CKL WWPS Resource Consent Servicing Assessment	
Project name	Summerset Retirement
Project number	A25556
Client	Summerset Group Holdings Ltd
Council / authority	Kapiti Coast District Council
Prepared by	**J.Allely**
Reviewed by	**K.Gunkel**
Revision	**E**

Resource consent basis
This workbook is a trimmed resource consent-level version prepared to support resource consent / servicing assessment.
It demonstrates wastewater demand, conceptual rising main sizing, pump/system curve basis, and indicative wet well/storage feasibility.
Final pump selection, supplier confirmation, surge, buoyancy, structural, electrical, controls and detailed operating levels are to be confirmed during detailed design / EPA.
Use the links below to navigate the workbook.

Workbook navigation		
Project information	**Open**	*Project and document control fields*
Design criteria	**Open**	*RC design assumptions and RITS criteria*
WW demand		
RC design summary	Open	*Concise printable resource consent summary*
Rising main concept	Open	*Concept pipe, velocity, headloss and septicity checks*
Pump curve	Open	*Pump / system curve reporting page*
Wet well / storage concept		
Lookup tables	Open	*Supporting lookup data*

Colour convention: blue = user input/manual entry; light grey = automatic, linked, calculated or lookup value.

Project: Summerset Retirement | No.: A25556 | Designed: J.Allely | Reviewed: K.Gunkel | Date: 20.10.26

Project details and document control				
Project name	Summerset Retirement	*Input*	**Office**	Auckland
Project number	A25556	*Input*	**Rev #**	E
Client	Summerset Group Holdings Ltd	*Input*	**Date**	20.10.26
Council / authority	Kapiti Coast District Council	*Input*		
Design stage	Resource Consent	*Dropdown*		
Calculation purpose	RC Design Sizing	*Input*		
Prepared by	J.Allely	*Input*		
Technical reviewer	K.Gunkel	*Input*		
Authorised by		*Input*		
Template version	v1.0 Draft	*Controlled*		
Template date	2026-06-30	*Controlled*		
Template Designed by	K.Gunkel	*Controlled*		

Revision history

Revision	Date	Prepared	Reviewed	Description
A	23/07/2026	JA	JS	Concept sizing
B	15/08/2026	JA	KG	Concept Sizing & Comparison of Peak Flow
C	25/09/2026	JA	KG	Draft for Client Feedback
D	9/10/2026	JA	KG	Revised following client review and design-review QA close-out
E	20/10/2026	JA	KG	Revised following client review x2

DESIGNER DECISION / RESPONSE

Designer:	JA	**Date:**	20.10.26	**Accepted**

Project: Summerset Retirement | No.: A25556 | Designed: J.Allely | Reviewed: K.Gunkel | Date: 20.10.26

Core wastewater demand, storage and hydraulic design criteria				
Criterion	**Value**	**Unit**	**Source / note**	**QA status**
Design Standard	4404/KCDC/WSA 04	-	*Modified for KCDC Addendum to NSZ4404. Refers back to WSA 04*	SET
Residential occupancy	1.3	persons/dwelling		SET
Care unit occupancy	1.0	persons/dwelling		SET
Wastewater unit flow: residents	263	L/person/day	*KCDC LDMR Clause 5.3.5.1 / 75% of potable water demand*	SET
Wastewater unit flow: care units	180	L/person/day		SET
Wastewater unit flow: staff/visitors	50	L/person/day		SET
Dry weather diurnal PF	2.5		*NZS4404 / WSA.*	SET
Wet weather PF : Gravity	2		*NZS4404 / WSA. Applies to Gravity systems only*	SET
Wet weather PF : LPS	1.2		*KCDC requirement. Applies to LPS only*	SET
Minimum rising main velocity	0.85	m/s	*As per WSA 04, section 11.3.6, varies with diameter. min = greater of (vsc = 0.267 d1/6) OR (vssc = 0.414 d1/6)*	SET
Preferred rising main velocity	1.5	m/s	*Ideal efficient operating range 1.0 to 1.5 m/s*	SET
Maximum rising main velocity	3.5	m/s	*As per WSA 04*	SET
Default Hazen-Williams C	N/A	-	*PE/PVC typical; confirm material*	SET
Maximum pump starts, S	8	starts/hr	*WSA 04 Section 6.4.3: 12 pump starts per hour for sizes ≤15 kW, whilst for sizes >15kW, 8 starts per hour or 90% of the pump manufacturer's recommended number. 8 taken to be conservative*	SET
Emergency storage duration	24	hr at ADWF	*KCDC 4404: requires min 24 hours for private stations.*	SET
Wet well detention review trigger	3	hr	*Review if exceeded*	SET
Rising main detention review trigger	6	hr	*Review odour/septicity risk if exceeded*	SET
Pressure utilisation warning	80	% of PN	*Allow margin for surge/transient effects*	SET
Surge screening length trigger	250	m	*Detailed surge review if exceeded*	SET
Surge screening velocity trigger	1.5	m/s	*Detailed surge review if exceeded*	SET
Rising main friction, roughness and pipe selection criteria				
Governing friction basis	Colebrook-White + Darcy-Weisbach	-	*Friction factor is solved using Colebrook-White; headloss is calculated with Darcy-Weisbach*	SET
Ks new/smooth pipe	0.5	mm	*Colebrook-White lower roughness case. Pump selection graph plots this system curve*	SET
Ks aged/rough pipe	1.5	mm	*Colebrook-White upper roughness case. Conservative TDH and pump selection graph use this system curve.*	SET
Optional comparison methods	Swamee-Jain / Hazen-Williams	-	*Reference only. Not used in governing TDH or system curve.*	INACTIVE
Kinematic viscosity	0.00000114	m2/s	*Default value consistent with water at approximately 15 deg C ; adjust only with project-specific data.*	SET
Laminar Reynolds limit	2000	-	*Use f = 64/Re below this value.*	SET
Transitional Reynolds upper limit	4000	-	*Flows between laminar limit and this value should be reviewed.*	SET
Reference table	See 99 Lookup Tables P:V	-	*Formula basis, applicability and source notes.*	SET
Active method note	Colebrook-White is the governing friction loss method	-	*Rising Main Design sheet uses Ks = 1.5 mm. Pump Selection sheet plots Ks = 0.5 mm and Ks = 1.5 mm system curves.*	SET
Minimum wet well diameter	2.1	m	*WSA 04 - 6.4.2 / User input*	SET
Minimum operational depth	0.40	m		SET
Stop level above pump min submergence	0.10	m	*WSA 04 9.7.2*	SET
Minimum duty / standby step	0.10	m	*WSA 04 9.7.2 standby start 100 mm above duty start; high alarm 100 mm above standby start*	*SET*

Resource consent note	*RC workbook. Final pump selection, surge, buoyancy, structural design, electrical and controls to be confirmed during detailed design / EPA.*

DESIGNER DECISION / RESPONSE

Assumed 50 L/p/d for staff based on typical flow data from Summerset. LPS PFs added to demonstrate difference in flows. Wetwell diameter set by this sheet, assumed minimum 2.1. Assumed minimum 24 hours emergency storage, suggested that felxibility is sought for this to allow potential reduction to 8 in future. 36 hours (KCDC LDMR 5.3.11 b) total volume not considered appropriate due to comprehensive maintenance contract to be provided for pump station.

Designer:	JA	**Date:**	20.10.26	**Accepted**

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Catchment / Population Inputs

Parameter	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	TOTAL	Units/Notes
Zoning	Medium Density Residential	Medium Density Residential	Medium Density Residential	Medium Density Residential	Medium Density Residential		
Residential dwellings	30	59	57	54	57	257	*No.*
Care units / serviced apartments	0	90	0	0	0	90	
Residential Occupancy	1.3	1.3	1.3	1.3	1.3		*persons/dwelling*
Care Units Occupancy	1.0	1.0	1.0	1.0	1.0		
Residential occupancy	39.0	76.7	74.1	70.2	74.1	334	
Care occupancy	0.0	90.0	0.0	0.0	0.0	90	*persons*
Manual PE adjustment: staff/visitors	9	49	9	9	9	85	*persons*
Total PE	48	216	83	79	83	**509**	*persons*

Demand Criteria

Parameter	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Unit / Notes
Unit wastewater flow - residents	263	263	263	263	263	*L/person/day.*
Unit wastewater flow - care units	180	180	180	180	180	*L/person/day.*
Unit wastewater flow - staff	50.0	50.0	50.0	50.0	50.0	*L/person/day.*
Dry weather diurnal PF	2.5	2.5	2.5	2.5	2.5	
Wet weather PF : Gravity	2.0	2.0	2.0	2.0	2.0	
Wet weather PF : LPS	1.2	1.2	1.2	1.2	1.2	

Calculated Demand Outputs

Parameter	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Unit / Notes
Stage Network Design	Gravity Network	Gravity Network	Gravity Network	Gravity Network	Gravity Network	
Water consumption (ADWF)	10699	38807	19923	18899	19923	*L/day*
ADWF	10.7	38.8	19.9	18.9	19.9	*m^3/d*
ADWF	0.1	0.4	0.2	0.2	0.2	*L/s*
PDWF	0.3	1.1	0.6	0.5	0.6	*L/s*
PWWF	0.6	2.2	1.2	1.1	1.2	*L/s*
Select for design?	Yes	Yes	Yes	Yes	Yes	*Select one or more Yes*
Design selection QA	PASS - 5 design stage(s) selected					*QA*

Selected Design Demand

Selected design stage	Multiple stages selected	-	*Where multiple stages are selected, the rising main assessment is based on the total combined flow.*
Population Equivalent	509	No	*Total Population Served*
Residential Dwellings	257	No	*Total Number Dwellings*
Care Centre Units and Services Apartments	90	No	*Number of care centre units and serviced apartments*
Selected ADWF	108	m3/day	
Selected ADWF	1.25	L/s	*Feeds rising main / wet well calculations*
Selected PDWF	3.13	L/s	
Selected PWWF	6.26	L/s	*Feeds rising main / wet well calculations*
Selected ADWF	108.3	m3/day	*Daily ADWF for storage/detention checks*
Demand check	PASS	-	*Requires at least one selected scenario and PWWF > 0*

Designer Notes

Source	*4404/KCDC/WSA 04*
Design note	*Staging columns may be selected individually or in combination. Select one or more Yes values. The combined selected demand feeds the downstream rising main, pump, wet well, buoyancy and surge calculations.*

DESIGNER DECISION / RESPONSE

Total number of units has increased, but reduction of staff ww allowance (from conservative figure of 250 L/p to 50 L/p results in similar outcomes. Updated based on new staging plan, received 6/10/26. Total flow calculated based on full gravity network.

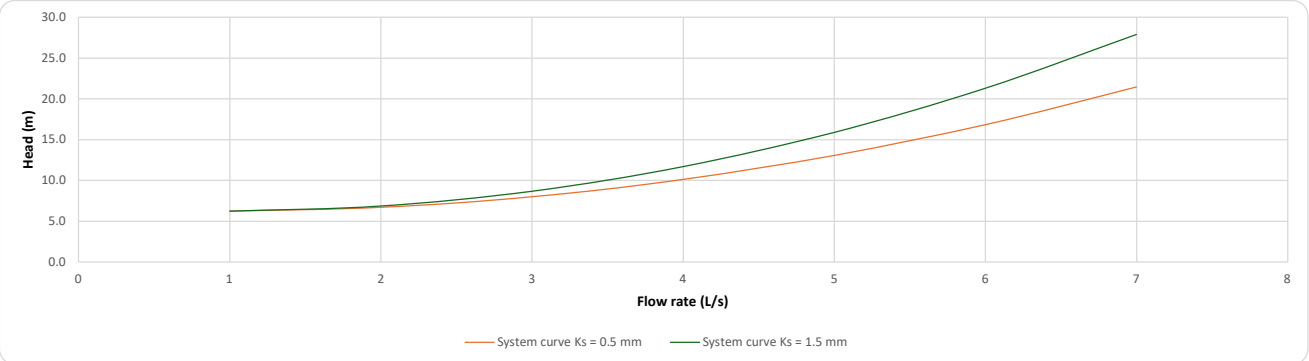
Designer:	JA	**Date:**	20.10.26	**Status:**	Accepted		

Summerset Retirement | No.: A25556 | Designed: J.Allely | Reviewed: K.Gunkel | Date: 20.10.26

Pipe and Hydraulic Inputs			
Selected pipe ID	PE100_90_PN16_SDR11	-	*Select pipe ID from dropdown. Velocity and pressure checks update automatically.*
Rising main length	307.2	m	*Chainage length / pressure main length*
Static discharge / high point RL	6.060	mRL	*Receiving HGL / high point / discharge control*
Pump stop RL	-0.18	mRL	*Operating stop level from wet well design*
Total minor loss K	6.02	-	*Calculated from fitting schedule below*
Manual pump flow override	5.90	L/s	*Enter 0 to use auto-selected flow. Use this for "What If" Scenarios*
Pipe internal diameter	73.5	mm	*From selected pipe ID*
Selected design stage	Multiple stages selected	-	*From 03 WW Demand selected cumulative stage*
Selected ADWF	1.25	L/s	*From 03 WW Demand*
Selected PWWF	6.26	L/s	*From 03 WW Demand*
Required flow for minimum velocity	3.60	L/s	*Q = vA based on selected pipe ID and minimum velocity*
Auto-selected pump duty	6.26	L/s	*Max(PWWF, minimum velocity flow)*
Design Duty	5.90	L/s	*Manual override if >0, otherwise auto-selected pump duty. Design Duty and Operating Duty are not the same thing*
Velocity at Design Duty	1.39	m/s	*Calculated from selected pipe ID and selected pump duty*
Headloss			
Friction headloss - governing Ks 1.5	20.4	m	*Colebrook-White friction factor + Darcy-Weisbach headloss*
Minor losses	0.59	m	*$K v^2 / 2g$*
Static head	6.24	m	*Static discharge / high point RL minus pump stop RL*
Total dynamic head - governing	27.2	m	*Static + friction + minor losses*
Septicity			
Rising main volume	1.30	m^3	*Pipe volume*
Rising main detention at ADWF	0.29	hr	*Selected ADWF detention check using daily ADWF from 03 WW Demand*
Operational Checks			
Operating pressure	266.8	kPa	*TDH x 9.81*
Pressure utilisation	16.7	% PN	*Normal operating pressure / selected pipe PN*
Velocity status	PASS	-	*Checks selected velocity against min/max velocity*
Pressure status	To be confirmed at detailed design	-	*Checks selected pipe PN against normal and surge pressure - To be*
Surge screening	To be confirmed at detailed design	-	*Surge/transient screening excluded from RC workbook; confirm during*
Overall rising main status	**REVIEW REQUIRED**	-	*Ready only when velocity and pressure checks pass*

Selected Pipe Details		
Material	PE100	-
Nominal OD	90	mm
SDR / DR	SDR11	-
Pressure class	PN16.	PN / bar
Pressure rating	1600	kPa
Mean wall	8.7	mm
Lookup status	PASS	-

System Curves Preview



Fitting / Minor Loss Schedule				
Select fitting from dropdown; K value calculates automatically.				
Fitting / valve	**K value**	**No.**	**K value Total**	
90 degree bend Elbow (R/D=0.5)	1.00	2.00	2.00	
Non-return (reflux) valve	1.00	1.00	1.00	
Sluice Valve Open	0.12	1.00	0.12	
90 degree bend Sweep (R/D=8~50)	0.20	2.00	0.40	
45 degree bend Sweep (R/D=8~50)	0.10	3.00	0.30	
Outlet to MH Sudden enlargement	1.00	1.00	1.00	
Wye junction 45 degree angle	0.60	2.00	1.20	
-	0.00	0.00	0.00	
-	0.00	0.00	0.00	
-	0.00	0.00	0.00	
-	0.00	0.00	0.00	
-	0.00	0.00	0.00	
Staged septicity / rising main retention screening				
Target maximum retention time	12.00	hr	*User input target. Default 12 hr unless project/authority requires otherwise.*	
Required ADWF to meet target	2.61	m3/day	*Required ADWF = rising main volume / target retention x 24*	
Rising main volume	1.30	m3		
Stage	**ADWF (m3/day)**	**Retention time (hr)**	**Supplementary water required (m3/day)**	**Status**
Stage 1	10.70			
Stage 2	38.81			
Stage 3	19.92			
Stage 4	18.90			
Stage 5	19.92			
TOTAL	**108.25**	**0**	**0.0**	**PASS**

Note: Where retention exceeds the target maximum, consider supplementary flushing water, reduced rising main volume, staging changes or operational mitigation.

DESIGNER DECISION / RESPONSE				
Refer DWG 5102 for longsection of rising main with discharge point. Velocity at duty appropriate. 2 90s at PS, then 2 90 sweeps near discharge manhole				
Designer:	JA	**Date:**	20.10.26	**Accepted**

RC DESIGN - Pump Curve and System Curve Report

Project: Summerset Retirement | No.: A25556 | Designed: J.Allely | Reviewed: K.Gunkel | Date: 20.10.26

This page is retained for resource consent reporting to show the concept system curve and relevant pump selection criteria. Final pump model and supplier curve are to be confirmed during detailed design.

Design Summary

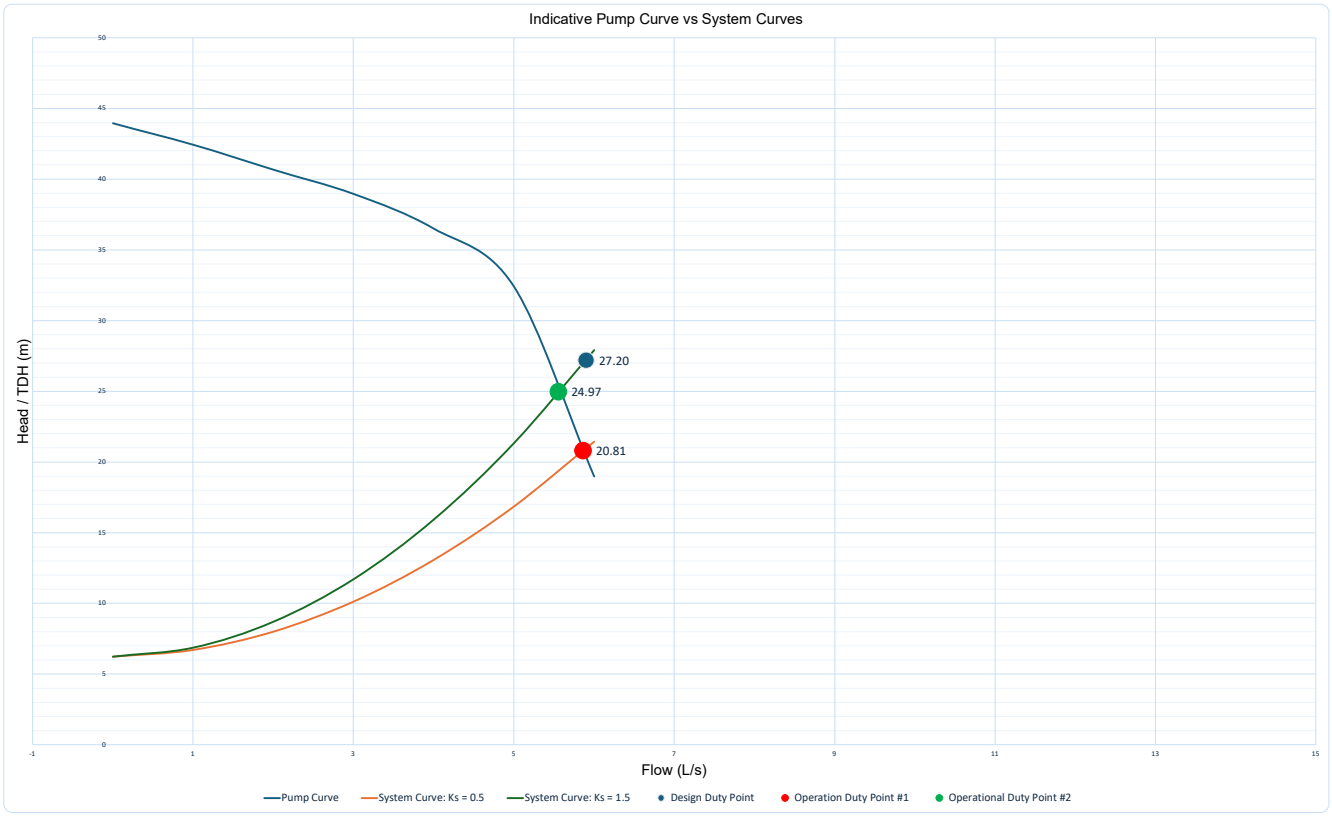
Item	Value	Unit	Comment
Selected design stage	Multiple stages selected	-	*Selected cumulative stage from WW Demand*
Selected pipe ID	PE100_90_PN16_SDR11	-	*Selected rising main pipe*
Pipe internal diameter	73.50	mm	*From selected pipe lookup*
Selected pump duty flow	5.90	L/s	*Max(PWWF, min velocity flow), unless manually overridden*
Required TDH	27.20	m	*Governing TDH from rising main design*
Velocity at selected duty	1.39	m/s	*Velocity check against minimum criteria*
Operating pressure	266.8	kPa	*TDH x 9.81*
Velocity status	PASS	-	*Pass / review from rising main design*
Surge / transient assessment	To be confirmed at detailed design	-	*Detailed surge assessment excluded from RC workbook*
Overall status	RC LEVEL - REVIEW AT DETAILED DESIGN	-	*Use for resource consent feasibility only*
Overall rising main status	REVIEW REQUIRED	-	*Use before confirming pump selection*

Pump Supplier / Designer Confirmation

Item	Status / Value	Notes
Duty / standby arrangement	Duty/standby	*Confirm with pump supplier*
VSD / fixed speed	Fixed speed	*Controls required to limit peak discharge to 5.9 L/s or less.*
Supplier curve attached / referenced?	Yes	*Attach curve or reference supplier data*
Duty point confirmed by supplier?	To be confirmed at detailed design	*Indicative curve only; final supplier pump to achieve required duty and operating range*
Pump efficiency at duty point %	To be confirmed	*Supplier to confirm efficiency at final duty point*
Motor power kW	To be confirmed	*Supplier to confirm motor size*
NPSH / submergence confirmed?	To be confirmed	*Supplier/designer to confirm*
Designer acceptance	RC basis only - final selection at detailed design	*Current pump curve is indicative and is not a procurement selection*

Velocity Checks					
Operating Condition	**Flow (L/s)**	**TDH (m)**	**Velocity (m/s)**	**Velocity Status**	**Pump Flow Rate Status**
PWWF	6.26				
Required Design Duty	5.90	27.20	1.39	PASS	0
Operational Duty Point @ k = 0.5	5.86	20.81	1.38	PASS	0
Operational Duty Point @ k = 1.5	5.55	24.97	1.31	PASS	0

Supplier Request Details			
Supplier to provide / confirm	**Requirement / Basis**	**Workbook source**	**Designer note**
Indicative pump model / curve	MP 3127 HT 3~ 252 Ø194 mm	Supplier data	*Indicative curve only; final supplier pump selection at detailed design*
Design Duty Point	Flow: 5.90 L/s @ 27.2 m TDH	05 Rising Main Design	*Duty point must be reviewed against supplier curve*
Operational Duty Point @ k = 0.5	Flow: 5.86 L/s @ 20.8 m TDH	06 Pump Selection	
Operational Duty Point @ k = 1.5	Flow: 5.55 L/s @ 25.0 m TDH	06 Pump Selection	
Impeller / speed / VSD setting	Required	Supplier data	*Confirm if trimmed impeller or VSD setting required*
Motor power and efficiency	Required	Supplier data	*Provide motor kW and efficiency at duty point*
Operating range	Required	Supplier data	*Confirm selected pump operates acceptably across system curve range*
NPSH / submergence	Required	Supplier data / wet well design	*Confirm against wet well operating levels*
Guide rail / discharge bend / valves	Required	Supplier data / design drawings	*Confirm interface and fittings assumptions*



DESIGNER DECISION / RESPONSE							
Assumed maximum limit for pumping of 5.9 L/s (based on previous HAL reporting). Anything above this will require verifcation via modelling. Flygt MP 3127 HT 3~ 252 Ø194 mm used for pump curve. https://pumpsandpipes.net.au/shop/flygt-mp3127ht-252-three-phase-7-4kw-sewage-grinder-pump/?attachment_id=29601&download_file=smvmoyh7bb8qa ASsumed fix speed pump and duty/standby arrangement							
Designer:	JA	**Date:**	20.10.26	**Status:**	Accepted		

Wet Well Geometry, Storage and Operating Levels - WSA 04 Aligned				
Project: Summerset Retirement | No.: A25556 | Designed: J.Allely | Reviewed: K.Gunkel | Date: 20.10.26				
Input / Output	**Value**	**Unit**	**Basis / comment**	
Calculate operating depth of pump (pump on - pump off)				
Minimum operational volume required to achieve allowable pump starts	0.66	m^3	*WSA 04 Appendix G, Operational volume =900*Qp / allowable starts per hour*	
Min operating depth required to achieve allowable pump starts	0.19	m	*Based on operational volume and minimum diameter*	
Design operating depth (between duty on/off)	0.40	m	*User input, compare against above (Indicative - to be refined at detailed design)*	
Design operating starts per hour	3.8	starts/hr	*Based on design operating depth chosen above*	
Calculate operating levels				
Design Lid Level, RL	6.44	mRL	*User input / project datum. (Indicative - to be refined at detailed design)*	
Incoming wastewater invert RL	2.37	mRL	*User input (from design model). One gravity inlet to wet well; multiple inflows should enter upstream collection MH.*	
Critical Overflow Level/Allowable surcharge level, RL	2.87	mRL	*User input / project datum. Based on 500mm allowable surcharge within network. This is equivalent to allowable overt of emergency storage chambers*	
Pump min submergence	0.17	m	*Set from supplier pump data. Pump stop auto-level is 100 mm above this. (Indicative - to be refined at detailed design)*	
Depth of wetwell base/foundation	0.40	m	*User input / project datum. (Indicative - to be refined at detailed design)*	
Max emergency storage outlet height	0.37	mRL	*From emergency storage chamber sheet (to avoid surcharging above critical level*	
Wet well internal diameter	2.1	m	*WSA 04: using selected pumping rate, max starts/hr and min operating depth. Min 2.0m. Formula may be overwritten for adopted structure size.*	
Duty pump start level	0.22	**mRL**	*150mm below inlet invert*	
Standby pump start level (in event of duty pump failure)	0.32	**mRL**	*100mm above duty on. NOTE: standby pump and duty shall be programmed to ensure two pumps are not operating simultaenously, unless maximum emergency storage level is reached. Standby pump is for alternation / duty pump failure only and is not used as an assist pump where simultaneous operation could exceed the discharge limit.*	
High level alarm = emergency storage outlet level	0.42	**mRL**	*Based on emergency storage outlet level. Formula may be overwritten where accepted.*	
Duty Pump stop level	-0.18	**mRL**	*WSA 04 9.7.2*	
Pump manufacturer min submergence RL	-0.28	mRL	*WSA 04 9.7.2*	
Wet well base (i.e. wetwell invert) RL	-0.45	mRL	*User input / project datum. (Indicative - to be refined at detailed design)*	
Wet well foundation level (max excavation) RL	-0.85	mRL	*User input / project datum. (Indicative - to be refined at detailed design)*	
Wetwell storage 50% level	1.65	**mRL**	*For dedicated storage: alarm at 50% emergency storage capacity.*	
Wetwell storage full level	2.87	**mRL**	*For dedicated storage: alarm when storage capacity is full.*	
Calculated storage, pump cycling and emergency storage				
Selected pump duty	5.9	L/s	*From Rising Main Design.*	
Selected ADWF	1.3	L/s	*From WW Demand.*	
Selected PWWF	6.3	L/s	*From WW Demand.*	
Rising main volume	1.3	m3	*From Rising Main Design.*	
Wet well area	3.5	m2	*Calculated from adopted wet well diameter.*	
Operating depth	0.40	m	*Duty start minus pump stop.*	
Active volume	1.4	m3	*Duty start to pump stop.*	
Max starts/hr at worst case	4.1	starts/hr	*Pump start frequency check. Check against minimum criteria given below*	
Pump run duration	5.0	min	*Run time from duty start to stop, based on selected pump duty and ADWF inflow.*	
24 Hr Emergency storage requirement (24hr * ADWF)	108.3	**m3**	*24 hours ADWF requirement*	
Volume of rising main	1.3	m3		
Assumed PWWF flow duration	3.0	Hrs	*Based on modelled HAL hydrograph, duration of peak*	
Inflow volume during PWWF event, based on duration above	67.7	m^3	*Assumes constant flow at PWWF, conservative*	
Outflow volume during PWWF event, based on duration above	63.7	m^3		
Peak event detention storage requirement	3.9	**m3**	*Designed to detain flows during the peak flow event, negating defecit between duty flow and PWWF.*	
Total emergency storage required	113.5	**m3**	*24hr ADWF + Volume of rising main + peak event detention*	
Emergency storage in wet well	8.5	m3	*Available volume between high-level alarm and overflow / critical alarm.*	
Emergency Storage Chambers	105.5	m3	*As calculated on Sheet 08*	
Total emergency storage available	114.0	**m3**	*Wet well emergency storage plus manual network/ancillary storage.*	
QA compliance checks				
Wet well diameter status	PASS	-	*Checks adopted diameter against min 1.8 m and calculated requirement.*	PASS
Operating depth status	PASS	-	*Checks duty start minus pump stop against min operating depth.*	PASS
Starts status	PASS	-	*Checks calculated starts/hr against maximum.*	PASS
Emergency storage status	PASS	-	*Checks total available emergency storage against total required storage (24 h ADWF + rising main + peak-event detention).*	PASS
Run volume vs rising main status	PASS	-	*Review if active pump run volume is less than rising main volume.*	PASS
Detention status	PASS	-	*Checks detention time against design criteria.*	PASS

DESIGNER DECISION / RESPONSE				
Updated wetwell storage (to consdier volume between high alarm and emergency storage limit). 3hrs PWWF constant flow duration (based on HAL hydrograph this is conservative). Minimum cover over culvert crossing pipe is also critical. Currently assumed 600mm minimum Allowable surcharge is critical. Currently based on 500mm allowable surcharge within network. This is equivalent to allowable overt of emergency storage chambers. Assumed 500mm thick concrete foundation. Minimum water level reduced based on selected pump specs. To limit pump outflow to 5.9 L/s or less: secondary pump to programmed to only turn on in the event duty pump fails, or if critical overflow level met				
Designer:	JA	**Date:**	20.10.26	**Accepted**

Emergency Storage Chamber Design			
Project: Summerset Retirement | No.: A25556 | Designed: J.Allely | Reviewed: K.Gunkel | Date: 20.10.26			
Input / Output	**Value**	**Unit**	**Basis / comment**
Hours of storage required	24.0	Hr	
Total storage required	113.5	m^3	*24hr ADWF + Volume of rising main + peak event detention*
Storage provided in wetwell	8.5	m^3	
Additional emergency storage required	105.0	**m^3**	
Calculated emergency storage size required			
Number of chambers	2.0		
Diameter of chamber 1	2.5		
Length of chamber 1	9.0		
Diameter of chamber 2	2.5	m	*Choose based on acceptable depth.*
Length of chamber 2	12.5	m	*From WW Demand.*
Emergency storage volume provided	105.5	**m3**	
Chamber Storage Check	PASS		
Calculate emergency storage levels			
Critical Overflow Level/Allowable surcharge level, RL	2.87	mRL	*User input / project datum. Based on 500mm allowable surcharge. This is equivalent to allowable overt of emergency storage chambers*
Invert of chamber	0.37	mRL	*Allowable surcharge level less diameter of largest chamber*

DESIGNER DECISION / RESPONSE				
Updated wetwell storage. Tank manufacturer TBC at detailed design. Smaller diameter tanks likely favourable as max excavation depth is based on allowable surcharge level in network				
Designer:	JA	**Date:**	20/10/2026	**Accepted**

WWPS Resource Consent Design Summary				
Project: Summerset Retirement | No.: A25556 | Prepared: J.Allely | Reviewed: K.Gunkel | Rev: E				
Design basis				
Item	**Value**	**Unit**	**Comment**	
Design standard / basis	4404/KCDC/WSA 04	-	*RC level servicing assessment*	
Selected design stage	Multiple stages selected	-	*Selected cumulative stage from WW Demand*	
Design purpose	Resource Consent	-	*Final design to be confirmed at EPA / detailed design*	
Pipe hydraulic method	Colebrook-White + Darcy-Weisbach	-	*Governing roughness approach retained from design workbook*	
Pump selection basis	Concept system curve only	-	*Supplier pump selection to follow at detailed design*	
Wastewater demand summary				
Item	**Value**		**Comment**	
Total PE	509		*From WW Demand*	
ADWF (m3/day)	108	m3/day	*m3/day / L/s basis retained in WW Demand*	
PWWF (L/s)	6.26	L/s	*Governing wet weather flow*	
Allowable Flow Point	5.86	L/s	*Based on HAL modelling*	
Rising main design				
Item	**Value**	**Unit**	**Comment**	
Selected pipe ID	PE100_90_PN16_SDR11	-	*User-selected pipe from lookup*	
Rising main length	307.20	m	*Alignment length from design model*	
Internal diameter	73.50	mm	*From selected pipe lookup*	
Operational Duty Point # 1 (k = 0.5)				
Flow	5.86	L/s	*Max of PWWF and minimum velocity flow unless overridden*	
Velocity	1.38	m/s	*Velocity check*	
Total dynamic head	20.81	m	*TDH, governing roughness*	
Operating pressure	204	kPa	*TDH x 9.81*	
Velocity status	PASS	-	*Pass / review*	
Pressure status	To be confirmed at detailed design	-	*Pass / review*	
Retention time at ADWF	0.3	hr	*Rising main retention screening*	
Operational Duty Point # 2 (k = 1.5)				
Flow	5.55	L/s	*Max of PWWF and minimum velocity flow unless overridden*	
Velocity	1.31	m/s	*Velocity check*	
Total dynamic head	24.97	m	*TDH, governing roughness*	
Operating pressure	245	kPa	*TDH x 9.81*	
Velocity status	PASS	-	*Pass / review*	
Pressure status	To be confirmed at detailed design	-	*Pass / review*	
Retention time at ADWF	0.3	hr	*Rising main retention screening*	
Wet Well / Storage RC Design				
Item	**Value**	**Unit**	**Comment**	
Wet well internal diameter	2.10	m	*Indicative diameter / basis*	
Pump stop level	-0.18	mRL	*Indicative operating level*	
Duty start level	0.22	mRL	*Indicative operating level*	
Standby start level	0.32	mRL	*Indicative operating level*	
High level alarm	0.42	mRL	*Indicative operating level*	
Emergency storage required	113	m3	*Indicative storage check*	
Additional storage required / emergency storage chambers	105	m^3		
Wet well status	PASS	-	*Indicative compliance check*	
Resource consent limitations				
RC limitation	*Final pump selection, pump curve acceptance, surge, buoyancy, structural design, electrical/controls, and detailed operating levels are excluded from this resource consent workbook and are to be confirmed at detailed design / EPA.*			
Pump curve tab retained	*The pump curve tab is retained to show concept-level system curve basis and supplier review requirements. It is not a final procurement selection unless supplier data and designer review are completed.*			
Design drawings	*All report drawings should remain consistent with the selected pipe size, pump station location, rising main alignment and storage strategy shown in this workbook.*			
Prepared by	J.Allely	**Reviewed by**	K.Gunkel	**20.10.26**
DESIGNER DECISION / RESPONSE				
Design prepared for RC completed 6/10/26 based on deep excavation and full gravity network. Refer individual sheets for key decisions.				
Designer:	JA	**Date:**	20/10/2026	**Accepted**