

**IRR OPTION 1**  
REPLACE FIELD IRRIGATION

**CONCEPTS**  
FOR COMMENT & APPROVAL

DRAWING TABLE		
DRAWING NUMBER	TITLE	REV
15888-300-1	DENNIS PARK SPORTS FIELDS - KEY PLAN	A
15888-301-1	DENNIS PARK JUNIOR RL FIELDS - LAYOUT 1	A
15888-302-1	DENNIS PARK SENIOR RL FIELDS - LAYOUT 2	A
15888-303-1	DENNIS PARK WATER SUPPLY - LAYOUT 3	A

**KEY DESIGN DATA - CONCEPT STAGE**  
**DENNIS PARK**

**DENNIS PARK - CURRENT & PROPOSED AREAS**

TOTAL AREA	4.24 HA (TBC - INCLUDES FUTURE)
SOIL, TYPICAL	LOAM
PLANT	SPORTS TURF - HIGH USE
PLANT FACTOR	0.8 (OPTIMUM GROWTH)
WINDOW	8.30PM TO 3.00AM
IRRIGATION TIME	6.5 HR/DAY
PEAK DEMAND	34 MM/WK
PUMP DUTY CAPACITY	Q= 10 I/S @ H=70M (OPTION 3 PS)
VALVE GROUPING RANGE:	UP TO 2X VALVES @ 5L/S EA
EXISTING PS POWER <sup>A</sup>	9.2KW (22 FLA @ 415V) 2X SUB(DXS)
NEW PUMP POWER	11KW (22 FLA @ 415V) VFD - (DXD)
PEAK VOLUME, WEEK	1.5 ML/WK
AVERAGE VOLUME, YEAR	25 ML/YR
ASSUMES YEAR ROUND FIELD USAGE & IRRIGATION PROGRAM	

NOTE(A); EXISTING PUMP CAPACITY FOR 1X DUTY SP30-10 IS;  
Q= 9 L/S @ H= 70M

**POWER SUPPLY**

<b>NEW DENNIS PARK PUMPS - OPTION 3</b>	
POWER/LOAD (2X DUTY)	2X 5.5KW / 11FLA = 22FLA @ 415V
<b>EXISTING DENNIS PARK PUMPS - OPTION 4</b>	
POWER/LOAD (DUTY/ST-BY)	9.2KW / 22FLA EA @ 415V (1 OP)

**KEY DESIGN DATA - CONCEPT STAGE - RW SUPPLY ALL SITES**  
**BITS SPORTS CLUBS, BITS GOLF & DENNIS PARK RL**

<b>ALL SITES ESTIMATED DEMAND SUMMARY *</b>	
AREA, TOTAL SITES	19.43 HA
FLOW PEAK DEMAND	42 L/S
VOLUME, PEAK WEEK	6.65 ML/WK
AVERAGE VOLUME, YEAR	112 ML/YR

<b>CURRENT RECYCLED WATER SUPPLY CAPACITY <sup>A</sup></b>	
FLOW, IN/OUT BITS TANKS	30 TO 35 L/S
FLOW, IN/OUT DENNIS PARK TANKS	13 L/S
COMBINED FLOW, IN/OUT BITS & DP	43 L/S
PEAK VOLUME, WEEK	## ML/WK (GRC-TBC)
AVERAGE VOLUME, YEAR	119 ML/YR (GRC-IMP)

**NOTES:**

- A. (\*) BASED ON AVERAGE BOM DATA, CURRENT SITE AREAS INCLUDE PROPOSED SPORTS FIELD EXTENSIONS WHERE SHOWN ON DRAWINGS. DOES NOT INCLUDE POTENTIAL FUTURE 5 GOLF HOLES, WHICH WOULD INCREASE GOLF PUMP STATION FLOW FROM 22 L/S TO 30 L/S AND TOTAL FLOW DEMAND TO 50 L/S.
- C. (\*) BITS TANK IS LIMITED TO 30 L/S WHEN DENNIS PARK IS OPERATING AT THE SAME TIME (8.30PM TO 3AM). GRC WATER OPERATORS ADVISED DENNIS PARK USAGE TIMES ARE SIGNIFICANTLY LOWER THAN BITS, PERHAPS RELATED TO SEASONAL FIELD USAGE, WHICH MAY OFFER SOME ALLOCATION FLEXIBILITY. GOLF HOURS 7PM-4AM.
- D. (\*) IF GOLF COURSE AREAS ARE SIGNIFICANTLY EXTENDED (EG, 5 HOLES ~ 4.4 HA) IN THE FUTURE THE STP CAPACITY, INCLUDING VOLUME, PUMP/PIPE SIZE, TANKS AND IN FLOWS WILL REQUIRE REVIEW AS THE ESTIMATED GOLF DEMAND WILL INCREASE PROPORTIONALLY BY 38% AND THE SYSTEM DESIGN IS AT OR NEAR CAPACITY WITHIN THE AVAILABLE TIME WINDOWS, BASED ON THE INFORMATION PROVIDED BY GRC TO DATE.
- E. GRC TO CONFIRM RW SUPPLY CAPACITY TO BITS/DENNIS PARK, STP MAY HAVE ALLOCATION SUPPLY OTHER SITES, EG - RED MUD DAM DURING DAY TIME HOURS

**DESIGN NOTES**

**SCHEDULING COEFFICIENT - PERFORMANCE OPTIONS:**  
DESIGN SPACING AND PATTERNS ARE MOSTLY DICTATED BY SHAPES AND OBSTACLES TO DETERMINE THE LAYOUT THAT BEST SUITS THE SITE, THEN A PRESSURE IS SELECTED FOR THE RESULTANT LAYOUT TO PROVIDE THE OPTIMUM PERFORMANCE IN TERMS OF DISTRIBUTION UNIFORMITY (%), COEFFICIENT OF UNIFORMITY - CHRISTIANSEN (%) AND SCHEDULING COEFFICIENT. THE PERFORMANCE IS LARGELY RELIANT ON THE PRODUCTS AVAILABLE TO MEET CRITERIA, AND THERE IS NO VALUE IN A SUBSTANDARD HYDRAULIC DESIGN AND STOCK LILAC PIPE IS GENERALLY LIMITED TO PN12.5. IN THIS CASE TWO MANUFACTURERS WITH THE BEST PERFORMANCE DATA TO COMPARE HAVE BEEN SELECTED ACROSS THE RANGE OF SPACINGS BEING USED IN THE DESIGN. IN THIS CASE OPTION 1 HAS THE BEST UNIFORMITY AND SCHEDULING COEFFICIENT (1.2), IN ALL FIELD LAYOUTS AND CAN BE RECOMMENDED FOR THIS APPLICATION. ROTOR COSTS WILL NOT BE SIGNIFICANTLY DIFFERENT IN THE SCALE OF PROJECT. OTHER FACTORS TO CONSIDER FOR SELECTING ROTOR OPTIONS INCLUDE THE CONTROL SYSTEM CAPABILITY, IN THIS CASE FOR A BLOCK SYSTEM THE ROTORS ARE NOT INTEGRAL WITH THE MANUFACTURERS CONTROL SYSTEM & SOFTWARE, HOWEVER A 'PACKAGED SYSTEM' MAY HAVE EXTENDED WARRANTY ADVANTAGES.

**CONTROL SYSTEM OPTIONS - OVERVIEW:**

BOTH SYSTEMS HAVE THE CAPABILITY FOR REQUIRED PROGRAMMING WITH SENSOR INPUTS SUCH AS FLOW METERS AND ENVIRONMENTAL SENSORS FOR FLOW MANAGEMENT AND SEASONAL SCHEDULING.

**OPTION 1 - RAIN BIRD**

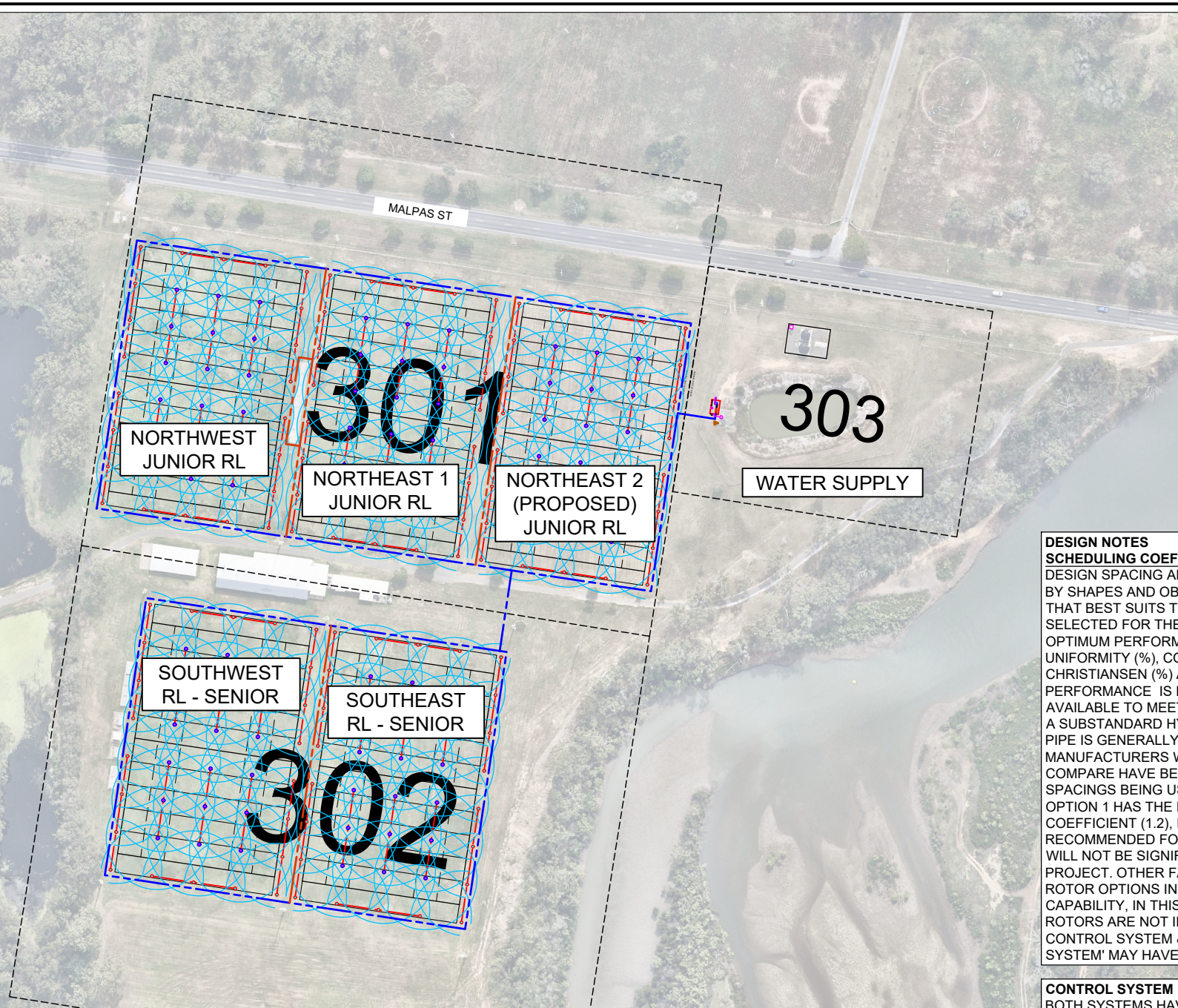
CENTRAL CONTROL SOFTWARE - IQ  
FIELD CONTROLLER, ESP-LX- IVM  
2 WIRE (2.5MM<sup>2</sup>) CONTROL SYSTEM & GROUNDING

**OPTION 2 - TORO**

CENTRAL CONTROL SOFTWARE - SENTINEL  
FIELD CONTROLLER - SENTINEL 2 WIRE DECODER  
2 WIRE (2.5MM<sup>2</sup>) CONTROL SYSTEM & GROUNDING

**RECOMMENDATION**

IN THE EARLY STAGES OF DETAILED DESIGN, OPERATORS RECEIVE A INTERACTIVE DEMONSTRATION OF THE CENTRAL CONTROL SOFTWARE FROM EACH MANUFACTURER OF THE NOMINATED OPTIONS TO ACCESS. SUGGESTED AGENDA 1 HOUR FOR HARDWARE & 1 HOUR FOR SOFTWARE EVALUATION OF EACH OEM CONTROLS. ALTERNATIVELY HYDROPLAN CAN PROVIDE A BRIEF EVALUATION OF THE TWO OPTIONS.

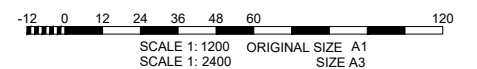


**OPTION 1 - RAIN BIRD**  
MODEL 8005SS-NP



**OPTION 2 - TORO**  
MODEL T7P-SS-52-E

Effluent Options Available  
SST Riser Options Available



Drawing by: Z/GRC - Gladstone Regional Council 15888 BITS Club and Dennis Park Sports Complex Drawings for use only. R11 15888-300-02 - Standard 15888-300-DENNIS PARK SPORTS IRRIGATION (02)-OPT 1.dwg - 08/05/2021 11:58 AM Original Size: ISO FULL BLEED A1 (420.00 X 297.00 MM)



REV	ISSUED	D.DWN	APRVD	REVISION DESCRIPTION	REV	ISSUED	D.DWN	APRVD	REVISION DESCRIPTION
A	30/07/2021	EM	SJ	CONCEPTS - FOR COMMENT & APPROVAL					



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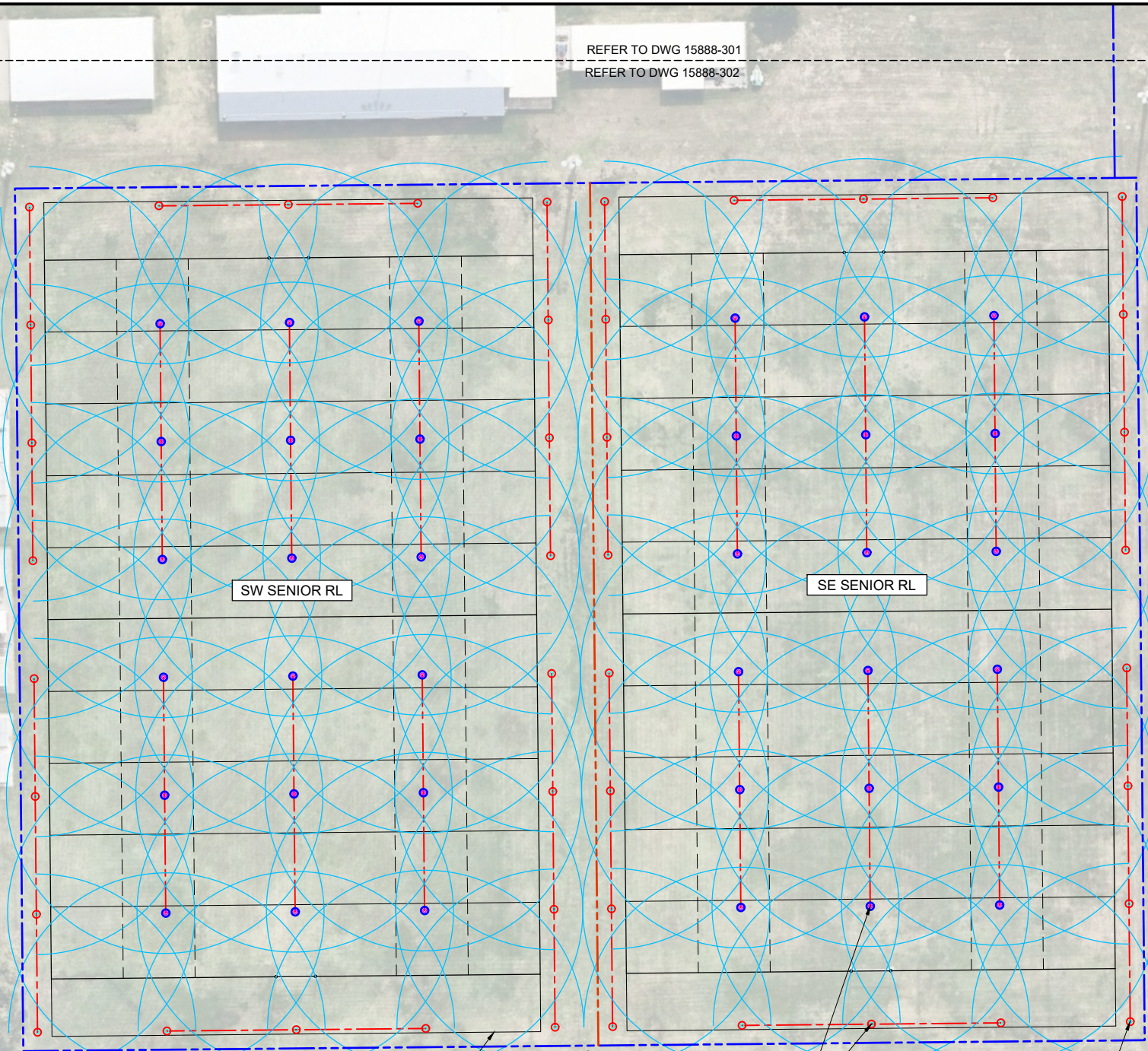
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DESIGNER:	EM	CLIENT:	GLADESTONE REGIONAL COUNCIL
CHECKED:	PH	PROJECT:	182-21 BITS CLUB SITE & DENNIS PARK SPORTS COMPLEX
APPROVED:	SJ	PROJECT:	DETAILED DESIGN IRRIGATION SYSTEM DENNIS PARK SPORTS FIELDS - KEY PLAN
DATE:	12/05/2021	DRAWING No.	15888-300-1
DRAFT REF:	4-GRC-d2	SHEET	1 OF 4
		REVISION	A



Drawing file: Z:\GRC - Gladstone Regional Council\15888 BITS Club and Dennis Park Sports Complex\Drawings\4- IRRIGATION (CONCEPT) - DENNIS PARK SPORTS COMPLEX\15888-300-DENNIS PARK SENIOR RL.dwg - 06/05/2021 11:58 AM Original Size: ISO FULL BLEED A1 (420.00 X 297.00 MM)



REFER TO DWG 15888-301  
REFER TO DWG 15888-302

SW SENIOR RL

SE SENIOR RL

**DEAD BALL LINE:**  
DEAD BALL LINES ARE SHOWN AS 8M ON SENIOR FIELDS, CLUB TO CONFIRM IF OTHERWISE

**ALL 360° & 180° ARC ROTORS**  
USE FULL SIZE NOZZLES ON SEPERATE VALVES

**ALL CORNER 90° ARC ROTORS**  
USE 1/2 SIZE/FLOW NOZZLES

**FIELD BOUNDARY NOTES:**  
THE FIELD BOUNDARIES PROVIDED IN BASE FILES WERE NOT SYMMETRICAL OR DETAILED WITH FIELD MARKINGS TO REGULAR DIMENSIONS. THE FIELD MARKINGS SHOWN ARE SYMMETRICAL TO GENERATE A SYMMETRICAL DESIGN LAYOUT OFFSET FROM CENTER AXIS WITH FIELD MARKINGS & GOAL POSTS DETAILED. THE MAIN PIPES ARE OFFSET FOR CLARITY HOWEVER THE FINAL SETOUT MAY BE ADJUSTED SLIGHTLY TO 'BEST FIT' IF REQUIRED TO AVOID PERIMETER OBSACLES OR SERVICES CONFLICT.

**LEGEND:**

- R RECYCLED WATER SIGN, TYPE/SIZE ####
- P PUMP, TYPE/SIZE ####
- T TANK, TYPE/SIZE ####
- L LOW LEVEL SENSOR (NOT SHOWN)
- B BACKFLOW ASSEMBLY, TYPE/SIZE ####
- A IRRIGATION CONTROLLER, TYPE ####
- W WEATHER SENSOR, TYPE ####
- F FLOW METER, TYPE/SIZE ####
- X ISOLATION VALVE (DN## LINE SIZE) C/W 910 VB
- S FILTER AUTO SCREEN, DN##, 200 MICRON
- A DN50 AIR VALVE C/W 910VB (NOT SHOWN)
- Q DN25 QCV C/W 910VB (NOT SHOWN)
- S DN## SOLENOID VALVE, TYPE #### \* (CONCEPT)
- S DN## SOLENOID VALVE, TYPE ####
- C DN## ROTOR C C/W SJR, MODEL #### FULL CIRCLE
- D DN## ROTOR D C/W SJR, MODEL #### PART CIRCLE
- DN## HDPE PN12.5 LILAC MAIN PIPE - A
- DN## HDPE PN12.5 LILAC MAIN PIPE - B\* (CONCEPT)
- DN## HDPE PN12.5 LILAC MAIN PIPE - C
- DN## HDPE PN12.5 LILAC LAT PIPE - A\* (CONCEPT)
- DN## HDPE PN12.5 LILAC LAT PIPE - B
- DN## HDPE PN12.5 LILAC LAT PIPE - C
- POWER CABLE & CONDUIT ROUTE (240-415V)
- CONTROL WIRE ROUTE A, ## (NOT SHOWN)
- CONTROL WIRE ROUTE B, ## (NOT SHOWN)

FOR ROTOR MODEL & NOZZLE REFER ROTOR TABLE, BASED ON SPACING

**OPTION 1.1.S - ROTOR PERFORMANCE - SENIOR RL**

**RAIN BIRD**

PARAMETER	UNIT	DATA
MODEL	#	8005-SS-NP
NOZZLE	#	22
BASE PRESSURE	KPA	483
FLOW	LPM	97
RADIUS	M	22.3
TYPICAL LATERAL SPACING	M	18
AVERAGE ROTOR SPACING	M	16.4
TYPICAL GRID PATTERN	REC/TRI/SIN	RECT
MEAN APPLICATION RATE	MM/HR	19.6
DISTRIBUTION UNIFORMITY	%	85
CU (CHRISTIANSEN)	%	89
SCHEDULING COEFFICIENT (10% WINDOW)	FACTOR	1.2

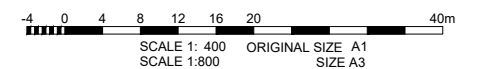
**OPTION 1.2.S - ROTOR PERFORMANCE - SENIOR RL**

**TORO**

PARAMETER	UNIT	DATA
MODEL	#	T7P SS 52 E
NOZZLE	#	27
BASE PRESSURE	KPA	483
FLOW	LPM	98
RADIUS	M	21
TYPICAL LATERAL SPACING	M	18
AVERAGE ROTOR SPACING	M	16.4
TYPICAL GRID PATTERN	REC/TRI/SIN	RECT
MEAN APPLICATION RATE	MM/HR	19.9
DISTRIBUTION UNIFORMITY	%	79
CU (CHRISTIANSEN)	%	83
SCHEDULING COEFFICIENT (10% WINDOW)	FACTOR	1.3

**IRR OPTION 1**  
REPLACE FIELD IRRIGATION

**CONCEPTS**  
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REV	ISSUED	D.DWN	APRVD	REVISION DESCRIPTION	REV	ISSUED	D.DWN	APRVD	REVISION DESCRIPTION
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DRAFT REF: 4-GRC-d2

CLIENT: GLADESTONE REGIONAL COUNCIL  
182-21 BITS CLUB SITE & DENNIS PARK SPORTS COMPLEX  
PROJECT: DETAILED DESIGN IRRIGATION SYSTEM  
DENNIS PARK SENIOR RL FIELDS - LAYOUT 2  
DRAWING No. 15888-302-1 SHEET 3 OF 4 REVISION A

Drawing file: Z:\GRC - Gladstone Regional Council\15888-BITS Club and Dennis Park Sports Complex\Drawings\4-Pref job\_1515888-300-2-DENNIS PARK SPORTS COMPLEX\15888-300-2-DENNIS PARK WATER SUPPLY - LAYOUT 3.dwg - 06/05/2021 11:58 AM Original Size: ISO Full Bleed A1 (297.0 x 420.0 mm)

REFER TO DWG 15888-301

REFER TO DWG 15888-303

**RECYCLED WATER SUPPLY CONTROL ENCLOSURE**  
RETAIN EXISTING PLC & SCADA INPUTS/OUTPUTS, INCL; TANK LEVEL(2), VALVE, FLOW METER. PLC LOGIC PUMP AT STP STARTS ON LEVEL SWITCH THEN OPENS VALVE AT TANK

**EXISTING RECYCLED WATER SUPPLY INFRASTRUCTURE**

**RECYCLED WATER STORAGE TANKS, CAPACITY 2X 46KL**

**INFLOW FROM STP**  
DUTY Q= 13 L/S

**DOSING:**  
NO SPECIFIC ALLOWANCE HAS BEEN MADE AT THE CONCEPT STAGE ON-SITE, OR AT STP, FOR ADDITIONAL WATER TREATMENT OR DOSING. POTENTIAL OPTIONS ARE ACID (pH), LIQUID CALCIUM (Na) & SURFACANTS (HW/HS). CHEMICAL STORAGE, BUNDING, SAFETY SHOWER & OPERATOR TRAINING TO BE CONSIDERED. GRC TO CONFIRM IF ANY SPECIFIC DOSING REQUIREMENT ON-SITE.

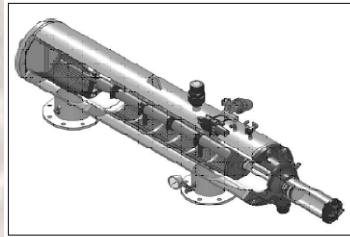
**FOR OPTION 3 - GRC TO PROVIDE A/C DRAWINGS OF RW SUPPLY PIPE TO WELL FOR CONTRACTOR TO LOCATE & CONNECT TO NEW PUMP SUCTION**

**DENNIS PARK WATER SUPPLY - PUMP OPTION 3**  
NEW SHED & PUMP SYSTEM & SHED  
DECOMMISSION EXIST PUMPS IN WET WELL  
GRUNDFOS MPC 2X CRNE15-4 (5.5KW EACH) DUTY X DUTY, Q= 10 L/S @ H=70M  
AUTO FLUSH SCREEN FILTER, FILTAWORX FW100EX (FULL 316SS), C/W 316SS BYPASS MANIFOLD & 3X BUTTERFLY VALVES

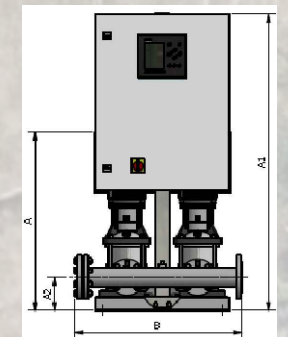
**DENNIS PARK POWER SUPPLY**  
EXISTING PUMPS OPTION 4 2X 9.2KW 21.8FLA @ 415V (EACH) DUTY X STANDBY  
NEW PUMPS OPTION 3 2X 5.5KW 11FLA @ 415V DUTY X DUTY = 22 FLA @ 415V

**DENNIS PARK WATER SUPPLY - PUMP OPTION 4**  
RETAIN EXIST PUMPS IN WET WELL (2X SP30-10 (9.2KW EACH) DUTY X STANDBY  
REPLACE FILTER WITH NEW AUTO FLUSH SCREEN FILTER, FILTAWORX FW###EX (FULL 316SS), C/W 316SS BYPASS MANIFOLD & 3X BUTTERFLY VALVES

NOTE(\*): EXISTING PUMP CAPACITY FOR 1X DUTY SP30-10; Q= 9 L/S @ H= 70M



**DN100 316SS AUTO SCREEN FILTER - BY PASS NOT SHOWN**  
NTS



**NEW PUMP UNIT GA - 2XCRNE15-4**  
NTS

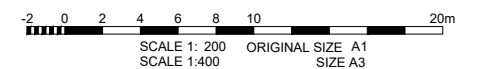
**LEGEND:**

- RECYCLED WATER SIGN, TYPE/SIZE ####
- PUMP, TYPE/SIZE ####
- TANK, TYPE/SIZE ####
- LOW LEVEL SENSOR (NOT SHOWN)
- BACKFLOW ASSEMBLY, TYPE/SIZE ####
- IRRIGATION CONTROLLER, TYPE ####
- WEATHER SENSOR, TYPE ####
- FLOW METER, TYPE/SIZE ####
- ISOLATION VALVE (DN## LINE SIZE) C/W 910 VB
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FOR COMMENT & APPROVAL



SCALE 1: 200 ORIGINAL SIZE A1  
SCALE 1:400 SIZE A3



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DATE:	12/05/2021
DRAFT REF:	4-GRC-d2

CLIENT:	GLADESTONE REGIONAL COUNCIL
PROJECT:	182-21 BITS CLUB SITE & DENNIS PARK SPORTS COMPLEX
DRAWING No.:	15888-303-1
SHEET	4
OF	4
REVISION	A

REV	ISSUED	D.DWN	APRVD	REVISION DESCRIPTION	REV	ISSUED	D.DWN	APRVD	REVISION DESCRIPTION
A	30/07/2021	EM	SJ	CONCEPTS - FOR COMMENT & APPROVAL					