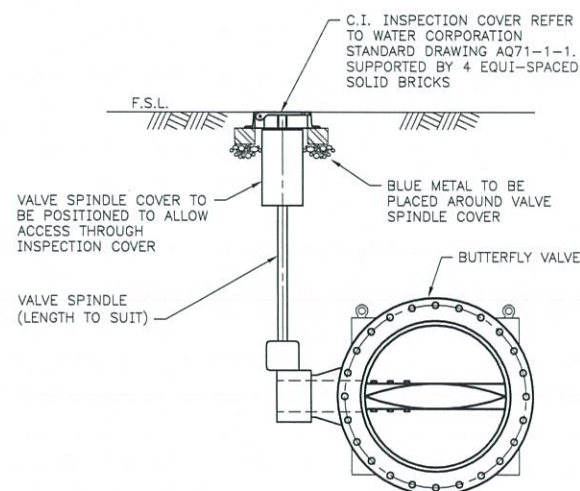
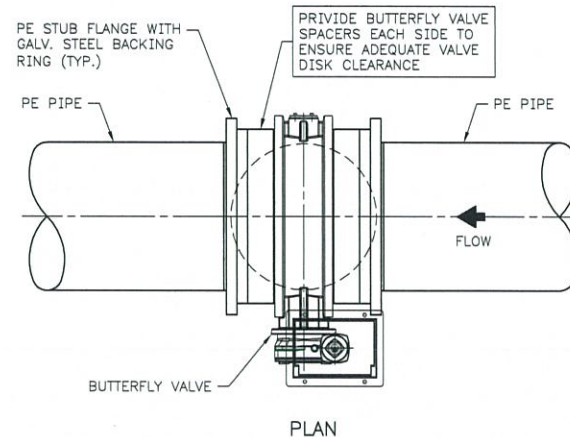
ISSUE	DATE	GRID	REVISION	DRN	REC	APPD	DESIGN SURVEY NONE	VERTICAL DATUM NONE	DES CALC G.EDWARDS	NORTH POINT	RECOMMENDED 7/12/17	INTEGRATED WATER SUPPLY SCHEME IWSS AWRP BEENYUP - RECHARGE PIPELINES DN800/DN710 PE PIPELINE CONNECTION DETAILS	ORIGINAL SHEET SIZE A1
							ASCON SURVEY NONE	COORDINATE SYS MGA94-50	DES REF GHD 61-34889	DRN G.EDWARDS Q.C. CHD J.THOMPSON	CONSULTANT PROJECT MANAGER 6/12/2017	FILE PROJECT C-W03249	
											CONSULTANT PROJECT DIRECTOR	PLAN MK94-4-1	
												CAD A	
												ISSUE A	
												MF	



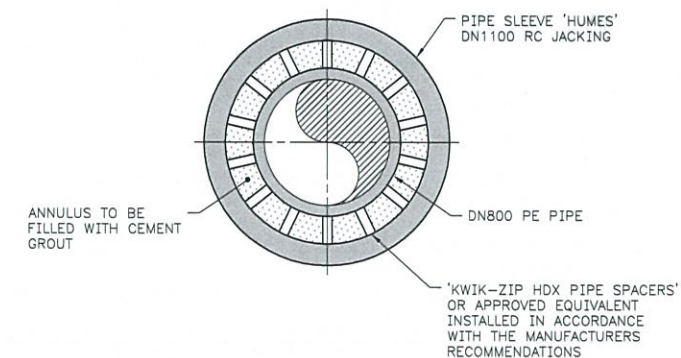
TYPICAL PIPE TRENCH DETAIL
(MATERIAL AS PER WATER CORPORATION DRG. EG20-1-1 AND EG20-1-2)
SCALE: DIAGRAMMATIC



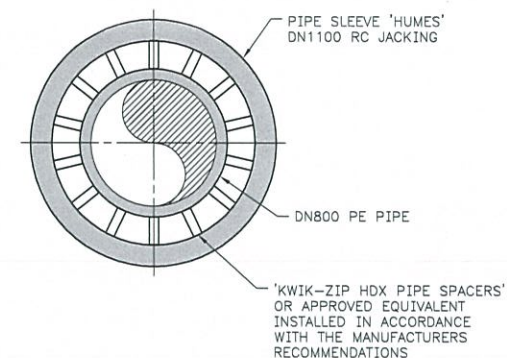
BURIED GATE VALVE INSTALLATION DETAIL
SCALE: DIAGRAMMATIC
NOTE: ALL VALVES TO BE INSTALLED WITH SPINDLES SET VERTICAL



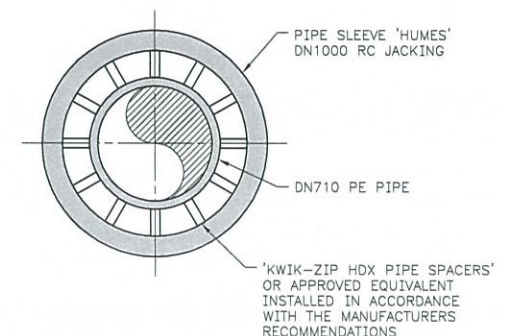
BURIED BUTTERFLY VALVE INSTALLATION DETAIL
SCALE: DIAGRAMMATIC
NOTE: ALL VALVES TO BE INSTALLED WITH SPINDLES SET VERTICAL



DN1100 PIPE SLEEVE - GROUTED INSTALLATION
SECTION A
SCALE 1:20 3-1



DN1100 PIPE SLEEVE - UNGROUTED INSTALLATION
SECTION B
SCALE 1:20 3-3



DN1000 PIPE SLEEVE - UNGROUTED INSTALLATION
SECTION C
SCALE 1:20 3-6 3-7

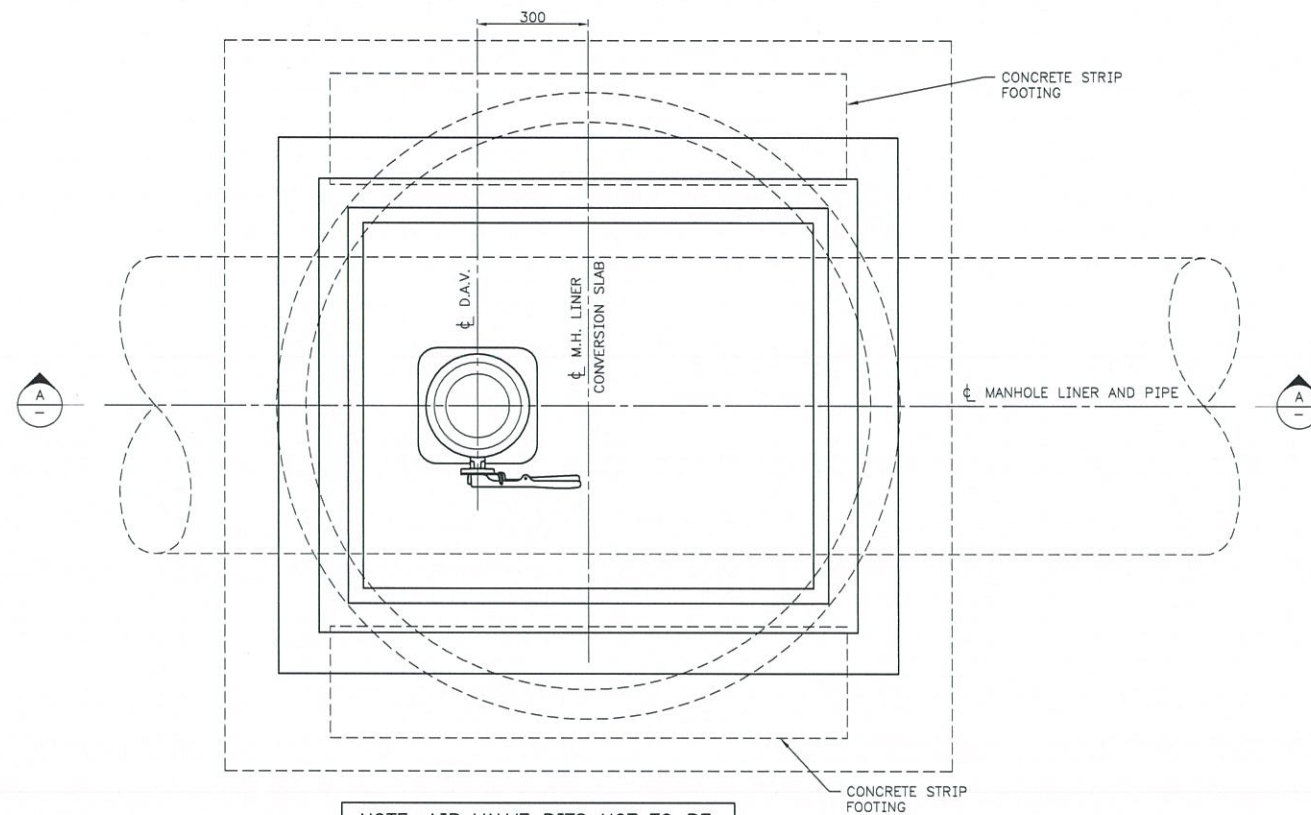
DEPARTMENT OF PLANNING, LANDS AND HERITAGE

DATE **14-Sep-2017** FILE **DAP/17/01228**

NOTES:
1. FOR GENERAL PIPEWORK NOTES REFER DRG. MK94-1-2.

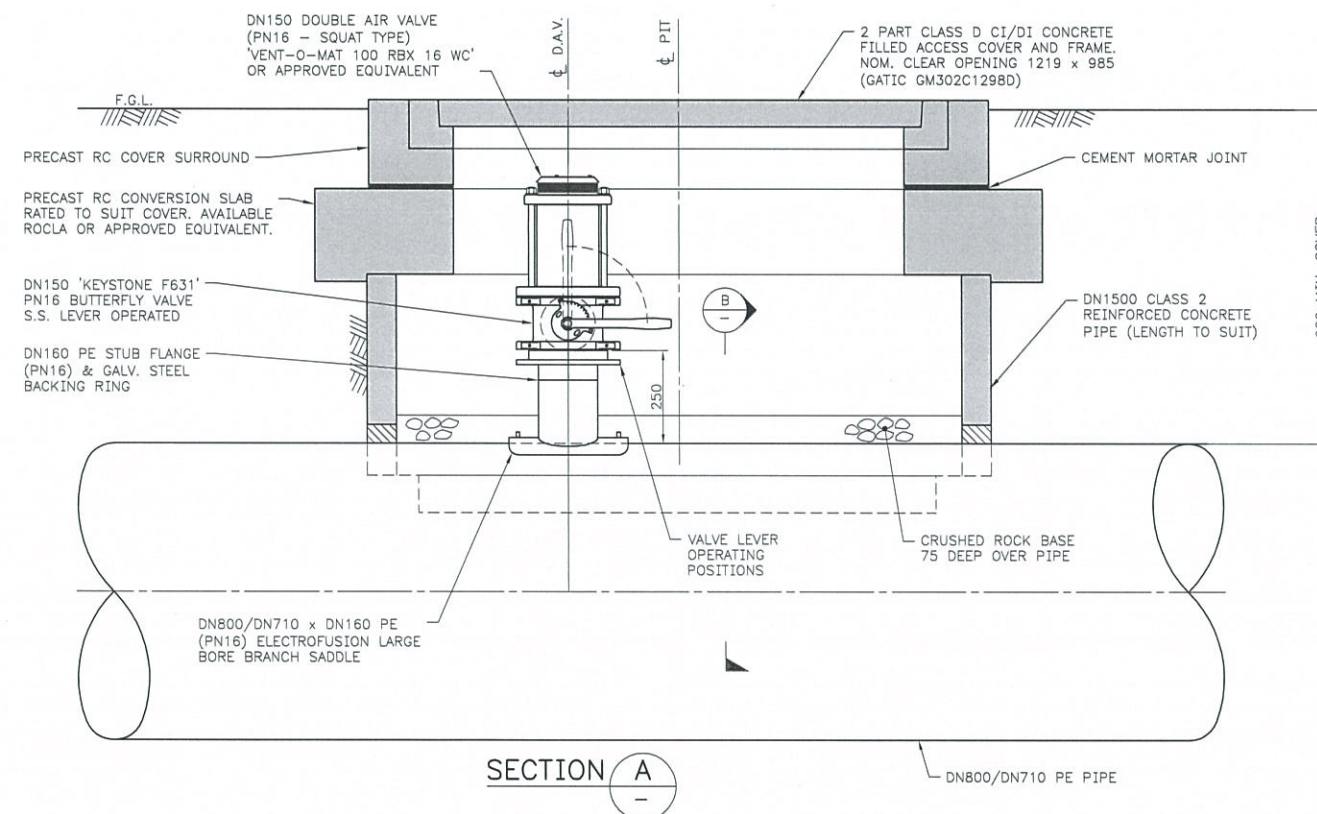
500 0 500 1000 mm (1:20)

ISSUE	DATE	GRID	REVISION	DRN	REC	APPD	DESIGN SURVEY NONE	VERTICAL DATUM NONE	DES. CALC. G.EDWARDS	NORTH POINT	RECOMMENDED 7/2/17	CONSULTANT PROJECT MANAGER	INTEGRATED WATER SUPPLY SCHEME IWSS AWRP BEENYUP - RECHARGE PIPELINES DN800/DN710 PE PIPELINE VALVE INSTALLATION & TRENCH DETAILS	ORIGINAL SHEET SIZE A1
							ASCON SURVEY NONE	COORDINATE SYS NONE	DES. REF GHD 61-34889	DRN G.EDWARDS Q.C. CHD J.THOMSON		APPROVED 6/2/2017	CONSULTANT PROJECT DIRECTOR	

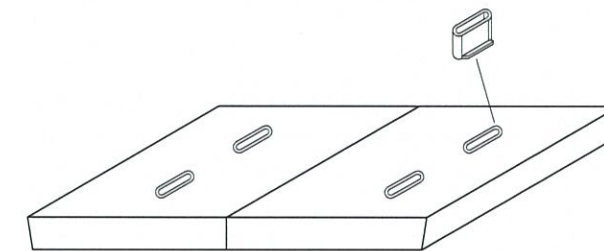


NOTE: AIR VALVE PITS NOT TO BE LOCATED UNDER DRIVEWAYS OR ROAD PAVEMENT (U.N.O.)

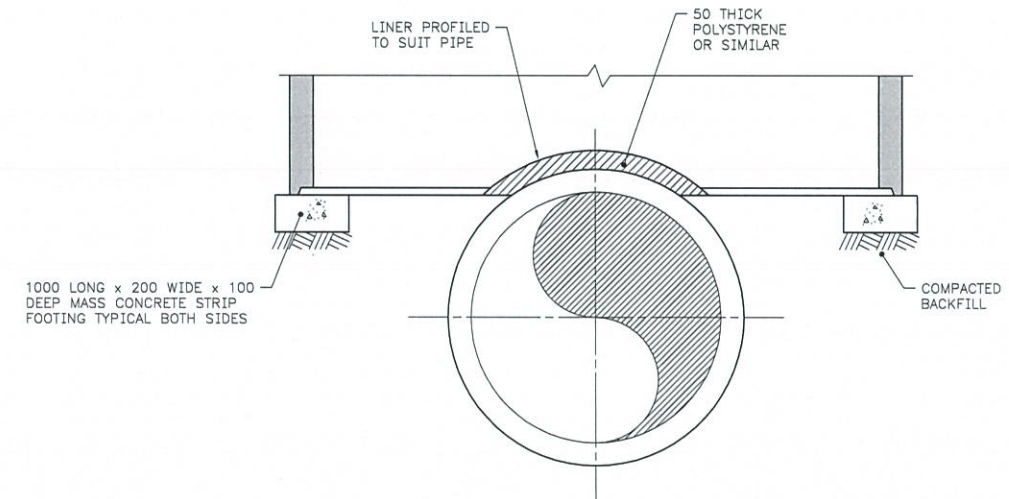
PLAN
(COVERS NOT SHOWN)



SECTION A



GATIC INSERT DETAIL
DIAGRAMMATIC



SECTION B

DEPARTMENT OF PLANNING, LANDS
AND HERITAGE

DATE
14-Sep-2017

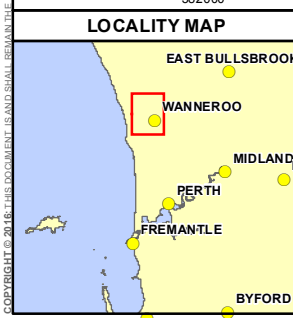
FILE
DAP/17/01228

GENERAL NOTES

- FOR GENERAL LOCATION OF AIR VALVES PITS SEE DRAWINGS 2-1 TO 2-22. (EXACT LOCATION OF AIR VALVE PITS TO BE DETERMINED ON SITE).
- FOR GENERAL PIPEWORK NOTES SEE DRAWING 1-2.
- MORTAR TO HAVE A 28 DAY COMPRESSIVE STRENGTH OF 11MPa TO AS2701.
- ALL CONCRETE TO BE GRADE N25 AND IN ACCORDANCE WITH AS3600.
- BACKFILL SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH THE SPECIFICATION.
- PROPRIETARY PRECAST CONCRETE ITEMS SHALL BE APPROVED BY THE SUPERINTENDENT.

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LEGEND

- Proposed Development Envelope
- Major Roads
- Minor Roads
- Local Government Area Boundaries
- Cadastral Boundaries

DATA SOURCES

- CADASTRAL BOUNDARY SOURCED FROM LANDGATE VIA SUP 14 SEPTEMBER 2016
- VEGETATION MAPPED BY 360 ENVIRONMENTAL 2016 AT A SCALE OF 1:1000
- LOCALITY MAP SOURCED LANDGATE 2006 AERIAL PHOTOGRAPHY SOURCED LANDGATE FEB 2016
- (© Western Australian Land Information Authority 2016)

SLIP ENABLER

NOTE THAT POSITIONAL ERRORS MAY BE >5M IN SOME AREAS

360 environmental
a 10 Bermondsey St, West Leederville, 6007 WA
t (08) 9388 8360 f (08) 9381 2360
www.360environmental.com.au

WATER CORPORATION

CREATED JJ/MH	CHECKED TM	APPROVED SS	REVISION 0	DATE 25/10/2016
HORIZONTAL DATUM GDA 1994 MGA Zone 50			PROJECT NO 1551	

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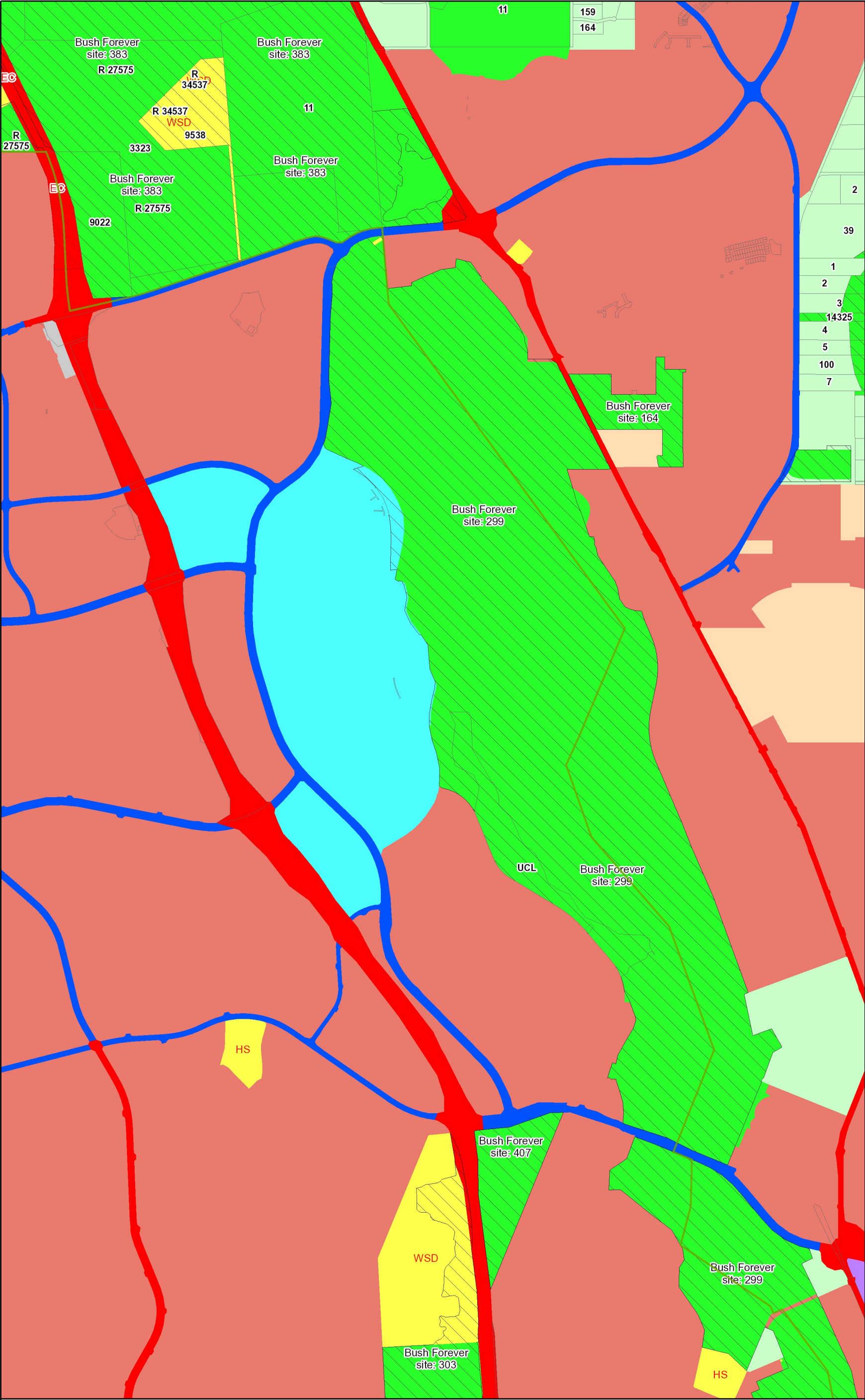
Water Corporation


Groundwater Replenishment Scheme (GWRS) Stage 2

Referral under Section 38 of the EP Act

Figure 2.2
Location of the Proposal

K:\Projects\2.0 INF\1551 GWRS\Figures\S38 Referral\1551 S38 Figure 2.5 - Location of the Proposal.mxd





Department of Planning,
Lands and Heritage

Legend

Local Government Area

Cadastre (View 2)

Region Scheme Boundary

Bush Forever Areas

Environmental Conditions

Region Scheme Zones and Rese

Central city area

Industrial

Other regional roads

Parks and recreation

Primary regional roads

Public purposes - State Energy Comm

Public purposes - Water Authority of W

Public purposes - high school

Railways

Rural

Urban

Urban deferred

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Notes:
The data that appears on the map may be out of date, not intended to be used at the scale displayed, or subject to license agreements. This information is stored in the relevant layers metadata. For these reasons the map should not be distributed outside of the Department.
Map was produced using DPLH's PlanViewWA.

Produced by: FUNCTIONALITY TO COME

Date produced: 23-Aug-2017



Minister for Environment; Disability Services
Deputy Leader of the Legislative Council

Statement No. 1065

STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED
(*Environmental Protection Act 1986*)

GROUNDWATER REPLENISHMENT SCHEME STAGE 2

Proposal: Construction of an Advanced Water Recycling Plant at the Beenyup Wastewater Treatment Plant and the construction of water recharge and conveyance infrastructure to recharge up to 14 GL of recycled water that meets **Australian drinking water standards** to the Leederville and Yarragadee aquifers.

Proponent: Water Corporation
Australian Company Number 28 003 434 917

Proponent Address: 629 Newcastle Street
Leederville WA 6902

Assessment Number: 2111

Report of the Environmental Protection Authority: 1597

Pursuant to section 45 of the *Environmental Protection Act 1986*, it has been agreed that the proposal described and documented in Table 2 of Schedule 1 may be implemented and that the implementation of the proposal is subject to the following implementation conditions and procedures:

1 Proposal Implementation

- 1-1 When implementing the proposal, the proponent shall not exceed the authorised extent of the proposal as defined in Table 2 of Schedule 1, unless amendments to the proposal and the authorised extent of the proposal have been approved under the EP Act.

Published on:
12 OCT 2017

2 Contact Details

- 2-1 The proponent shall notify the CEO of any change of its name, physical address or postal address for the serving of notices or other correspondence within twenty-eight (28) days of such change. Where the proponent is a corporation or an association of persons, whether incorporated or not, the postal address is that of the principal place of business or of the principal office in the State.

3 Time Limit for Proposal Implementation

- 3-1 The proponent shall not commence implementation of the proposal after five (5) years from the date on this Statement, and any commencement, prior to this date, must be substantial.
- 3-2 Any commencement of implementation of the proposal, on or before five (5) years from the date of this Statement, must be demonstrated as substantial by providing the CEO with written evidence, on or before the expiration of five (5) years from the date of this Statement.

4 Compliance Reporting

- 4-1 The proponent shall prepare, and maintain a Compliance Assessment Plan which is submitted to the CEO at least six (6) months prior to the first Compliance Assessment Report required by condition 4-6, or prior to implementation of the proposal, whichever is sooner.
- 4-2 The Compliance Assessment Plan shall indicate:
- (1) the frequency of compliance reporting;
 - (2) the approach and timing of compliance assessments;
 - (3) the retention of compliance assessments;
 - (4) the method of reporting of potential non-compliances and corrective actions taken;
 - (5) the table of contents of Compliance Assessment Reports; and
 - (6) public availability of Compliance Assessment Reports.
- 4-3 After receiving notice in writing from the CEO that the Compliance Assessment Plan satisfies the requirements of condition 4-2, the proponent shall assess compliance with conditions in accordance with the Compliance Assessment Plan required by condition 4-1.
- 4-4 The proponent shall retain reports of all compliance assessments described in the Compliance Assessment Plan required by condition 4-1 and shall make those reports available when requested by the CEO.

- 4-5 The proponent shall advise the CEO of any potential non-compliance within seven (7) days of that non-compliance being known.
- 4-6 The proponent shall submit to the CEO the first Compliance Assessment Report fifteen (15) months from the date of issue of this Statement addressing the twelve (12) month period from the date of issue of this Statement and then annually from the date of submission of the first Compliance Assessment Report, or as otherwise agreed in writing by the CEO.

The Compliance Assessment Report shall:

- (1) be endorsed by the proponent's Chief Executive Officer or a person delegated to sign on the Chief Executive Officer's behalf;
- (2) include a statement as to whether the proponent has complied with the conditions;
- (3) identify all potential non-compliances and describe corrective and preventative actions taken;
- (4) be made publicly available in accordance with the approved Compliance Assessment Plan; and
- (5) indicate any proposed changes to the Compliance Assessment Plan required by condition 4-1.

5 Public Availability of Data

- 5-1 Subject to condition 5-2, within a reasonable time period approved by the CEO of the issue of this Statement and for the remainder of the life of the proposal the proponent shall make publicly available, in a manner approved by the CEO, all validated environmental data (including sampling design, sampling methodologies, empirical data and derived information products (e.g. maps)) relevant to the assessment of this proposal and implementation of this Statement.

- 5-2 If any data referred to in condition 5-1 contains particulars of:

- (1) a secret formula or process; or
- (2) confidential commercially sensitive information;

the proponent may submit a request for approval from the CEO to not make these data publicly available. In making such a request the proponent shall provide the CEO with an explanation and reasons why the data should not be made publicly available.

6 Flora and Vegetation – Indirect Impacts to Banksia Woodlands

- 6-1 The proponent shall ensure that there are no indirect impacts to native vegetation in Areas A and B as shown in Figures 2 and 3 and defined by coordinates in Schedule 2 within five years post construction that are attributable to the proposal.

7 Flora and Vegetation, Inland Waters Environmental Quality, Hydrological Processes, Terrestrial Fauna – Construction Impacts

- 7-1 During construction of the proposal the proponent shall:
- (1) implement hygiene protocols, consistent with the *Management of Phytophthora cinnamomi for Biodiversity Conservation in Australia, Part 2 National Best Practice Guidelines* as amended or replaced from time to time;
 - (2) undertake weed control and management to prevent the introduction or spread of weeds;
 - (3) treat and manage any Acid Sulfate Soils disturbed during the construction of the recharge pipeline consistent with the requirements of the Department of Water and Environmental Regulation's Acid Sulfate Soils Guidelines *Identification and investigation of acid sulfate soils and acidic landscapes* (2015) and *Treatment and management of soils and water in acid sulfate soil landscapes* (2015), or any approved update of these guidelines;
 - (4) undertake the following actions to minimise impacts to terrestrial fauna:
 - (a) clear all open pipeline trenches and open **trenchless technology** pipeline launch and retrieval pits of any trapped fauna by fauna-rescue personnel prior to any construction or no later than three hours after sunrise, whichever event occurs first;
 - (b) clear all open pipeline trenches of any trapped fauna by fauna-rescue personnel between the hours of 3:00pm and 6:00pm of that same day;
 - (c) clear open pipeline trenches and open **trenchless technology** pipeline launch and retrieval pits by fauna-rescue personnel no more than one hour prior to backfilling of trenches and pits;
 - (d) ensure that fauna-rescue personnel obtain the appropriate licences required for fauna rescue under the *Wildlife Conservation Act 1950*;

- (e) ensure that open pipeline trench lengths do not exceed a length capable of being inspected and cleared by the fauna-rescue personnel within the required times as set out in condition 7-1(4)(a), 7-1(4)(b) and 7-1(4)(c); and
- (f) provide egress points ramps and/or fauna refuges that provide suitable shelter from the sun and predators for trapped fauna in the open pipeline trenches at intervals not exceeding 50 metres.

7-2 Following construction of the proposal, the proponent shall:

- (1) undertake weed control and management in the development envelope in Bush Forever Sites 299, 303, 383 and 407 and within 10 m of the development envelope in Bush Forever Sites 299, 303, 383 and 407 for five years post construction;
- (2) within 12 months, undertake rehabilitation of native vegetation with locally native species to achieve pre-construction vegetation densities in all areas disturbed during construction activities that are not required for the ongoing operation of the proposal; and
- (3) undertake annual monitoring and any remedial measures to ensure rehabilitation required by 7-2(2) will successfully establish within five years post construction.



Hon Stephen Dawson MLC
MINISTER FOR ENVIRONMENT

12 OCT 2017

Table 1: Summary of the Proposal

Proposal Title	Groundwater Replenishment Scheme Stage 2
Short Description	Construction of an Advanced Water Recycling Plant at the Beenyup Facility and the construction of two water recharge sites and a 12.8 kilometre recharge pipeline to recharge up to 14 GL of recycled water that meets Australian drinking water standards to the Leederville and Yarragadee aquifers.

Table 2: Location and authorised extent of physical and operational elements

Column 1	Column 2	Column 3
Element	Location	Authorised Extent
Advanced water recycling plant, northern recharge site and southern recharge site	Refer Figure 1	Clearing and disturbance of no more than 0.13 ha of native vegetation within a 4.54 ha development envelope.
Recharge pipeline	Refer Figure 1	Clearing and disturbance of: <ul style="list-style-type: none"> • no more than 2.05 ha of native vegetation, including: <ul style="list-style-type: none"> ○ 0.74 ha loss of native vegetation within Bush Forever Site 299; ○ 0.02 ha of native vegetation within Bush Forever Site 407; and ○ 0.33 ha of native vegetation within Bush Forever Site 383; • 2.23 ha loss of black cockatoo foraging habitat, within a 27.58 ha development envelope.
Pipeline construction using trenchless technology	Refer Figure 1, 2 and 3	To be undertaken at least 2 m below ground level
Yarragadee and Leederville aquifer recharge	At recharge sites shown in Figure 1	Recharge of up to 14 GL of water that meets Australian drinking water standards per annum.

Table 3: Abbreviations and Definitions

Acronym or Abbreviation	Definition or Term
Australian drinking water standards	2011 Australian Drinking Water Guidelines published by the National Health and Medical Research Council and as amended from time to time; and As defined by the Department of Health and set out in the <i>Memorandum of Understanding for Wastewater Services and Groundwater Replenishment between the Department of Health and Water Corporation (Oct 2014)</i> and as amended from time to time.
CEO	The Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of section 48 of the <i>Environmental Protection Act 1986</i> , or his delegate.
EPA	Environmental Protection Authority
EP Act	<i>Environmental Protection Act 1986</i>
GL	gigalitres
ha	hectares
m	metres
<i>Management of Phytophthora cinnamomi for Biodiversity Conservation in Australia, Part 2 – National Best Practice Guidelines</i>	E O’Gara, K Howard, B Wilson and GStJ Hardy (2005) <i>Management of Phytophthora cinnamomi for Biodiversity Conservation in Australia: Part 2 – National Best Practice Guidelines</i> . A report funded by the Commonwealth Government Department of the Environment and Heritage by the Centre for Phytophthora Science and Management, Murdoch University, Western Australia.
Trenchless technology	Construction techniques for pipeline installation that do not involve disturbance of soils or native vegetation above ground level and which may include but not be limited to horizontal directional drilling and micro-tunnelling.

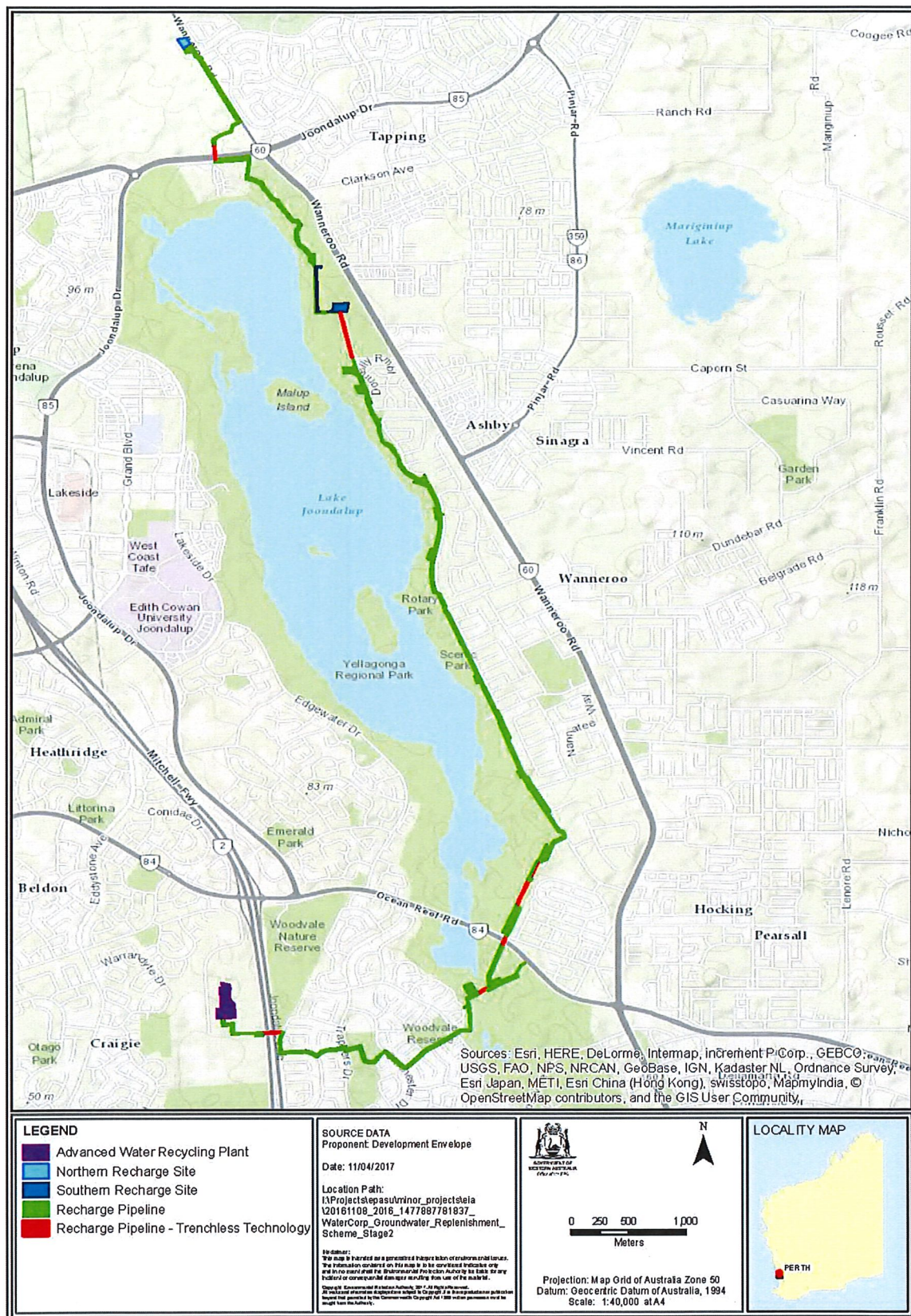


Figure 1 Location of the Advanced Water Recycling Plant, Northern Recharge Site, Southern Recharge Site, Recharge Pipeline and Recharge Pipeline – Trenchless Technology areas (This figure is a representation of the coordinates shown in Table 2 of Schedule 1).

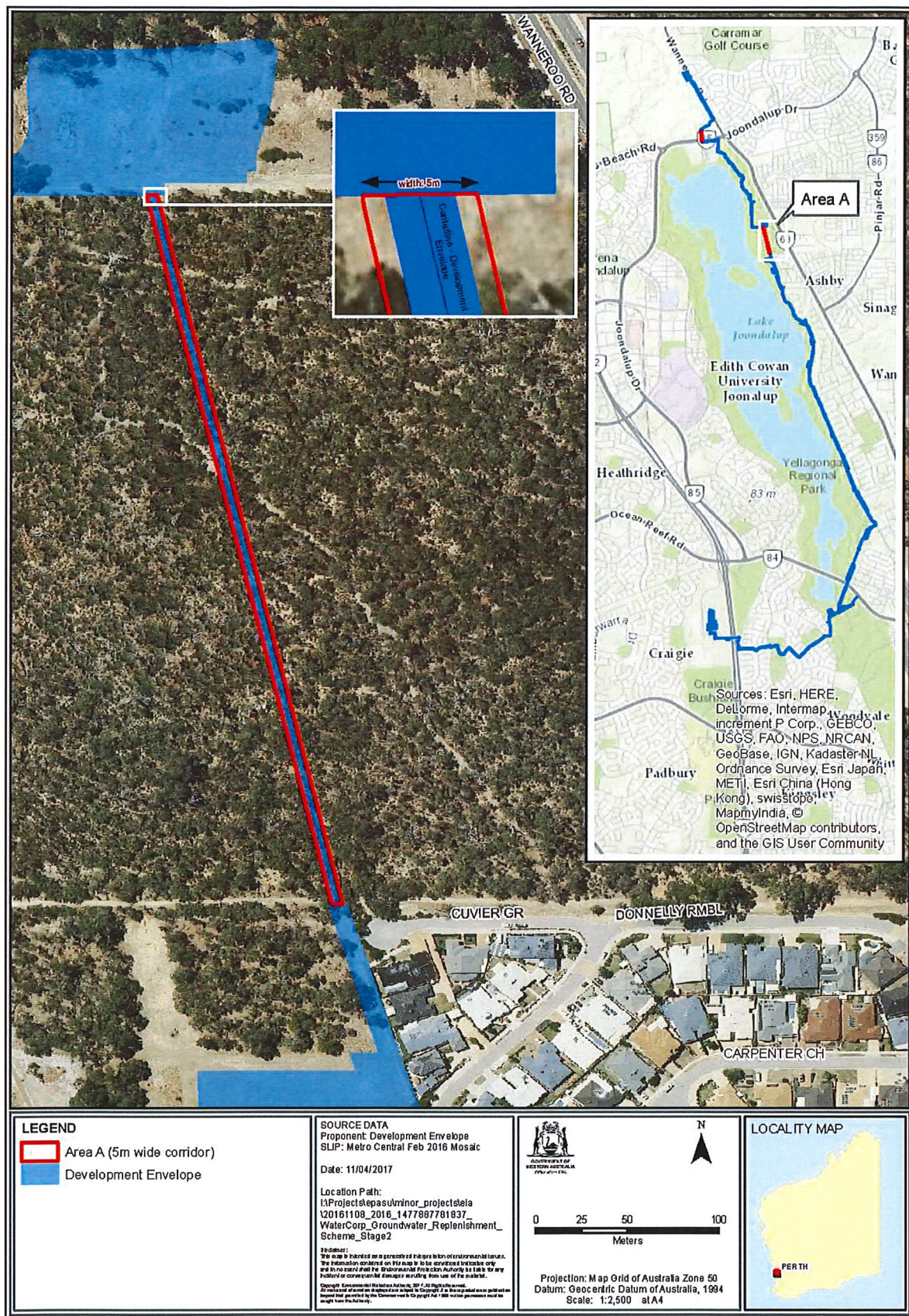


Figure 2 Area A of Banksia Woodland where trenchless technologies are to be used for the installation of the pipeline (This figure is a representation of the coordinates referred to in condition 6-1).

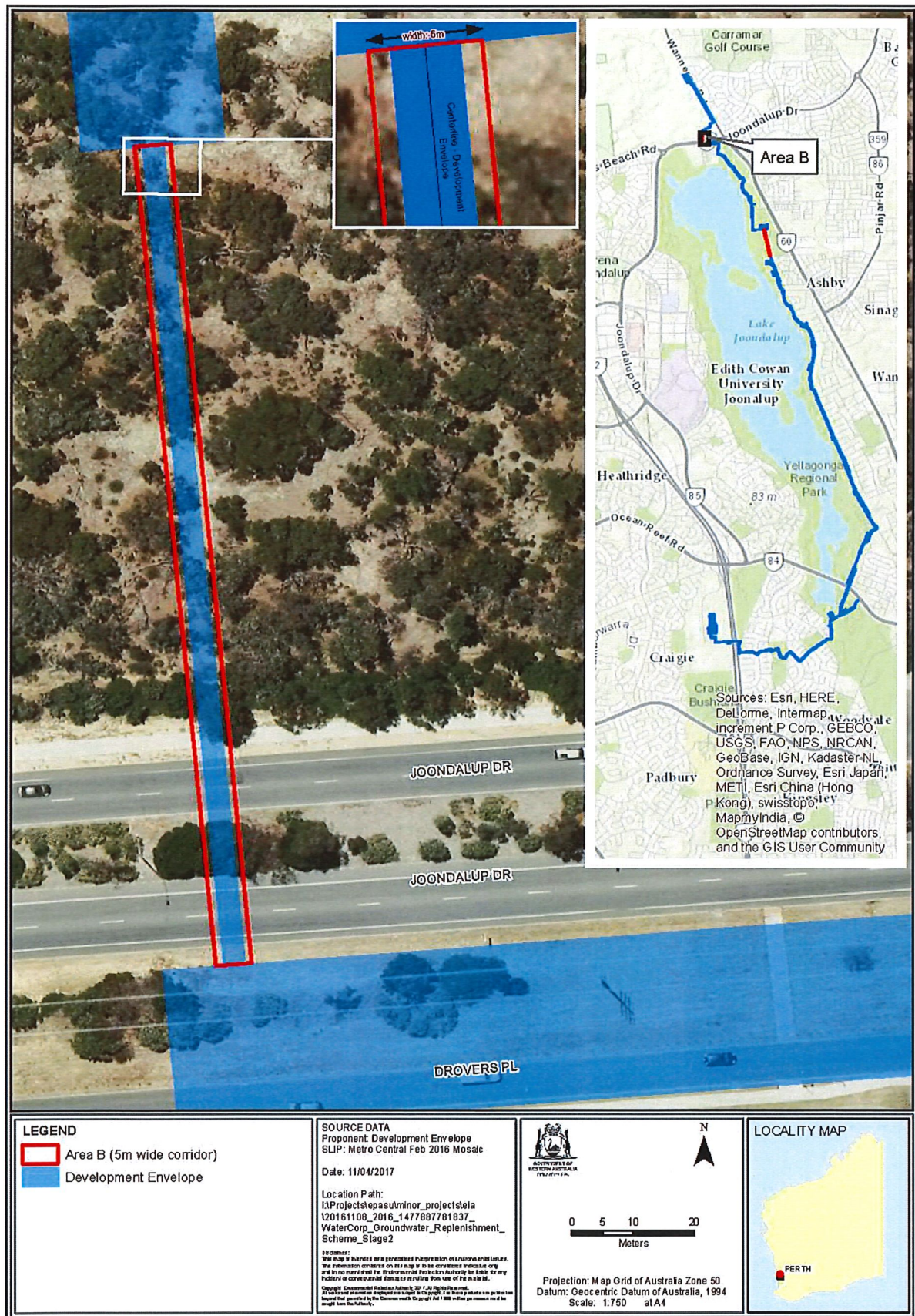


Figure 3 Area B of Banksia Woodland where trenchless technologies are to be used for the installation of the pipeline (This figure is a representation of the coordinates referred to in condition 6-1).

Schedule 2

Coordinates defining:

- the Advanced Water Recycling Plant
- the Northern and Southern Recharge sites
- the Recharge Pipeline
- the Recharge Pipeline – Trenchless Technology areas
- Area A
- Area B

shown in Figures 1, 2 and 3 are held by the Department of Water and Environmental Regulation, Document Reference Number DWERDA-009862.