Grant Archer & Corey Spencer

Specification for Irrigation Pump Station

June 2025

Contents

Table index

1 Introduction

Grant Archer and Corey Spencer (the principal) own and operate two adjoining properties occupying 91 & 110 Bracknell Road, located at Bracknell. They currently operate the properties as mixed dairy and cropping enterprises with a significant area of irrigated ground for fodder and cropping production. The two parties have negotiated to develop a new water storage dam across the property boundary to ensure future irrigation opportunity and improve the usage of their current systems.

The water will be transferred to the dam from the Liffey River by way of a 2.3km pipeline across the land owned by Grant Archer and beneath Bracknell Road, to the new dam site on the northern side of Bracknell Road.

Meander Valley Council, upon enquiry, have advised that the property is zoned Agricultural and as such there is an exemption – 4.2.3 – for irrigation pipes. The proposed irrigation pipes do not require a planning permit, however a Working in Road Reserve Permit will be required.

A new pump station is proposed to be constructed on the Liffey River, upstream and on the stream bank adjacent to the existing pump shed servicing the property of Grant Archer. This enables utilisation of a local power connection and a deep section of river from which to draw water. A new power pole local to the site and overhead connection crossing the Liffey River has been arranged by the client in anticipation of the new Pump Station.

The new pump station will consist of:

- A new electric pump station featuring two pumps and all associated works including electrical equipment and wiring located at the nominated site approximately 10 metres upstream of the current pump station, on the northern bank of the Liffey River.
- Delivery pipelines from the pump station including valves, water meters and the connection to the below ground dam fill transfer mainline.
- Suction manifold and ground entry fittings and suction supply lines.
- Dam fill transfer mainline to new dam site, connecting to through wall pipe including associated fittings.
- All other necessary fittings and associated works.

The requirement is for the supply, installation and commissioning of the proposed pump station, ground entry pipework, suction supply lines, connections and dam transfer mainline pipe as detailed in the following specifications and attached detailed drawings.

- Additionally, a separate portion of irrigator feed pipeline is itemised as “Mainline B” which is to be laid concurrently within the same pipeline trench for a portion of the Mainline length. This is intended to remove the need for a second road corridor underbore and maintain works in the farm lane to a singular disruption period.

The supply and installation of electrical works within the pump station building and connecting to the local power supply form part of this specification and must be quoted as part of the response.

The proposed time frame for installation and completion of the works will be negotiated with the successful supplier.

1.1 Contact

All quotations are to be submitted and addressed to Grant Archer (grantandkim@activedairies.com).

All technical queries and site inspections in relation to this specification should be directed to: Mr James Curran - 0407 622 483 or Ross Bugg - 0400 914 473.

2 Specification

2.1 Functional Description – Pump Station and Dam Transfer Pipeline System

The principal requires the supply, installation and commissioning of a new pump station, dam fill transfer supply pipeline and all other associated works on property co-located at 91 & 110 Bracknell Road, Bracknell, Tasmania.

This specification is for the supply and installation of the proposed pipeline and pump station, including connections to the dam supply mainline, pump shed, civil works, pumps and pipework and all necessary fittings including the required electrical works to supply adequate flow and pressure for the transfer of water to the new storage dam. Excluded from this specification and tender submission is arrangement and establishment of the new power supply pole, this has been arranged by the principal.

Additionally, a portion of a separate irrigation feed mainline is to be installed within the same trench as the dam transfer pipeline. This section is to be itemised separately within the tender submission, as only one party (Archer) will be financially responsible for this Mainline "B".

3 Mainline

The proposed mainline route, size and class are detailed on the attached system plans (Drawing Numbers: 101 Mainline Pipeline Specification, 102 Mainline Pipe Specification (Mainline "B")) and in the tables below:

Table 1. Mainline Pipe

Section	Pipe Size, Class & Material	Qty
Pump to Dam	355mm PN 6.3 polyethylene	2340 m
River to Pump	250mm PN 10 Polyethylene	50 m

Table 2. Mainline "B" Pipe

Section	Pipe Size, Class & Material	Qty
Bracknell Road to CP2 (existing)	315mm PN 6.3 polyethylene	640 m
	280mm PN 6.3 polyethylene	190 m

The mainline shall include:

- All mainline pipe as required
- All main line fittings and associated parts and fittings as required
- All nut, bolts and gaskets as required, including tees where necessary to connect to the future pipeline sections for Mainline "B"

- All other miscellaneous fittings as required
- All concrete thrust blocks as required

3.1 Dam Fill outlet details

The tenderer shall supply and install connecting pipe work to the through wall pipe installed by the dam contractor during construction.

The outlet pipework shall comprise:

- Suitably sized concrete head wall
- 355mm polyethylene flap valve (flange mounted)
- 1 only 355mm flange and backing ring
- 1 only 355mm by 2-inch tapping band
- 1 only 2-inch threaded poly riser pipe (900mm approx.)
- 2 only 2-inch M&F poly elbows
- All necessary thread tape, gaskets, bolts, nuts and Washers
- The 355mm pipe is to be grouted into the concrete head wall
- Rip rap rock (nominally 100 to 200mm) is to be placed down slope of the headwall to prevent scouring.

The preference is for the connecting pipework to be butt welded, however the use of electro fusion couplings will be considered provided this is detailed in the submitted tender.

4 Pump Station

The pump units, and all associated pipework and fitting are to be supplied, installed and commissioned into the pump shed (by the tenderer) on site.

The required pump units and nominated pump duties are:

Table 3. Pump summary

System	Pump Duty	Suggested Pump and motor
Dam transfer pump No.1 & No.2	Combined 114L/s @ 19m head	2 x Southern Cross 150x125-250 (278mm impeller) c/w 22kW 4 pole motor and VFD
Priming Pump	N/A	Davey X201 c/w Kelco P60 Pump Controller

The required pump station layout, fittings and configuration are detailed on the following drawings:

- 201 GEOREFERENCED PUMP SHED LOCATION PLAN
- 202 MAIN PUMP SHED GENERAL LAYOUT
- 203 MAIN PUMP SHED SIDE ELEVATION
- 204 MAIN PUMP SHED END ELEVATION
- 205 TRANSFER PUMP PRIMING SYSTEM
- 301 FABRICATED FITTINGS STEEL

- 302 FABRICATED FITTINGS POLY
- 303 FABRICATED FITTINGS TRANSFER PUMP BASES
- 304 FABRICATED FITTINGS PRIMING PUMP BASE
- 305 FABRICATED FITTINGS PUMP BASE WHEELS

Where specific brands and part numbers have been detailed on the plan they are to be tendered and supplied.

The tenderer is to supply and install all the required parts and fittings as detailed on the drawings and otherwise necessary to complete the installation of the system. This includes all necessary valves, air valves, water meters, nuts and bolts, gaskets, pressure gauges (remote mounted in the shed, with isolation valves, and drain valves), and miscellaneous fittings as required.

4.1 Pipe Work

The suction and discharge pipework has been drawn as a combination of polyethylene and heavy galvanised steel however this may be installed by the tenderer using either stainless steel or wholly polyethylene, provided this is detailed in the submitted tender.

- Appropriate steel pipe supports are to be provided to adequately hold the suction line pipes in place.

4.2 Pump Shed

The tenderer is to supply and construct a suitable pump shed on site. The nominated size of the shed is 4.6m long (suction side) by 4.5m wide (north-south) by 2681mm high (wall height), as detailed on drawing 202 and drawing 203.

These drawings are intended to detail the general arrangement of the shed along with position of pipe entry and exits through the walls, positions of pumps, doors, electrical cabinet, pump starter and variable frequency drives along with the required minimum dimensions. They are not intended as shed construction plans. The tenderer is to allow for the supply and construction of a shed of the nominated size or larger, including site earthworks preparation and leveling. The shed shall incorporate high- and low-level ventilation (louvers with bird mesh) to provide adequate air flow during operation.

The shed finished floor level shall be at RL206.50 (AHD) as a minimum to remain above the identified maximum flood level for the site, and detailed on drawing numbers 202 to 204. This level will be verified on site by the principal's representative.

The shed shall be made vermin proof.

The tenderer is to seek and obtain any necessary building structural design.

The tenderer is to provide adequate details of the proposed shed construction, such that the proponent will be reasonably informed as to what is proposed by the tenderer.

4.3 Pump Bases

The requirement is for the manufacture of the pump bases (drawing numbers 303 to 305), along with the supply of the nominated pumps and motors.

The pump bases are to be fully welded unless noted otherwise on the drawing.

The pump bases are to be galvanised after fabrication.

Any pooling, bubbles etc. of zinc (resulting from galvanising) in critical areas for pump and motor mounting shall be removed prior to mounting and aligning the pump and motor.

The pump and motor shall be painted the same colour.

Welds of any of the pump base components designated to be performed after galvanising, shall be coated with Hot Galv Stick, then painted with Cold Gal, then painted with Silver Frost.

4.4 Fabricated Stainless Steel Fittings

The fittings are to be fabricated in compliance with the following:

- Fittings are to be fabricated from steel pipe with minimum of schedule 10
- Plate steel flanges and butt weld reducers and elbows are to be utilised.
- Butt weld elbows are to be long radius unless otherwise noted.
- Flanges shall comply with AS 2129, Table D, unless otherwise noted on the drawings.
- Flanges are to be welded inside and out.
- Where loose flanges are used the thickness of the retainer flange shall be at least 70% of the thickness of a standard Table D/E flange.
- The insides of loose flanges are to be chamfered to allow clearance for the weld on the retainer flange.

Appropriate care is to be taken during transport, loading and unloading to avoid damage to the pipe work.

4.5 Flow Meters

The Contractor shall supply and install a single flow meter on the discharge pipework between fitting S005 and fitting P003 as per the provided drawings. The flow meter and installation practises must comply with the manufacture's specification with reference to the "Tasmanian standard for non-urban water meters" (2014).

Table 4. Flow meter summary

Pumps	FM size	FM Brand/Model
Dam transfer pump No.1 & No.2	DN250	Bermad Euro Mag

As the water meter is to be located above head height, the pulse output from the meter is to be connected to a remote eye level wall mounted readout. The read out must as a minimum provide

accumulated flow. Alternative water meters will be considered provided they can be installed as proposed in the drawings and remain compliant with the standard, and provided adequate details is provided in the submission to allow for evaluation of suitability.

4.6 Electrical

Details of the proposed electrical works for the irrigation pump station shall be provided as part of the tenderer's response. This is to include provision of the electrical cost as a separate item.

Note: The new low voltage supply pole is proposed to be installed at a distance between 5m and 10m in a straight line east from the pump station.

The general requirements are provided below.

4.6.1 Pump Station

The requirement is for the supply and installation of all the electrical equipment for the pump station. This will include, but not be limited to:

- Electrical distribution / metering board
- Supply cabling from pole to shed
- Wiring of the proposed priming pump, transfer pump motors, drives and controls
- Wiring of shed for single phase power outlets and lighting, including outside flood lighting
- All other necessary equipment and fittings

The pump station will consist of the following pumps and drives:

- 2 only 22kW 4 pole pump units for the Dam Transfer Pumping system, with:
  - Pump motors to be controlled by a VFD linked to the flow meter with a user programmable interface to allow for setting target flow delivery.
  - Pump start will be controlled manually from the shed and the ability to control each pump individually will be necessary.
  - Suitable pump protection will also be required i.e. low pressure, dry running, burst main.

- 1 only Davey X201 Pump Priming system
  - Pump start will be automated at the pump shed upon operation of the transfer pumps, controlled by a Kelco P60 flow switch to ensure pump prime is achieved.

4.7 Valves

4.7.1 Butterfly Valves

All butterfly valves shall be gear driven and constructed to suit table D flanges. The valve body is to be cast iron with an EPDM liner and a stainless-steel stem and disk.

5 Installation

For all works on site by the tenderer/supplier and their subcontractors, all appropriate workplace health and safety procedures shall be implemented and followed. It is the contractor's responsibility to identify and appropriately mitigate and manage any potential workplace hazards.

Where the supplier's systems and resources are inadequate to deal with the hazards and issues that arise, work shall not proceed until this has been addressed to the satisfaction of the principal or their representative.

The personnel appointed by the successful supplier shall be appropriately trained, experienced, and qualified for the required tasks. Additionally, appropriate and correct equipment, tools and machinery must be available and utilised for the installation and assembly of the various elements of the project.

6 Site Inspection and Access

The successful supplier/contractor is responsible for inspecting the proposed work site and being fully aware of the general ground conditions and the requirements for installation. They are also responsible for location of any services that they may impact during works on site.

A preliminary Dial Before You Dig search conducted has highlighted a Telstra line in the roadside verge on Bracknell Road, and within the property there will be requirement for location services to be undertaken by a suitably qualified operator.

A minimum of 24 hours' notice must be given to the principal or their representative prior to site access for either initial inspection or works commencement.

7 Site Set Out and Pegging

The principal is responsible for arranging setout of the nominal pump shed location as designed and provision of a site benchmark referencing final slab height for the contractor.

8 Site Security

The successful supplier/contractor, their employees and sub-contractors will be solely responsible for the security of their equipment, tools and all materials.

9 Site Clean Up

All rubbish and packaging shall be removed from site at the conclusion of the installation and recycled as appropriate. This must be to the satisfaction of the principal or their representative.

All surface rock is to be removed from the works areas and grass seed sown.

10 Hours of Work

Given the rural location, there are no restrictions on the hours of work. That said, suitable notice of any proposed weekend / out of normal working hours work will be given to the principal or their representative.

11 Commissioning and Training

The contractor is to commission the pump system at the completion of the installation.

Adequate onsite training for the principal or their representative shall be provided such that they have adequate knowledge in the operation of the pump station along with the maintenance requirements.

The quotation provided is to detail how training will be provided within the submitted tender.

12 Original Equipment Documentation

The supplier/contractor must supply the originals of all operation and maintenance manuals for all installed plant and equipment including fixtures, fittings and appliances forming part of the tender as provided to the Contractor by the suppliers of the applicable plant and equipment.

13 Warranty

Tenderers shall comprehensively detail all warranty schedules for the proposed pipelines and electrical works within the submission. This must clearly define the period, terms and conditions of the various components including, but not limited to:

- Pipework
- Pump units
- Valves
- Water meters
- Electrical equipment

The procedures for handling warranty situations must also be detailed within the submission.

Additionally, details of how long-term maintenance arrangements and backup services can be provided will also be included in the submission.

14 Insurance

The successful supplier/contractor shall ensure suitable insurance cover is in place to cover the various components and equipment that comprise the mainline and electrical works until such time as contract completion. This shall include but not be limited to:

- Damage during transport
- Malicious damage
- Damage from fire and theft

Adequate insurance for public liability, workers compensation and motor vehicle insurance must also be held by the successful supplier/contractor.

15 Completion

The completion date will be negotiated with the successful supplier/contractor. A draft program of works shall be submitted with the tender documentation.

16 Other Matters

16.1 Livestock Control

In accessing farmland (including cropped paddocks) it cannot be assumed that livestock are not present. All gates should be left as they are found. For multiple vehicle access where the gate was closed to the first vehicle, if the following vehicle is not in sight, then the gate is to be closed. Any costs associated with livestock loss / escape from paddocks and associated work to recapture stock that can be attributed to the improper latching or not following these rules by the successful supplier or their subcontractors, will be claimable by the principal from the successful supplier.

16.2 Fences

Works that require the cutting of internal fences (with potential consequences for stock control) must be communicated with the principal. It is anticipated that it will be possible to negotiate the removal of all livestock from both sides of the fence for the duration of the works at this locality, to minimise further control actions.