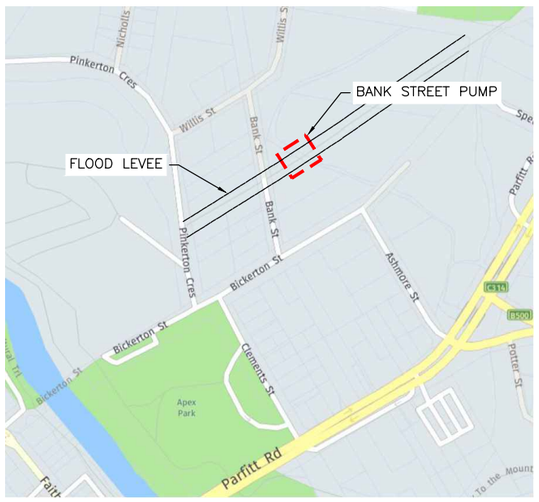
RURAL CITY OF WANGARATTA

BANK STREET STORMWATER PUMP STATION

CONSTRUCTION OF REPLACEMENT STORMWATER PUMP STATION, PIPEWORK, ELECTRICS & ASSOCIATED WORKS

ISSUED FOR CONSTRUCTION



LOCALITY PLAN

LIST OF DRAWINGS

DRAWING NUMBER	SHEET NUMBER	DRAWING NAME	REVISION
2101	1	COVER SHEET	2
2102	2	CONSTRUCTION NOTES	2
2103	3	LAYOUT PLAN & SECTION VIEW	2
2104	4	DISSIPATION PIT & DETAILS	2
2105	5	ELECTRICALS DETAILS	2
2106	6	PUMP ALARM TELEMETRY	2

ISSUED FOR CONSTRUCTION

REVISIONS			REVISIONS		
No.	DETAILS	DATE	No.	DETAILS	DATE
1.	ISSUED FOR COMMENT	12/22			
2.	ISSUED FOR CONSTRUCTION	02/23			

Gordon Gibson Nominees Reference No. : J:\Clients\Council\Wangaratta\Flood Levee\Pump Sites\Bank Street\AutoCAD\Designs\Bank Street Pump_Design 261022.dwg

NORTH

SCALE

Designed A.J.G. 12/22
Drawn I.C.H. 12/22
Checked
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RURAL CITY OF WANGARATTA

LEVEE BANK PUMP STATIONS
BANK STREET, WANGARATTA
COVER SHEET

CLIENT No. WANG45

DRAWING No. 2101 REV. 2

Sheet 1 of 6 A3

GENERAL NOTES:

1. THESE DRAWINGS/SKETCHES/COMPUTATIONS SHALL BE READ IN CONJUCTION WITH OTHER CONSULTANTS DRAWINGS, SPECIFICATIONS AND WRITTEN INSTRUCTIONS WHERE APPLICABLE.

2.ALL MATERIALS AND WORKMANSHIP ARE TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE RELEVANT & CURRENT AUSTRALIAN STANDARDS, BUILDING CODE OF AUSTRALIA AND LOCAL STATUTORY AUTHORITIES.

3.ALL DIMENSIONS, SETOUT AND DESIGN INVERTS & LEVELS ARE TO BE CONFIRMED ON-SITE PRIOR TO CONSTRUCTION WORKS. ANY DISCREPANCIES TO BE REFERRED TO THE DESIGN ENGINEER PRIOR TO WORKS COMMENCING.

4.ALL DIMENSIONS IN MM UNLESS NOTED OTHERWISE. DRAWINGS SHALL NOT BE SCALED. WRITTEN MEASUREMENT TO TAKE PRECEDENT OVER SCALE.

5.ENSURE FABRICATION AND CONSTRUCTION WORKS ARE PLUMB AND TRUE TO LINE AND LEVEL.

6.CONTRACTOR IS RESPONSIBLE FOR THE COMPLETION OF DIAL BEFORE YOU DIG INQUIRIES AND LOCATING OF EXISTING UNDERGROUND SERVICES PRIOR TO ANY EXCAVATIONS COMMENCING.

7.CONTRACTOR TO ENSURE LOAD REMAINS EVENLY DISTRIBUTED DURING CONSTRUCTION AND STRUCTURE SHALL BE ADEQUATELY SUPPORTED TO MAINTAIN STABILITY & STRUCTURAL INTEGRITY DURING CONSTRUCTION. DURING ERECTION PROVISION BE MADE TO LIMIT DEFLECTIONS TO DEAD LOADS ONLY.

8.SUBSTITUTION OF MATERIALS IS NOT PERMITTED WITHOUT PRIOR WRITTEN PERMISSION OF THE DESIGN ENGINEER.

9.ANY PROPRIETARY PRODUCTS ARE TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS AND RECOMMENDATIONS.

10. INSPECTION BY DESIGN ENGINEER OF ANY STRUCTURAL ELEMENT SHALL BE COMPLETED. CONTRACTOR SHALL PROVIDE A MINIMUM 48 HOURS NOTICE PRIOR TO REQUIRED INSPECTION.

SITE PREPARATION & CIVIL WORKS:

1. REMOVE ALL GRASS, ROOTS, ORGANIC MATERIAL, TOP SOIL, LOOSE OR UNSUITABLE MATERIAL FROM THE NATURAL SURFACE TO A MINIMUM DEPTH OF 100MM.

2.TOPSOIL SHALL BE STRIPPED AND STOCKPILED ON-SITE AND REUSED WHERE POSSIBLE. ALL EXCESS SPOIL SHALL BE DISPOSED OF OFF-SITE.

3.STRIP, PAD AND EDGE BEAM FOOTINGS SHALL BE FOUNDED THROUGH ANY FILL 100MM INTO NATURAL UNDISTURBED FOUNDATION MATERIAL WITH A MINIMUM SAFE ALOWABLE BEARING PRESSURE OF 150KPA (250KPA FOR BORED PIERS) AND IN ACCORDANCE WITH RELEVANT SITE GEOTECHNICAL INVESTIGATION REPORT.

4.INTERNAL BEAMS AND SLAB PANELS SHALL BE FOUNDED ON NATURAL UNDISTURBED FOUNDATION MATERIAL OR COMPACTED CONTROLLED FILL WITH A MINIMUM SAFE ALLOWABLE BEARING PRESSURE OF 100KPA. EXCAVATE FOR BEAMS TO DRAWING DIMENSIONS SHOWN.

5.THE CONTRACTOR SHALL OBTAIN APPROVAL OF THE FOUNDATION MATERIAL CAPACITIES BY A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF CONCRETE.

6.EXCAVATIONS SHALL BE CLEAN AND DRY. ANY SOFT AREAS SHALL BE EXCAVATED TO A FIRM BASE, PROOF ROLLED AND BACKFILLED WITH CLASS 3 FCR COMPACTED IN 100MM MAX. LAYERS.

7.DEWATER FOOTINGS. AT NO TIME DURING CONSTRUCTION, OR SUBSEQUENTLY SHALL WATER BE ALLOWED TO POND ON OR NEAR THE FOOTING. PROVIDE PROPER MAINTENANCE OF CLAY SITES SUCH THAT THE MOISTURE CONTENT OF THE CLAY IS KEPT REASONABLY CONSTANT.

8.SLAB & FOOTINGS IN CLAY SOILS SHALL BE PLACED AT OR NEAR NORMAL MOISTURE CONDITIONS. SLAB & FOOTINGS PLACED IN CLAY SOILS IN ABNORMAL MOISTURE CONDITIONS (ABNORMALLY WET OR ABNORMALLY DRY) SHALL BE AVOIDED DUE TO THE LARGE POTENTIAL MOVEMENT OF CLAY SOILS AS MOISTURE CONTENT RETURNS TO NORMAL CONDITIONS. LANDSCAPING & DRAINAGE SHALL BE CONSTRUCTED TO AVOID THE DEVELOPMENT OR EXISTENCE OF ABNORMAL MOISTURE CONDITIONS.

9.NO EXISTING FOOTINGS OR UNDERGROUND SERVICES SHALL BE UNDERCUT OR SURCHARGED BY IMPOSED LOADS FROM PROPOSED WORKS. UNDERPINNING OF EXISTING FOOTINGS SHALL BE IN ACCORDANCE WITH ENGINEERS DESIGN.

10. THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF EXCAVATIONS AND EXISTING STRUCTURES DURING CONSTRUCTION. ANY TRENCH EXCAVATIONS IN EXCESS OF 1.5M DEPTH ARE SUBJECT TO THE REQUIREMENTS OF THE WORKCOVER SAFE TRENCHING REGULATIONS.

METALWORK:

1. METAL WORK SHALL BE DESIGNED, FABRICATED AND ERECTED IN ACCORDANCE WITH AS4100:2020 STEEL STRUCTURES.

2.UNO, STRUCTURAL STEEL GRADES SHALL CONFORM WITH AS3679.

3.UNO, CONTINUOUS FILLET WELDS (CFW) TO BE 6MM SP CATEGORY TO BOTH SIDES.

4.UNO, FULL PENETRATION BUTT WELDS (FPBW) TO BE SP CATEGORY.

5.UNO, CLEATS, GUSSETS & STIFFENERS TO BE 10MM PLATE.

6.UNO, BOLTS SHALL BE GALVANISED M20/8.8/S TYPICAL.

7.SEAL ENDS OF HOLLOW SECTIONS WITH 3MM PLATE UNO.

8.ALL WELDING SHALL BE COMPLETED & SUPERVISED BY A SUITABLY EXPERIENCED AND QUALIFIED WELDING FABRICATOR. WELDING SEQUENCES SHALL MINIMISE DISTORTION, DEFORMATION, MISALIGNMENT, TWISTING AND RESIDUAL STRESSES TO ALL MEMBERS.

9.BOLT DESIGNATION EXAMPLE - 4/M20/8.8/S

NUMBER OF BOLTS: 4

SIZE (DIAMETER): 20

GRADE: 8.8 (HIGH STRENGTH) OR 4.6 (NORMAL STRENGTH)

TIGHTENING: S (SNUG TIGHTENED) OR TB (TENSIONED - BEARING) OR TF (TENSIONED - FRICTION)

ALL BOLTS AND BOLTING PROCEDURES SHALL CONFORM WITH AS1252.

10. WELDING, UNO, SHALL BE "E48XX", SHALL BE "SP" CATEGORY AND LOW HYDROGEN CONSUMABLES.

11. UNO, 25MM MIN. HARD RAMMED MORTAR GROUT TO BE PROVIDED UNDER ALL COLUMN BASEPLATES WITH APPROVED PROPRIETARY NON-SHRINK GROUT.

12. UNO, ALL EXTERNAL STEELWORK, EXPOSED BOLTS, CAST IN PLATES AND/OR FITTINGS TO BE HOT DIPPED GALVANISED.

13. UNO, EXPOSED STRUCTURAL METALWORK SHALL BE SANDBLASTED TO CLASS '2.5' SURFACE PREPARATION AND COATED WITH A SINGLE COAT OF INORGANIC ZINC SILICATE. REFER TO ARCHITECTURAL SPECIFICATION FOR TOP COAT REQUIREMENTS.

14. ALL SHARP EDGES AND BURRS TO BE REMOVED FROM METALWORK.

15. CONTRACTOR IS RESPONSIBLE FOR WORKSHOP DRAWINGS AND SHALL SUPPLY THE ENGINEER WITH COPIES FOR INSPECTION PRIOR TO COMMENCEMENT OF FABRICATION.

16. NO HOLES TO BE MADE IN FLANGES OF BEAMS OR COLUMNS WITHOUT THE PRIOR APPROVAL OF THE DESIGN ENGINEER.

17. FABRICATOR SHALL PROVIDE ALL CLEATS AND HOLES REQUIRED FOR FIXING OF ARCHITECTURAL AND NON-STRUCTURAL ELEMENTS TO METALWORK.

18. PROVIDE PRELOADING OF BEAMS SUPPORTING EXISTING MASONRY WALLS TO 80% OF TOTAL DESIGN DEAD LOAD DEFLECTION. PROVIDE INFILL BRICKWORK AND/OR NON-SHRINK GROUT BETWEEN BEAM & EXISTING BRICKWORK. PROVIDE PRELOAD TO BEAMS USING WEDGES OR OTHER APPROVED METHODOLOGY.

REINFORCEMENT & CONCRETE:

1. ALL CONCRETE, SLAB & FOOTING CONSTRUCTION WORKS SHALL CONFORM WITH AS3600, AS2870 AND BCA REQUIREMENTS.

2.ALL REINFORCEMENT USED SHALL CONFORM WITH AS4671, AS2870, AS3600 AND BCA REQUIREMENTS.

3.CONCRETE PROPERTIES, UNO, TO BE AS FOLLOWS:

LOCATION	GRADE	SLUMP (mm)	MAX AGG (mm)
FOOTINGS	N32	100	20
SLAB ON GROUND	N32	100	20
PUMP WELL	SR40	100	20

4.CLEAR COVER TO REINFORCEMENT, UNO, TO BE AS FOLLOWS:

LOCATION	COVER	EXPOSURE CLASS
FOOTINGS	50	A2
EXTERIOR SLABS	40	B1
AGAINST MEMBRANE	50	A2
AGAINST SOIL/ROCK	50	A2

5.REINFORCEMENT NOTATION:

'N' - DEFORMED REINFORCING BARS (NORMAL DUCTILITY)

'R' - STRUCTURAL GRADE PLAIN ROUND BARS

'SL' - SQUARE MESH FABRIC

'RL' - RECTANGULAR MESH FABRIC

'TM' - TRENCH MESH

THE NUMBER FOLLOWING THE BAR SYMBOL IS THE NOMINAL BAR DIAMETER IN MILLIMETERS.

6.LAY 0.2MM POLYETHYLENE WATERPROOF MEMBRANE TO ENTIRE SLAB AREA, FOLLOWING UNDER BEAMS AS SHOWN ON DETAILS. LAP MEMBRANE 200MM MIN AT JOINTS AND TAPE CONTINUOUSLY. ALL PENETRATIONS ARE TO BE PATCHED AND TAPED TO ALLOW RELATIVE MOVEMENT TO CONCRETE ELEMENT.

7.WELDING OR HEATING OF REINFORCEMENT IS NOT PERMITTED WITHOUT THE APPROVAL OF THE DESIGN ENGINEER. BENDING OF REINFORCEMENT STEEL TO BE IN ACCORDANCE WITH AS3600 CL19.2.3.1

8.SUPPORT BEAM AND SLAB REINFORCEMENT AT 800MM CTS MAX WITH APPROVED BAR CHAIRS, ENSURE THAT CORRECT COVER IS ACHIEVED AND MAINTAINED TO BOTTOM AND SIDES OF ALL REINFORCEMENT.

REINFORCEMENT SHALL BE SECURELY TIE WIRED IN POSITION.

9.REINFORCEMENT LAPS:

N12 - 450MM, N16 - 600MM, N20 - 700MM,

N24 - 900MM, N28 - 1050MM, N32 - 1250MM,

N36 - 1500MM, MESH - 2 CROSS WIRES PLUS 25MM. CONTINUE REINFORCEMENT THROUGH FULL WIDTH OF FOOTING AT 'T' & 'L' INTERSECTION UNO.

10. ANY PENETRATIONS OF BEAMS, SLABS OR FOOTINGS SHALL BE REFERRED TO THE DESIGN ENGINEER FOR APPROVAL & RECOMMENDATIONS.

11. ALL FORMWORK TO BE DESIGNED AND CONSTRUCTED TO COMPLY WITH AS1509 STRIPPING OF FORMWORK TO COMPLY WITH AS3600 & AS3610.

12. ALL CONCRETE, INCLUDING FOOTINGS, IS TO BE WELL COMPACTED AND WORKED AROUND REINFORCEMENT WITH A MECHANICAL VIBRATOR. CONCRETE SHALL BE AVAILABLE FOR TESTING DURING POUR. CONCRETE TESTING SHALL BE IN ACCORDANCE WITH AS3600.

13. EXCAVATIONS BEYOND SPECIFIED DIMENSIONS SPECIFIED MAY BE FILLED WITH 15 MPA BLINDING CONCRETE.

14. CONCRETE SHALL BE CURED FOR 7 DAYS BY APPROVED METHOD. NO ADMIXTURES OR CURING ADDITIVES ARE TO BE USED IN CONCRETE WTIHOUT THE PRIOR WRITTEN APPROVAL OF THE DESIGN ENGINEER.

15. PROVIDE 2-N12 X 2000MM LONG TRIMMERS DIAGONALLY ACROSS THE CORNERS OF ALL OPENINGS, PENETRATIONS AND AT RE-ENTRANT CORNERS OF SLABS.

16. SIZES OF CONCRETE DO NOT INCLUDE THICKNESS OF APPLIED FINISHES. REINFORCEMENT IS SHOWN DIAGRAMMATICALLY AND NOT NECESSARILY IN TRUE PROJECTION. UNO, ALL FORMED EDGES AND CORNERS OF CONCRETE ELEMENTS SHALL HAVE 20MM CHAMFERS.

17. CONSTRUCTION JOINTS WHERE NOT SHOWN SHALL BE LOCATED TO THE APPROVAL OF THE DESIGN ENGINEER.

18. NO PENETRATIONS OR CHASES OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE MADE IN CONCRETE MEMBERS WITHOUT THE PRIOR APPROVAL OF THE DESIGN ENGINEER.

19. PROVIDE N12 TRIMMER BAR TO PERIMETER OF ALL SLABS, 400 LAP AND 'L' BARS TO CORNERS 400 LEGS.

20. UNO, PROVIDE APPROVED HYDROTITE WATERSTOP STRIPS TO EACH FACE OF ALL WATER RETAINING BASE WALLS, SIDE WALLS AND COLUMN BASE JOINTS, PITS & SUMP JOINTS AND BASE SLAP AND WALL PENETRATIONS. INSTALL WATERSTOPS IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS AND SPECIFICATIONS.

21. DRILL TO AVOID REINFORCEMENT AND/OR TENDONS DURING INSTALLATION OF ANY BOLTS, ANCHORS, STARTER BARS OR OTHER FIXINGS IN REINFORCED, PRESTRESSED OR POST TENSIONED CONCRETE ELEMENTS.

REFERENCE DOCUMENTS:

THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH:

- BANK STREET PUMP STATION - SPECIFICATION FOR CONTRACT No. 31564

PUMPSTATION ELECTRICAL DESIGN

These specifications should be read in conjunction with relevant Australian Standards and WSA 04–2001 Sewage Pumping Station Code of Australia.

POWER SUPPLY

The incoming power supply from the local supply company must be 415V, 3 phase at 50Hz. An underground consumer main must be run between the point of supply and the control cabinet. The supply meters must be housed in the control cabinet.

Emergency Generator Connection: A generator connection point must be provided with the Main Switch to indicate operation in Mains Supply, Off, or Generator Supply. The connection point is to be recessed into the cabinet as shown on the drawings.

SWITCHBOARD CONSTRUCTION

Provide one cubicle type outdoor switchboard to perform the function of the installation main switchboard, motor control centre and common control for the pump station. Dimensions are to be as shown on the drawings. The cabinet is to be located between 1m and 3m from the well perimeter to facilitate monitoring of the pump operation and the control circuit. Open doors must not obstruct access around the well perimeter. The cabinet shall be installed on a concrete plinth that is either cantilevered on the station roof or located on compacted ground.

Switchboard Functions: To include protection, controls and starting equipment for the pump sets, together with main circuit breaker and other sub circuit protection and controls generally as follows:
- Distribution Company Meters
- Circuit Breaker
- Distribution
- Pump Starters
- Ancillary Equipment Starters
- Common Controls

Materials: Outer Panels Marine Grade Aluminium 3mm thick
Inner Panels 2mm thick

Finishes: Powdercoat. Internal – White External – Mist Green

Plinth: Provide a galvanised mounting plinth bolted to the base of the switchboard 150mm high with toe–out.

Weather Protection: Provide an extended hood as shown on the drawings and slope roof at 1:40 to back.

Doors: Use folded section and fit with stiffening members to ensure adequate rigidity and freedom from warping.
Seal – Fit doors with a door rim and black Neoprene seal arrangement to prevent dust and moisture intrusion.
Hinges – Chromium plated with all fixing screws fully concealed and designed to allow complete removal of the door from the switchboard when opened.
Handles – Chromium plated T–handle type. Fit large door with 3–way roller latch, arranged to fasten the door at the top, bottom and mid point. Locks to be keyed to North East Water keying system, with Meter Panel keyed to power company keying system. Provide 2 sets of keys.

Escutcheon Plates and Covers: Provide escutcheon plates within operator accessible compartments. Neatly cut the escutcheon such that all switch and circuit breaker toggles, fuse carriers etc are accessible without removal of the escutcheon plate. Pre–cut a space to accomodate a flow meter head. Use a hinge design that allows removal of the escutcheon plate from the switchboard when open.

Gland Plates: Provide gland plates between the cable chamber and the telemetry/control compartments.

Sealing: Thoroughly seal cable glands with expanding "Space Invader" type foam before operation.

Ventilation: Provide a motor driven fan and air vents at top and bottom of wall as shown on the drawings and in base of control panel to allow air to be drawn from the bottom and exhausted from the top of the switchboard.

CONTROL SYSTEMS

The pumping system control system must enable the manual and automatic operation of the pumps.

Motor Control: Each pump must have a control switch with the following three positions:
ON The pump will operate independently of any automatic control from the station controller.
OFF The pump will not operate.
AUTO The pump will be controlled by the pumping station controller in accordance with the level in the raw water storage tank. The pump will start and stop automatically and alternate between duty and stand–by mode.

Motor Starters: The selection of the starter motor is based on the starting currents and capacity of the motors, and the requirements of the electricity supply authority.

Motor Protection: Moulded case circuit breakes and thermal overload relays must be used for motor protection. Each motor must have thermistor protection. If an autotransformer is used for motor starting, it must have thermal overload protection.

Metering: Each pump must have a five digit hours run meter and an ammeter. The hour run meter records the cumulitive operating time of the pump in hours. The ammeter gives local indication of the pump status. ON and OFF indication lights are not required.

Pump Controls: Provide a MultiTrode MT2PC Duplex Pump Controller or an approved equivalent made–for–purpose pump control unit.

The pumpwell must have a pressure sensing level transmitter (Type: Multitrode or approved equivalent) level sensing system to signal the levels shown in the table below (with additional high level float switch).

Parameter	
Pump Start	Set at 3.1m above the well floor level.
Pump Stop	Set at 0.6m above the well floor level.
Low level alarm	Set at 300mm above the well floor level.

This is to be connected directly to the telemetry input terminals and operate in "fail safe" mode. That is, a closed contact will indicate a healthy condition.

If one or more of the phases of power supply is lost, the pumps will be stopped.

Fail Safe: Certain critical alarms must be fail safe. The logic of fail safe alarms is, either failure condition or break in link to telemetry unit / annunciator will activate alarm.
Instruments: Indicating instruments must be flush mounted type of 72mm square pattern industrial grade. The accuracy of ammeter and voltmeters must be Class 1.5 in accordance with AS1042.

Indicator Lights: Use "push to test" type. Lamps shall have minimum operating life of 5000 hours.

Labels: Label all controls, readouts, circuit designations, current–limiting fuses, warning notices etc. Labels shall be two–colour laminated plastic or photo–anodised rigid aluminium, black letters on white background (Warning notices – white lettering on red background). Use lettering 1.5mm thick and size to ensure easy readability and appropriateness to the item labelled.

CABLES AND CONDUITS

Cables: The cable connecting the submersible pumps to the switchboard must be suitable for immersion in raw sewage (waterproof submersible) and must be one continuous length to the terminiation point. Provide cable glands in the cable zone at the bottom of the switchboard cubicle at locations where cabling leaves the cubicle.
Conduits: Conduits must be used for cables running between the control cabinet, the cable pit, pumpwell and the ERS. The layout and routes should be co–ordinated with the civil design to enable the inclusion of conduits at the works construction stage. Heavy duty uPVC or stainless steel material conduits must be used to avoid corrosion.

Conduits must take the shortest route available and be arranged in straight runs with long–radius bends for changes in direction.

The selection of the appropriate conduit size must be in accordance with the SAA Wiring Rules, as a minimum. The size will be determined by the size of cables to be enclosed. Conduits must be sized to permit the subsequent removal and replacement of any cable. It is required that seperate conduits be used. One each for pumps and one for level controllers.

WIRING

Provide wiring of type 0.6kV V–75 PVC insulated to AS3147. Size to suit current carrying capacity. Minimum sized power conductors shall be multi–strand 2.5mm2. Control and Indication Circuits shall be not less than 1.0mm2 and Analog Circuits shall be PVC sheathed copper strands not less than 0.5mm2.
Colour code the wiring as follows:
A Phase – Red
B Phase – White
C Phase – Blue
Neutral – Black
Earthing – Green / Yellow
240V AC Active – Brown
240V AC Neutral – Blue
24 V AC Control – Orange
24 V AC Common – Grey
24 V DC Positive – Red with Black Stripe
24 V DC Negative – Black with Red Stripe
4 to 20 mA Loop – White and Black twisted shielded pairs

If wiring is not installed in PVC ducts, neatly bunch, support and lace wiring with PVC ties or strips. Segregate electric circuits subject to possible interference. Also segregate terminations into groups according to voltage and function. Identify wiring by engraved plastic ferrule markers and assign unique wire numbers to each different wire.

OTHER REQUIREMENTS

General Power Outlets: One double general purpose outlet, (GPO) must be provided within the telemetry unit compartment for powering the telemetry unit.

A further double 10A general purpose outlet must be provided within the control compartment for maintenance purposes, protected by ELCB.

Flow meters: The pumpstation shall have an electromagnetic flow meters (Type: Seimens, ABB Magflo or approved equivalent) fitted to the rising main with the display head fitted in the switchboard at the location as shown on the drawings.

Telemetry: A telemetry unit will be provided by the contractor for remote monitoring and supervision of operation status and alarms. The cabinet design must include space for the telemetry unit. The items listed in the following Table must be monitored.

Call-up	Operation digital signal	Type	Remarks
D6	Pump No. 1 Motor protection	Alarm	Thermister; starter and auto
D12	Wet well low level	Alarm	Wet well No. Failsafe
D13	Pump Running	State	

All Telemetry connections must be provided up to telemetry input isolating links as shown in the drawings.

The telemetry contractor must arrange for the supply amd installation of the communication service.

The telemetry unit software must be configured to Rural City of Wangaratta requirements. The telementary unit must have provision for analog inputs and digital control inputs and outputs.

ISSUED FOR CONSTRUCTION

REVISIONS			REVISIONS		
No.	DETAILS	DATE	No.	DETAILS	DATE
1.	ISSUED FOR COMMENT	12/22			
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Gordon Gibson Nominees Reference No. : J:\Clients\Council\Wangaratta\Flood Levee\Pump Sites\Bank Street\AutoCAD\Designs\Bank Street Pump_Design 261022.dwg

NORTH

SCALE

Designed	A.J.G. 12/22
Drawn	I.C.H. 12/22
Checked	
Approved	

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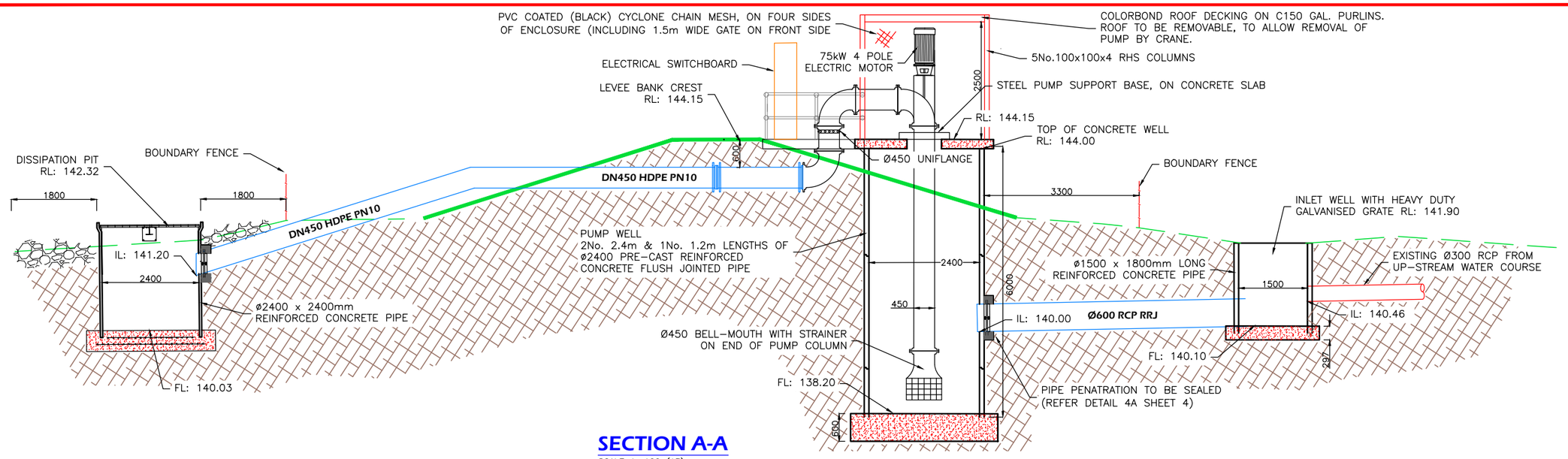
RURAL CITY OF WANGARATTA

LEVEE BANK PUMP STATIONS
BANK STREET, WANGARATTA
CONSTRUCTION SPECIFICATION NOTES

CLIENT No. WANG45

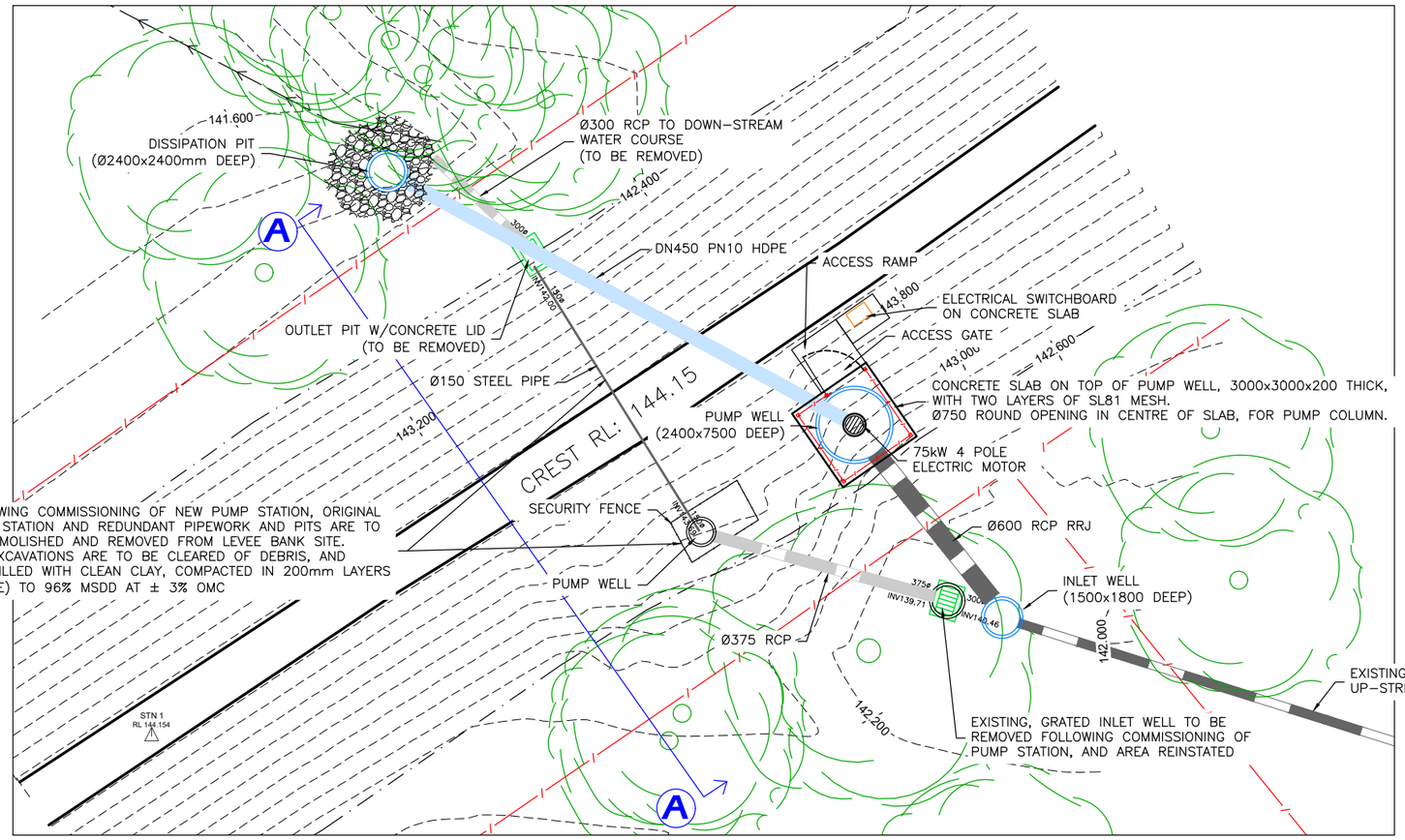
DRAWING No. 2102 REV. 2

 A3



SECTION A-A

SCALE 1: 100 (A3)



FOLLOWING COMMISSIONING OF NEW PUMP STATION, ORIGINAL PUMP STATION AND REDUNDANT PIPEWORK AND PITS ARE TO BE DEMOLISHED AND REMOVED FROM LEVEE BANK SITE. ALL EXCAVATIONS ARE TO BE CLEARED OF DEBRIS, AND BACKFILLED WITH CLEAN CLAY, COMPACTED IN 200mm LAYERS (LOOSE) TO 96% MSDD AT ± 3% OMC

PLAN VIEW

SCALE 1: 200 (A3)

PUMP REQUIREMENTS:

- 1 No. PUMPS TO BE INSTALLED
- PUMP DUTY POINT: 400 L/s @ 8m HEAD
- SURFACE LEVEL AT PUMP STATION: 144.50
- INCOMING DRAIN I.L.: 140.00
- WELL FLOOR LEVEL: 138.20
- DUTY CUT-IN LEVEL: 141.30
- CUT-OUT LEVEL: 138.80
- HIGH LEVEL ALARM: 141.70
- LOW LEVEL ALARM: 138.50
- PUMP TO BE VERTICAL SHAFT AXIAL FLOW, BATESCREW 14/16 (or approved equivalent), DIRECT COUPLED TO 75kW 4 POLE TEFC MOTOR.

LEGEND:

EXISTING Ø150 STEEL PIPE
Ø600 RCP
DN450 HDPE PIPE

SET OUT DETAILS

ITEM	EASTING	NORTHING
CENTRE OF INLET WELL	440016.548	5977114.082
CENTRE OF PUMP WELL	440011.584	5977120.572
CENTRE OF ENERGY DISSIPATION PIT	439995.842	5977129.110

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NORTH

Designed	A.J.G. 12/22
Drawn	I.C.H. 12/22
Checked	
Approved	

SCALE 1: 200 (A3)

0 2m 4m
SCALEBAR (m)

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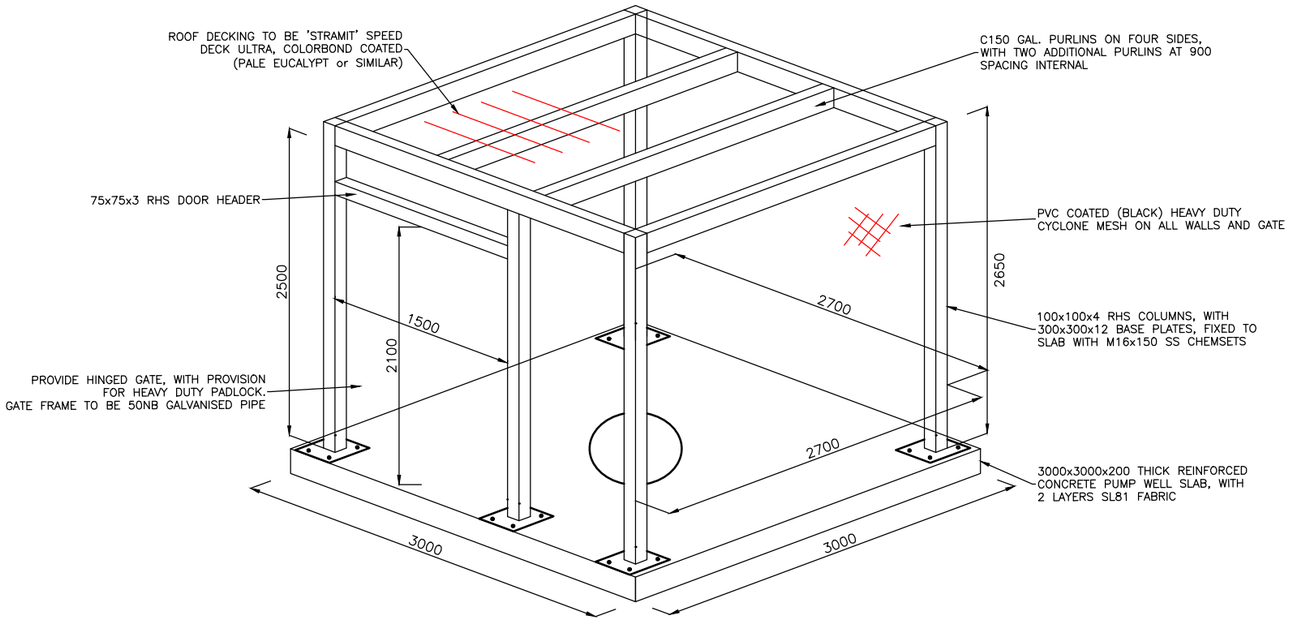
RURAL CITY OF WANGARATTA

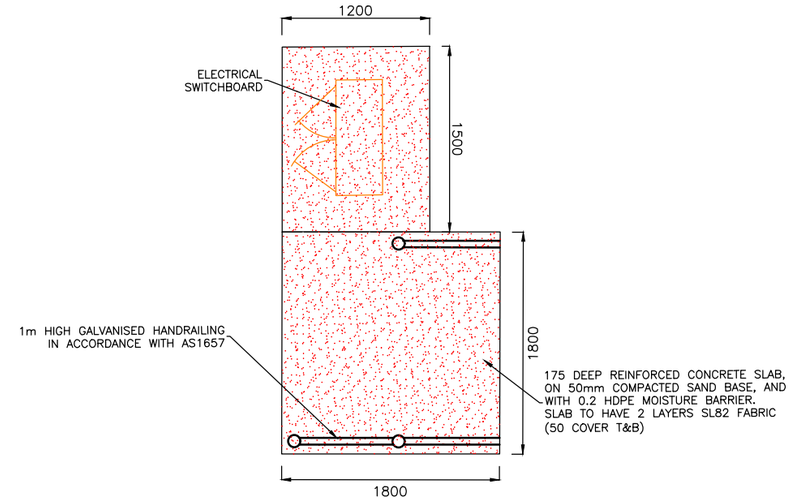
LEVEE BANK PUMP STATIONS
BANK STREET, WANGARATTA
LAYOUT PLAN & SECTION VIEW

CLIENT No. WANG45
DRAWING No. 2103 REV. 2
Sheet 3 of 6 A3



PUMP ENCLOSURE

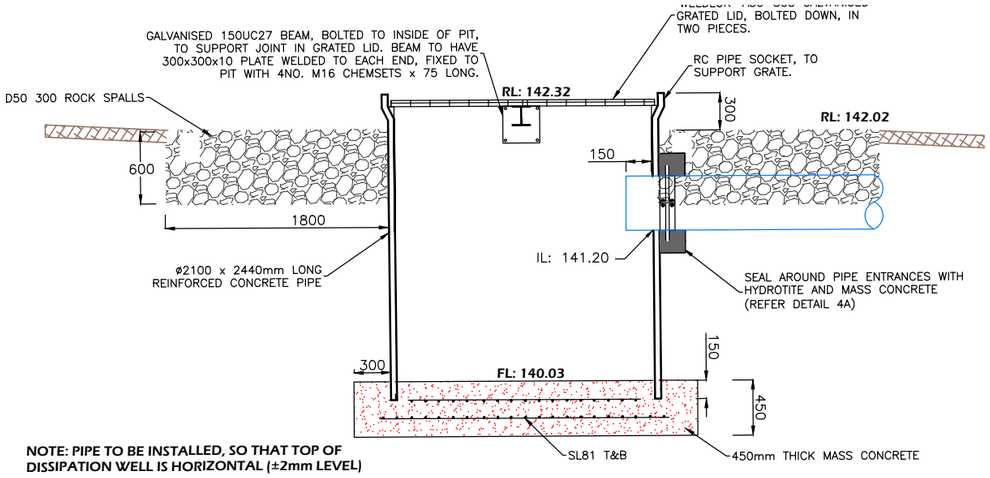
SCALE 1:50 (A3)



ACCESS RAMP DETAIL

SCALE 1:50 (A3)

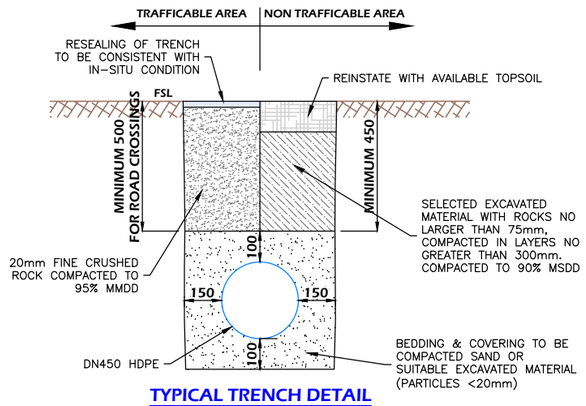
NOTE:
ALL STEEL WORK TO BE GALVANISED, AND COATED WITH ONE COAT GAL. PRIMER AND TWO COATS EPOXY ENAMEL (PALE EUCALYPT or SIMILAR)



NOTE: PIPE TO BE INSTALLED, SO THAT TOP OF DISSIPATION WELL IS HORIZONTAL (±2mm LEVEL)

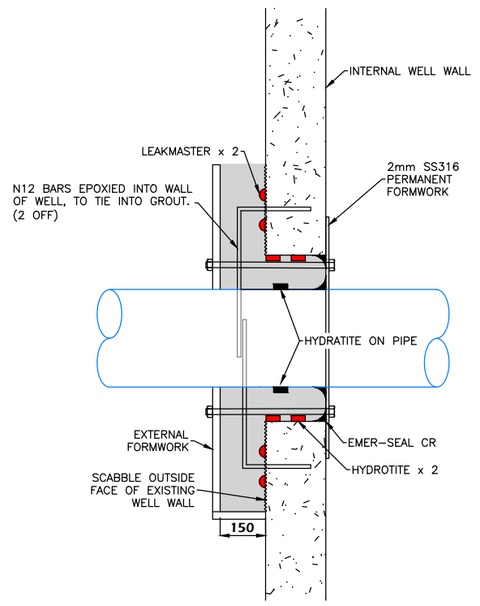
DISSIPATION PIT DETAIL

SCALE 1:50 (A3)



TYPICAL TRENCH DETAIL

NOT TO SCALE



PIPE PENETRATION DETAIL 4A

NOT TO SCALE

ISSUED FOR CONSTRUCTION

REVISIONS			REVISIONS		
No.	DETAILS	DATE	No.	DETAILS	DATE
1.	ISSUED FOR COMMENT	12/22			
2.	ISSUED FOR CONSTRUCTION	02/23			

Gordon Gibson Nominees Reference No. : J:\Clients\Council\Wangaratta\Flood Levee\Pump Sites\Bank Street\AutoCAD\Designs\Bank Street Pump_Design 261022.dwg

NORTH

SCALE

Designed	A.J.G.	12/22
Drawn	I.C.H.	12/22
Checked		
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RURAL CITY OF WANGARATTA

LEVEE BANK PUMP STATIONS
BANK STREET, WANGARATTA
DISSIPATION PIT AND DETAILS

CLIENT No. WANG45

DRAWING No. 2104 REV. 2

Sheet 4 of 6 | A3

ELECTRICAL NOTES

POWER SUPPLY
The incoming power supply from the local supply company must be 415V, 3 phase at 50Hz. An underground consumer main must be run between the point of supply and the control cabinet. The supply meters must be housed in the control cabinet.

The principal must:
- Apply to the electricity company for the supply of electricity, adequate for usage.

Emergency Generator Connection: A generator connection point must be provided with the Main Switch to indicate operations in Main Supply, Off, or Generator Supply. The connection point is to be recessed into the cabinet as shown on the drawings.

CONTROL SYSTEMS

The pumping system control system must enable the manual and automatic operation of the pumps

Motor Control : The pump must have a control switch with the following three positions:

"ON" – The pump will operate independently of any automatic control from the station controller

"OFF" – The pump will not operate

"AUTO" – The pump will be controlled by the pumping station controller in accordance with the water level in the well.

The pump will start and stop automatically.

Motor Starter: The selection of the starter motor is based on the starting currents and capacity of the motors, and the requirements of the electricity supply authority. The motor shall have soft start and soft stop.

Motor Protection. Moulded case circuit breaker and thermal overload relays must be used for motor protection. The motor must have thermistor protection. If an autotransformer is used far motor starting, it must have thermal overload protection.

Metering: The pump must have a five digit hours run meter and an ammeter The hour run meter records the cumulative operating time of the pump in hours. The ammeter gives local indication of the pump status. ON and OFF indication lights are not required.

Pump Controls: The proposed control circuit diagram is shown in the drawings. Other control devices, such as MultiTrode MT2PC Duplex Pump Controller or a Programmable Logic Controller (PLC) can be used if the logic is identical to the relay logic circuit. If PLC's are to be used they must be directly PC compatible. Software and programs are to be supplied to Rural City of Wangaratta.
Pumps are to operate in duty / standby (flip flop) operation.

Parameter	Description
Cut–in level	Set at RL: 141.30. The duty cut in level must be able to be quickly and easily changed by staff through the level controller system
Cut–out level	Set at RL: 138.80.
High level alarm	Set at RL: 141.70
Low level alarm	Set at RL: 138.50

There shall be an independent high level alarm level switch. This is to be connected directly to the telemetry input terminals and operate in a "fail safe" mode. That is, a closed contact will indicate a healthy position.

If one or more of the phases of power supply is lost, the pump must be stopped.

Rural City of Wangaratta must be consulted at the time of design to ascertain the type and make of the pumping station controller or programmable logic controller to be used.

Fail Safe: Certain critical alarms must be fail safe. The logic of fail safe alarms is, either failure condition or break in link to telemetry unit / annunciator will activate alarm.

Instruments: Indicating instruments must be flush mounted type of 72mm square pattern industrial grade. The accuracy of ammeter and voltmeters must be Class 15 in accordance with AS1042.

Indicator Lights: Use 'push to test' type. Lamps shall have minimum operating life of 5000 hours.

Labels: Label all controls, readouts, circuit designations, current –limiting fuses, warning notices etc. Labels shall be two–colour laminated plastic or photo–anodised rigid aluminum, black letters on white background (Warning notices ~ white lettering on red background). Use lettering 15mm thick and size to ensure easy readability and appropriateness to the item labeled.

CABLES AND CONDUITS
Cables: The cable connecting the submersible pumps to the switchboard must be suitable for immersion in stormwater (waterproof submersible) and must be one continuous length to the termination point. Provide cable glands in the cable zone at the bottom of the switchboard cubicle at locations where cabling leaves the cubicle.

Conduits: Conduits must be used for cables running between the control cabinet, the cable pit, pump well and the wet well. The layout and routes should be coordinated with the civil design to enable the inclusion of conduits at the works construction stage. Heavy duty uPVC or stainless steel material conduits must be used to avoid corrosion.

Conduits must take the shortest route available and be arranged in straight runs with long–radius bends for changes in direction.

The selection of the appropriate conduit size must be in accordance with the SAA Wiring Rules, as a minimum. The size will be determined by the size of cables to be enclosed. Conduits must be sized to permit the subsequent removal and replacement of any cable. It is required that separate conduits be used, One each for pumps and one for level controllers.

WIRING
Provide wiring of type 0.6kV V–75 PVC insulated to AS3147. Size to suit current carrying capacity. Minimum sized power conductors shall be multi–strand 2.5mm2. Control and Indication Circuits shall be not less than 10mm2 and Analog Circuits shall be PVC sheathed copper strands not less than 0.5mm2.

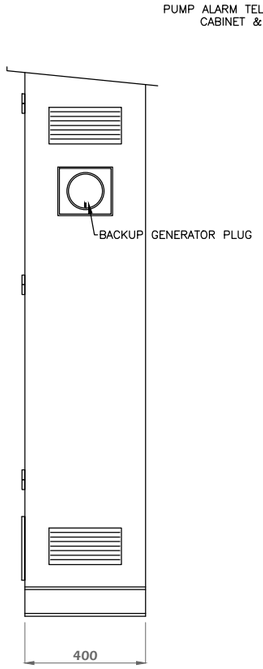
Colour code the wiring as follows
A Phase – Red
B Phase – White
C Phase – Blue
Neutral – Black
Earthing – Green / Yellow
240V AC Active – Brown
240V AC Neutral – Blue
24 V AC Control – Orange
24 V AC Common – Grey
24 V DC Positive – Red with Black Stripe
24 V DC Negative – Black with Red Stripe
4 to 20 mA Loop – White and Black twisted shielded pairs

If wiring is not installed in PVC ducts, neatly bunch, support and lace wiring with PVC ties or strips. Segregate electric circuits subject to possible interference. Also segregate terminations into groups according to voltage and function. Identify wiring by engraved plastic ferrule markers and assign unique wire numbers to each different wire.

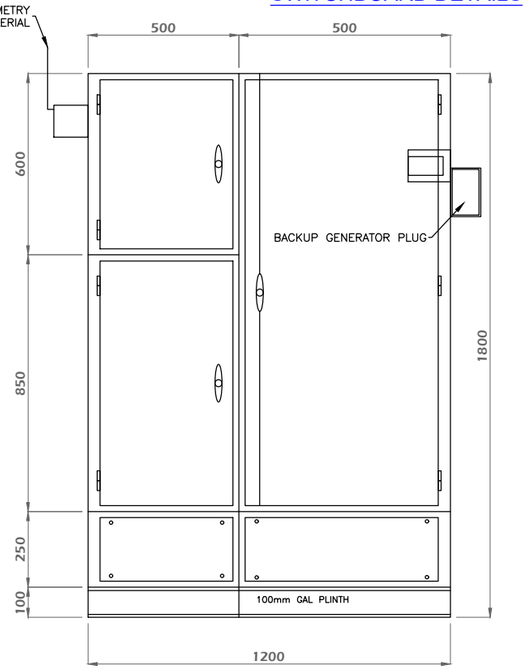
OTHER REQUIREMENTS
General Power Outlets: One double general purpose outlet, (GPO) must be provided within the telemetry unit compartment for powering the telemetry unit.

A further double 10A general purpose outlet must be provided within the control compartment for maintenance purposes, protected by ELCB.

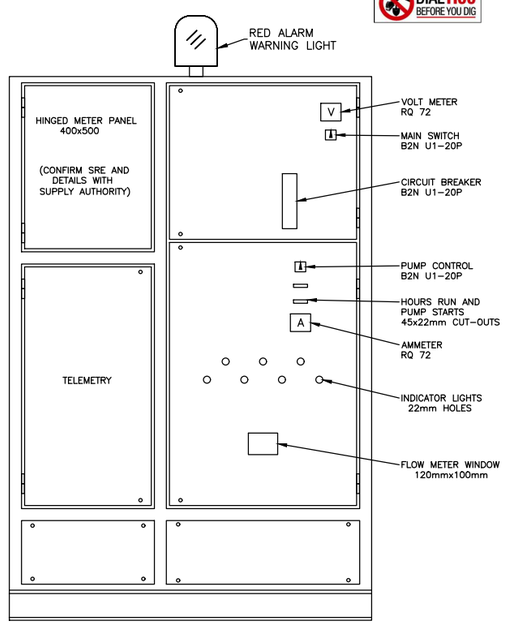
SWITCHBOARD DETAILS



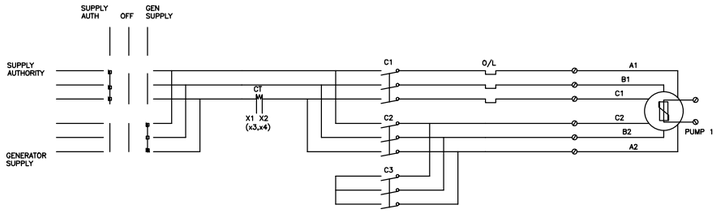
SIDE ELEVATION
SCALE 1:10



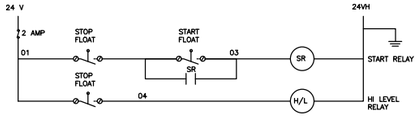
FRONT ELEVATION
SCALE 1:10



PANELS
SCALE 1:10

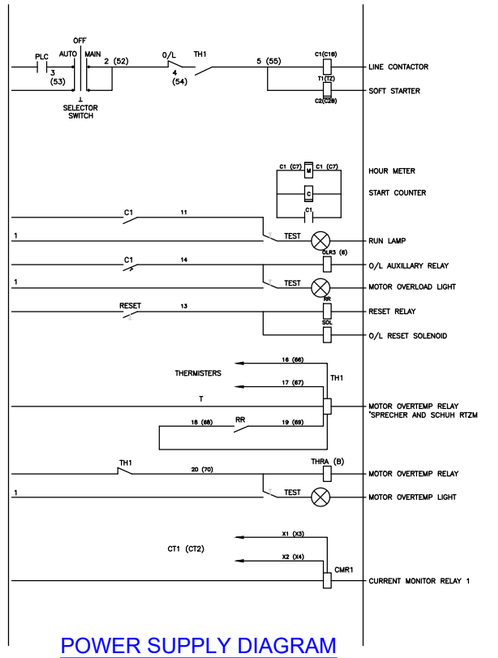


POWER SUPPLY DIAGRAM
NTS



24 VOLT CONTROL
NTS

NOTE: THE POINT OF ELECTRICAL SUPPLY FOR THE PUMP STATION SITE SHALL BE AT THE LOW VOLTAGE TERMINALS OF THE KIOSK TYPE SUBSTATION (REAR OF THE KIOSK)



POWER SUPPLY DIAGRAM
NTS

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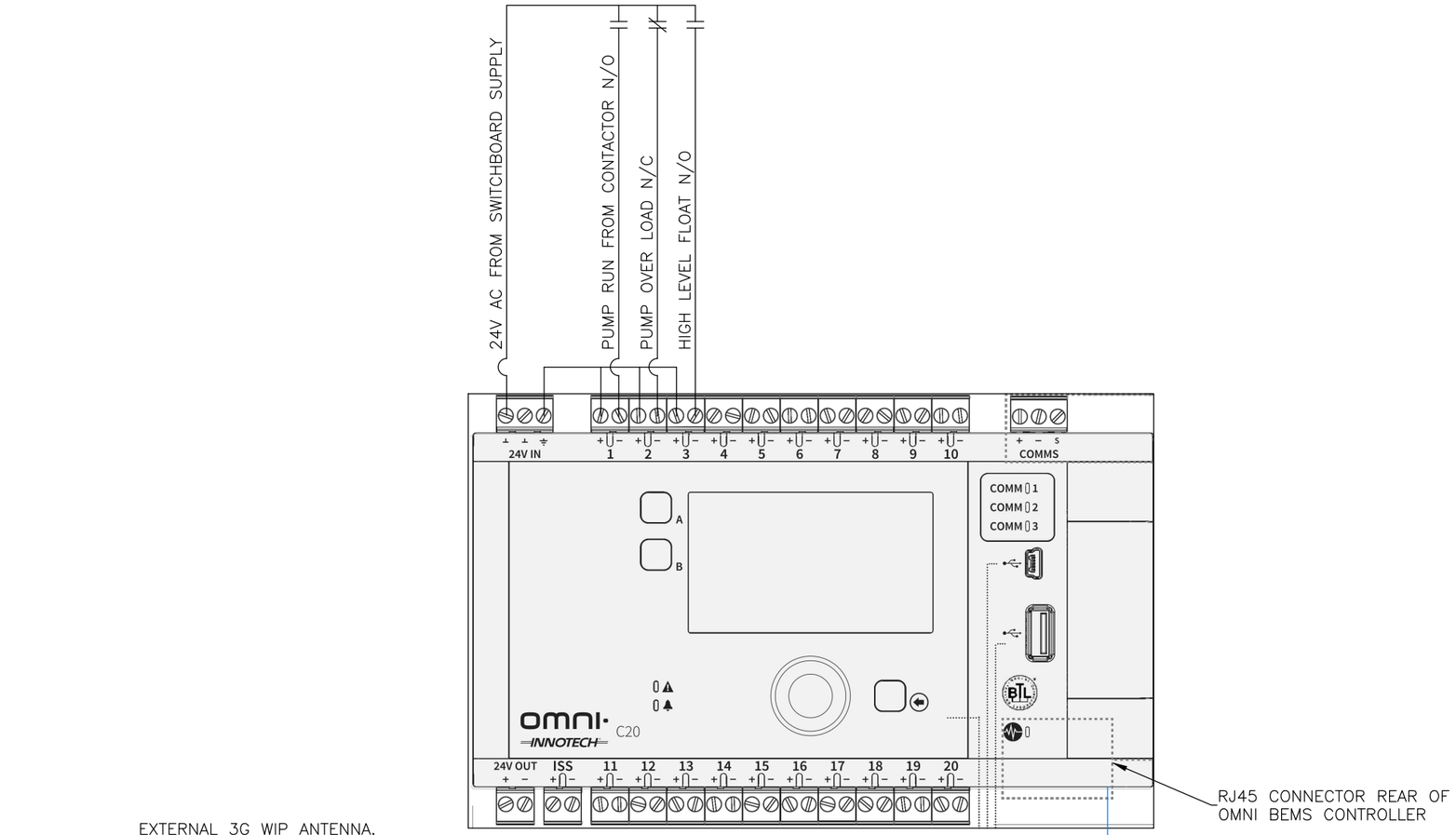
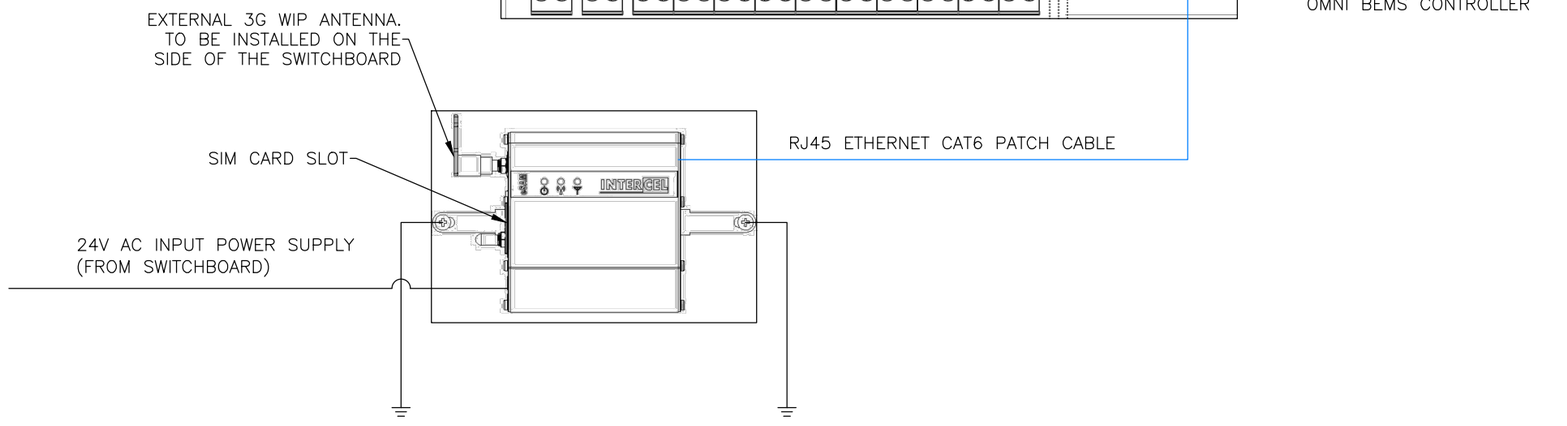
RURAL CITY OF WANGARATTA

LEVEE BANK PUMP STATIONS
BANK STREET, WANGARATTA
ELECTRICALS DETAILS

CLIENT No. WANG45
DRAWING No. 2105 REV. 2
Sheet 5 of 6 | A3





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RURAL CITY OF WANGARATTA

LEVEE BANK PUMP STATIONS
BANK STREET, WANGARATTA
PUMP ALARM TELEMETRY SYSTEM - LINE DIAGRAM

CLIENT No. WANG45
DRAWING No. 2106 REV. 2
Sheet 6 of 6 A3