14. Wastewater Memo
13 March 2020

TECHNICAL MEMO – WASTEWATER SPECIALIST INPUT

To:	Lucia Taluga
From:	Robyn Floyd, Senior Wastewater Specialist
Approved by:	Rod Dissmeyer, Team Leader, Stormwater, Wastewater & Industrial Trade, Specialist Unit
Date:	13 March 2020

1.0 APPLICATION DESCRIPTION

Application and property details

Applicant's Name:	Fearless Star Limited (Also referred to as Zhyisil Chokyi Ghatsal Charitable Trust)
Wastewater Discharge Consent Variation Application Number:	DIS60084241-A This is the third s127 variation application to the original wastewater discharge consent for the development: • DIS60267733 initially issued in 2013 for the discharge of up to 29.6m^3/day of treated wastewater up to February 2029; • DIS60267733-B issued in 2016 for the discharge of up to 30.0m^3/day of treated wastewater; • DIS60084241 issued in 2017 for the discharge of up to 33.8m^3/day of treated wastewater.
Service Centre Associated Application Numbers:	LUC60121582-F - A current s127 variation application to existing landuse consent for change in accommodation building to be replaced by residential apartments, with associated landscaping, carparking and wastewater matters, being the sixth variation to the original land use consent for the development issued in 2013, under original service centre application number R/JSL/2013/1569. DIS60267743-A - A current s127 variation application to existing stormwater consent for site development, associated with the new residential apartments and parking areas.
Service Centre BUN Application	BUN60318370 -

Number:	(for collective current applications associated with the new the proposed new residential apartment development)
Original NRSI Consent Number (& File Number):	41700 (23800)
Activity Type:	The discharge up to 33.8 m^3/day of treated domestic wastewater from private residential units, temple accommodation rooms and Tibetan Buddhist temple facility to land on the site.
Site Address:	1 Wastney Road, Ardmore
Current Legal Description (of Disposal Area lot):	DP 471400
Approximate Discharge Point NZTM Map Reference:	NZTM: 1771845 mE: 5901935 mN

2.0 PROPOSAL, SITE AND LOCALITY DESCRIPTION

2.1 Proposal Relevant to Discharge Consent Variation Application

Original land use and wastewater discharge consents and Subsequent Variations

A summary of the existing and prior land use and wastewater discharge consents are is provided in the list in the application description above. Further details of background to the variable multiple applications from 2013 to 2017 is appended in Appendix 1. The information source is the July 2017 Auckland Council Variations' Decision Report for then applications LUC60121582-E and DIS60084241, the latter being the second variation application for consent DIS60267733 issued in 2013 for an approximate term of 15 years up to the expiry date of 28 February 2029.

Existing Wastewater Consent

The applicant's current discharge consent DIS60084241 permits the discharge of 33.8m^3/day of treated domestic wastewater from the facilities and occupancies, as specified in condition 67 of consent variation issued on 7 July 2017 as summarised in Table 1 below.

Proposal Under New Wastewater Consent Variation

The purpose of the latest wastewater discharge consent application is to change the discharge consent to provide for modified types of accommodation facilities to be connected to the wastewater system. Although there is a reasonable similar total population number between the previous and current discharge consent proposals, if approved the current proposal provides for an increase in total unit numbers connected from 36 total units/houses to 56 total units, /houses/apartments (with a unit being a residential dwelling or apartment ranging in from size from 2 to 4 bedrooms with the

majority in the order of 2 bedrooms.) But this increase is proposed without any proposed change to the maximum wastewater discharge flow volume limit.

These significant changes are achieved without a need for a change to the discharge flow volume limit by the use of a corresponding change (decrease) in the design occupancy numbers per unit, so no significant increase has been reflected in the design population and in the per person water usage/wastewater flow allowances and a significant decrease in the off-site visitor numbers to the temple facility (from 126 people down to 50 people on any one-day event).

The differences in the unit types in terms of the respective comparative house and now proposed new apartments numbers, their sizes and their design occupancy numbers and corresponding design flows are indicated in Tables 1, with the differences indicated in the respective numbers between those in the last and current variation applications.

Table 2 is the applicant's representation of the revised wastewater design flow calculations for this application in terms of flows from the existing houses and proposed additional Pod D apartments. It provides details of the numbers used in the calculations in terms of the per person design flow allocation and the per dwelling occupancy capacity as provided by the applicant, with differences indicated for the wastewater flow allowances according to the unit type. The difference in terms of house 'a' classifications represent provisions for lower water usage in half the houses, apparently in the form of increased water saving/flow reduction fixtures and fittings in place and additional contractual constraints on water usage/wastewater flows.

Application for Change to Consent DIS6004142-A

The main changes being sought to the *wastewater consent* as part of the current application concern changes to the specified numbers of unit and types that may connect to the wastewater system and corresponding changes to the wastewater treatment system components and disposal field layout. Visitor accommodation facilities were proposed as part of the last variation and were grouped with the general reference to house sizes. These have now been replaced by the reference to the now proposed 'Pod D residential apartments'.

To accommodate the increase in flows above current flow levels in response to the connection of flows from the Pod D apartments, the main changes to the *wastewater treatment system* include the installation of an additional primary septic tank, an additional advanced secondary treatment recirculation tank and the installation of a UV disinfection unit, of which a Wedeco LBX 10 type UV unit is proposed Most of these components were included in the Stage 2 system under the current consent but have yet to be installed. The recommended conditions require that installation is completed before Pod D units are connected. These account for up to a third of the whole design flow.

Significant changes are proposed to the layout of the sections of the primary wastewater *irrigation disposal system* and locations of the various reserve areas. The total primary area is decreasing by 104m or less than 1% in the revised proposal which is accepted as marginal and the reserve area is decreasing from 90% to 72%.

Information on the respective system connections and wastewater system components and layouts between the current and proposed replacement variation discharge

consents is available in the respective system flow diagrams and site layout plans in Appendix 1. (The former plans are attached for comparative background purposes only.)

Table 1: Proposed Residential Facilities & Design Occupancy Numbers (per Consent Application)

	Current Consent DIS60084241 (Issued July 2017)			Current Application DIS60084241-A (For Approval)		
Facility Type	Unit Nos.	Total Design Occupancy No. in all Units	Design Flow Volume (litres/day)	Unit Nos.	Total Design Occupancy No. in all Units	Design Flow Volume (litres/day)
One Bedroom Temple Rooms Stg1 Stg2	x12 & x14	12p 14p	1,800 2,240	12	12p	1,920
Two Bedroom Houses Stg1 Stg2	x7 & x5	28p 20p	4,480 3,200	5	20p	3,200
Two Bedroom 'a' Houses	-	-	-	7	22.4p NOTE 1	3,248
Three Bedroom Houses Stg1 Stg2	x11 & x11	55p 55p	8,800 8,800	x11	55p	8,800
Three Bedroom 'a' Houses	-	-		x7	22.4p NOTE 1	3,248
Four Bedroom Houses	x2	12p	1,920	-	-	-
Four Bedroom 'a' Houses	-	-	-	x2	6.4p NOTE 1	928
POD D Two Bedroom Apartments	-	-	-	x20	60p NOTE 2	8,700
POD D Three Bedroom Apartments	-	-	-	x4	16p NOTE 2	2,320
DESIGN FLOW:		196p	31,240		214p	32.36m^3/day
Temple Visitor Nos.	x1	126p NOTE 3	2,520	x1	50p NOTE 3	1,000

(External Visitors)						
CALCULATED TOTAL DESIGN FLOW:		33.76m^3/day			33.36m^3/day	
CURRENT CONSENTED MAXIMUM FLOW (Flow for System Design Sizing)					**33.8 m^3/day**	

NOTE 1 - *The design occupancy in the sixteen 'a' type houses is based on 3.2 people per unit irrespective of bedroom numbers (based on average occupancies recorded to date) & the design flow allocation per person is 145 litres per person per day.*
A design flow allocation for the other 16 existing houses is 160 litres per person per day as per all the former applications and system designs to date original ;

NOTE 2 - *The design occupancy in the two apartments is based on 3 people instead of the TP58 recommended maximum of 4 people and the design occupancy in the three apartments is based on 4 people instead of the TP58 recommended maximum of 5 people based on forecast maximum occupancies in the new apartments.*

NOTE 3 - *The reduced off-site visitor numbers in the latest application is due to the applicant's view that off-site visitors to the temple will decrease as the on-site resident numbers increase. The design water usage/wastewater flow allocation for day visitors is limited to 20 litres per person per day.*

Table 2 – Ormiston Table of Design Flow Calculations
(Source Ormiston Memo dated 31 October 2020)

TABLE 3 TOTAL DAILY FLOW PROJECTION					
Existing Houses Number of Bedrooms	**Design Average No People/House**	**l/p/d**	**No of Houses**	**Wastewater Flow/House (Litres)**	
2 Bedroom[1]	4	160	5	640	3,200
2a Bedroom[2]	3.2[3]	145	7	465	3,255
3 Bedroom	5	160	11	800	8,800
3a Bedroom	3.2	145	7	465	3,255
4a Bedroom	3.2	145	2	465	930
				Total	**19,440**
Proposed Pod D Apartments					
2 Bedroom	3	145	20	435	8,700
3 Bedroom	4	145	4	580	2,320
				Total	**11,020**
Temple Number of Bedrooms					
1 Bedroom	12	160			1,920
External Visitors	50	20			1,000
				Total	**2,920**
				TOTAL COMBINED DAILY FLOW	**33,380**

Notes.
1. Existing occupied dwellings for which maximum daily discharge is limited to the volume stated above and cannot be changed.
2a[2]. Dwellings for which daily maximum discharge can be revised to a reduced flow level based.
2. Average occupancy over all the occupied dwellings(excluding Temple Rooms) as recorded for August, September and October 2019 with 27-28 houses and having an occupancy of 86p – 88p.

Application Information

Supporting information for the application to change the wastewater discharge consent is primarily provided in the following documents:

- Application AEE Report: by ……
- Wastewater Memo: by Ormiston Associates Ltd. titled *'On-site Wastewater Treatment and Land Disposal Application No. BUN60318370'* dated 31 October 2019, (hereafter referred to as the first Ormiston report).
- Wastewater Memo: by Ormiston Associates Ltd. titled *'On-site Wastewater Treatment and Land Disposal Application No. BUN60318370'* dated 20 February 2020, (hereafter referred to as the last Ormiston report).
- Revised Wastewater Flow Diagram, by Ormiston Associates Ltd. titled '*Proposed Ultimate Development (33,380 litres/day) Wastewater System Process Flow, 1 Wastney Road Alfriston'* dated 20 February 2020.
- Revised Wastewater Site Plan, by Cadviz. (provided in the Ormiston wastewater memo) titled '*Effluent Field Revised Layout, 1 Wastney Road Alfriston, Sheet EF1, Rev9'* dated 20 February 2020.

Significant further application information was provided in the following prior application documents. But there have been numerous iterative changes to the new development proposal in terms of bedroom numbers and occupancy numbers used as the basis for the design flow volume through the documents. These older documents have been superseded by the most current information above and as such are now considered out of date and contrary to the final proposal, so they are listed here for informaiton purposes only, but to avoid confusion should not be included in the discharge consent documents list.

- Letter: by Ormiston Associates Ltd. titled *'Comparison Between Ori8ginal Consent Conditions and Current Proposed development, On-site Wastewater Treatment and Land Disposal',* dated 25 July 2019.
- Letter: by Ormiston Associates Ltd. titled *'Response to Auckland Council Request for Further Information, On-site Wastewater Treatment and Disposal Application No. BUN60318370'* dated 29 June 2018.
- Letter: by Ormiston Associates Ltd. titled *'On-site Wastewater Review Proposed Pod D Apartment Black and Updated Wastewater Treatment Plant Capacities',* dated 28 March 2018.
- Wastewater Report: by Ormiston Associates Ltd. titled *'Fearless Start Application for Changes to an Existing Discharge Consent Application R/VCC2013/1569/5 and LUC/2017/933 (wastewater Permit 41700) at 1 Wastney Road Ardmore'* dated 6 May 2017.

2.2 Changes Sought to the Conditions of Wastewater Consent DIS60084241

Changes are proposed to the discharge consent conditions to represent the changes to the unit types and numbers, the total residential population and the off-site visitor numbers that collectively discharge wastewater to the system, with corresponding changes to the treatment system components and the layout of the respective irrigation disposal fields and reserve areas as already outlined above.

The applicant has sought specific changes to the following condition, as specified in an email from David Hay of Osbourne Hay Ltd dated 03 September 2019. (A copy of this email is appended in Appendix 2.)

In summary the changes sought concern the conditions in the following list below. Note, the changes to conditions represented in italics are additional changes recommended to support the proposed overall application but not initially requested by the applicant. Other editorial changes have also been suggested. :

Condition 66 *Indication of design occupancy and visitor numbers in support of authorised discharge quantity*

Condition 67 Revised development stages specifications

Condition 68 *Update of triggers in the existing review condition to better represent the current wastewater system to and the latest development details, and associated concerns*

Condition 69 Approval required prior to Stage 2 development - condition outdated so deleted

Condition 70 Revised list of wastewater system components and disposal area sizing

Condition 71 Revised list of wastewater application design documents

Conditions 86 to 88 *Revisions to the final engineer's system as-built plan and certification and construction inspection meeting conditions in response to substantial changes/additions proposed to disposal area layout to provide for the Pod D connection.*

Condition 91 *Revisions to the provisions for approval for use of the reserve area including the requirement for consent application for consequential changes to the relevant consent conditions.*

Condition 99 *Revisions to the management plan to provide for latest system changes for the Pod D connection and corresponding changes to conditions under this application*

Conditions 103 & 105 *Provisions for reduced sampling frequency while flows remain at less than 75% of capacity*

Condition 112 Revised list of connected units with revised list of the design flow per unit according to unit type (existing vs new house vs new apartment), size (bedroom numbers) and design occupancy (averaged based on proven low average supported by contractual agreement, conservative based on TP58 but still with reduced contingency).

The actual recommended changes to the wording of conditions are specified in the set of marked changes to conditions provided separately to this report dated 13 March 2020. All changes are clearly marked as coloured underlined/crossed out Marked Changes.

2.3 System & Site Details

The site and existing irrigation disposal area were assessed by a Council specialist on 6 March 2020. There hasn't been significant rain for over two months, the land was dry with mild indications of irrigation in comparison to the reserve land and in general the wastewater irrigation fields were considered to be in a very good condition and well maintained. There were no signs of prior ponding or runoff or potential locations where there could be any potential for irrigated wastewater to seep into a stormwater drain.

It is understood that 28 of the now proposed 32 dwelling are currently occupied (with 36 dwellings actually permitted under the current consent) and connected to the wastewater system. This represents over 80% of the connections for stages 1 and 2. The total population is apparently at 67% of the total maximum occupancy provided for design purposes in the design specifications used as the basis for the existing consented system. Flow records for the past year indicate that average flows lie at approximately 27% the peak permitted flow volume provided for by the existing 33.8m^3/day flow limit. Average monthly flow data suggests people use from 70 to 156 litres of water each per day, but again this is based on average not daily peak flow data.

The consent holder has indicated that recently significant additional measures have been made to reduce water usage and the most recent data suggests people were surviving on a significantly reduced water usage/wastewater flow with effective flow restriction devices installed at many locations. Flow data indicates monthly data averaged flows as low as 80 litres per person per day, with annual averaged flows still less than 100 litres per person per day. (These figures increase when calculations are based on the peak monthly rather than average monthly daily flow figures.)

3.0 REASON FOR CONSENT

3.1 Reasons for Consent

An application for change or cancellation of consent conditions is a **Discretionary Activity** in accordance with Section 127 of the Resource Management Act, 1991 (RMA).

The original application was also a discretionary activity and was granted under the Auckland Unitary Plan operative in part (AUP). There have been no changes to the AUP standards of significance that may relate to the provisions for the discharge of domestic wastewater to land since the processing of the original consent, so no additional considerations in terms of reasons for consent need to be taken into account in response to this application.

4.0 TECHNICAL ASSESSMENT OF EFFECTS

4.1 Assessment of Effects on the Environment

General Assessment of the Proposed Design Change

The most significant change to the system as a result of this application is the proposed variable lower water usage/wastewater flow allowance per person and also the lower people numbers per unit and the greater number of residential units (houses/apartments) to be connected with no change to the overall maximum permitted discharge volume. The main difference is represented by the increase from a maximum of 34 units to increase to up to 56 units to be connected to the same wastewater system, an additional 65% increase unit numbers with no proposed change in the design flow volume.

Although at approximately 3%, there is not a major difference in the design population, but what is very different is that the occupancy used per unit is significantly less than the maximum occupancy capacity used in the prior design proposals for the system. The design flow is to now be based on predicted average occupancies per unit rather than maximum potential occupancies per unit. This is in addition to the use of a lower non conservative occupancy figure according to TP58 recommendation design flow allowance per person in many of the newer facilities, being 145 litres per person per day, compared to 160 in the initial application and subsequent variations.

An average occupancy of 3.2 people is used for the design occupancy in houses classified as 'a' houses, irrespective of bedroom numbers which range from 2 bedrooms to 4 bedrooms. This has been applied to half or 16 of the total 32 permitted dwellings. The applicant has claimed that the water usage/wastewater flows can be controlled and reduced to lower levels in these dwellings primarily due to 'tighter contractual arrangements'. These are not arguments that the Council has accepted before, but in this case actual records do suggest water usage has been significantly lower than standard TP58 design flows.

Another point of note is that while the occupancies in the Pod D apartments have not been reduced as low as that for the 'a' classified dwellings, one less person than prescribed by TP58 based on bedroom numbers has been used i.e. 3 people in a 2 bedroom unit versus 4 in TP58 and 4 people in a 3 bedroom unit versus 5 in TP58. It is also noted that all houses have separate studies as well as specified 2 to 3 bedrooms (this apparently does not apply to the proposed Pod D apartments). This could increase the likelihood of all bedrooms of the 2, 3 and 4 bedroom houses being occupied by an extra additional person on occasion.

It should also be noted that the design flows are based on average water usage/wastewater flows and not maximums as is the specified approach in TP58 for single systems. But the use of average rather than maximum flows for design purposes per lot becomes more of a real and reasonable option depending on the number of dwellings to be connected to one system, since erratic peaks in random units can be counted against low to nil usage in other units at the same time.

Overall this means the average actual flow is likely to be closer to the design and permitted maximum flow and the concentration of contaminants is likely to be greater than for more conservatively designed systems. This removes significant safety factors

present in most designs.

Finally the applicant claims in response that all these concerns are adequately counted by the fact that records indicate that average water usage/wastewater flows are very low and significantly lower than what would be expected based on the more conservative TP58 based design estimates. It is considered that this is particularly reflective of the naturally caring and conservative cultures of a Buddhist community where there may be shared feelings of doing what is best for the community as a whole. But the situation could be quite different if units should be sold to non-Buddhist members of the public which remains a real possibility. So in return the conditions require that the consent holder continues to influence and impose and where practicable control low water usage practices in each unit and in addition daily automated flow volume monitoring is a condition of consent. The modifications to the treatment system capacity will still ensure adequate treatment of the potentially more contaminated wastewater due to lack of water wastage/excessive usage to dilute the wastewater flows. Ultimately this will be proven by actual flow and regular discharge quality monitoring which are conditions of consent.

4.2 Comparative Existing System & Site Details

It is understood that 28 of the currently permitted 32 dwellings are currently occupied and connected to the wastewater system. This represents over 89% of the connections for stages 1 and 2. The total population is apparently at 67% of the total maximum occupancy provided for design purposes in the design specifications used as the basis for the existing consented system. Flow records for the past year indicate that average flows lie at approximately 27% the peak permitted flow volume provided for by the existing 33.8m^3/day flow limit. Average monthly flow data suggests people use from 70 to 156 litres of water each per day, but again this is based on average not daily peak flow data.

The consent holder has indicated that significant additional measures have been made recently in the more recent units to reduce water usage and similar measures will be adopted in the new Pod D apartment units. The consent holder indicated that the most recent flow data suggests significantly reduced water usage was achieved where the new flow restriction devices had been installed with flow data suggesting people were existing on average water usage of less than 100 litres per person per day

Specific Comments on Recommended Changes to Conditions

The list of conditions to which changes are recommended is provided in section 2.2 above. In addition to the five conditions the applicant sought changes to (conditions 67, 69 to 71 and 112) which are supported subject to minor modifications which are explained with the edits on the version provided, changes are also recommended to nine other conditions (conditions 66, 68, 86 to 88, 91, 99, 103 and 105). The overall purpose of the changes is to ensure the conditions best represent the latest system and development rather than the initially intended reduced scale proposal under the initial 2013 consent. Refer to the marked changes on the attached version of conditions for actual details of the recommended changes.

Of particular note are the recommended changes to Condition 68 which the applicant

noted was out of date since it referred to Stage 1 works and requested it be deleted. The current condition requires that there is a review of the system performance after the Stage 1 construction. The Stage 1 development discharge volume at the time was in the order of 19m^3/day and Stage 2 development had a maximum permitted discharge volume of 29.6m^3/day. The condition was intended to address significant concerns with the scale and potential adverse effects of the system at the time of the original consent. The number of units place already well exceeds the number expected for the Stage 1 development. (The current consent envisaged up to 20 dwellings for Stage 1 and up to an additional 16 dwellings for Stage 2.) The total number of units now proposed is up to 56 units.

The proposed permitted discharge volume has not increased while the number of units has increased by 75%. This is achieved by new calculations of per unit flows, based on lower per unit occupancy numbers and lower per person flows. Although this is well supported by actual flow records, overall it also reflects a significant decrease in contingency provisions in the design compared to that in the three prior versions of the consent (including two prior variations).

In response it is considered crucial that a review of the system performance is undertaken at the early stages of it approaching full capacity. The conditions do not otherwise have an audit condition as is the norm with such high discharge volume consents with discharges in locations that could have adverse effect on public health or the receiving environment if not carefully managed over time. This is the case for this site with the intensive density of residential developments albeit with considerable open space but with the majority of it already allocated either as primary or as reserve wastewater irrigation area. In addition while there is a reasonably substantial reserve area at 72%, much it is a lot less suitable for irrigation purposes than the land allocated as the primary area. This is due to reserve areas lying on substantially earthworked land or close to residential developments and access roads or close to property and roadside boundaries, such that it would need to be reassessed under a new consent application before it could be approved for use.

In light of these constraints and reduced contingency provisions in the design and particularly in the design flows, the requirement for a review of the system performance in accordance with the edits proposed to existing conditions is considered crucial. The revisions to the existing condition 68 specify a review is to be undertaken of the system once the flows approach its design capacity expressed as follows:

68. Following construction of the Final Stage ~~1~~ <u>of development</u>, and <u>following</u> at least one year of ~~wastewater discharge volume monitoring results that correspond with~~ activities ~~that are~~ at a scale representative <u>of 80% system usage, being whichever is the former</u> of ~~Stage 1~~:

- *<u>At least 80% final maximum design site occupancy has been achieved (being 170 people out to the 214 maximum design occupancy capacity; and/or</u>*
- *<u>The first 45 (80%) out of the total of 56 units are occupied; and/or</u>*
- *<u>The actual discharge volume has exceeded 27m^3/day (80%) on more than two occasions</u>*

<u>then</u> an assessment of the discharge flow volumes and performance of the wastewater treatment <u>and disposal</u> system shall be completed by a Chartered Professional Engineer or suitably qualified person experienced in wastewater ~~treatment~~ systems' design and operation.

This assessment shall evaluate whether the wastewater ~~treatment~~ system design assumptions accurately reflect actual total water use and wastewater flows on the site and whether the additional wastewater generated following completion of the final Stage ~~2~~ 2 of development can be adequately managed on the site. The assessment shall include adequate detail and be to the satisfaction of the Team Leader, Compliance Monitoring South ~~Rural and Wastewater Consents, NRSI. This assessment shall be attached to any request for approval of the Team Leader, Rural and Wastewater Consent, Natural Resources and Specialist Input Unit (NRSI) for construction of Stage 2~~. The assessment shall be completed within 3 months of either of the above triggers occurring.

Advice Note:

The consent holder is reminded that the assessment in this condition is required to verify that the system that has been appropriately sized, with the design sizing based on variable average not maximum occupancy numbers per unit (variable averages through the existing houses and Pod D apartments) and based on variable per person water usage provisions (depending on contractual controls per unit), and is adequate for actual flows and occupancies in practice.

The applicant has indicated that condition 68 as previously written is not required because it has been completed for Stage 1 and the requirements fulfilled and requested that it be deleted. But there is a concern that the assessment report required by the condition in the original consent and which remained in subsequent variations was never provided for Stage 1. This is despite the progression over time to Stage 2 works.

Parts of the development works that have evolved by iterative variations to the discharge consent now include much of what was previously classified as the Stage 2 development works. Also there has never been an actual full compliance report for the system in the life of the system. The flow analysis information has been presented in Ormiston design reports (which have reached very variable conclusions on water usage requirements in each version) and at one point, very limited discharge quality data well below the number of analyses required by the existing consent. It is understood that the prior problems with lack of monitoring data were only resolved with the maintenance contractor in December 2019, but the quarterly analyses should be forthcoming henceforth as required.

The lack of regular compliance reports for the system through its 4 year life is also far from an ideal compliance history (although the iterative open variation applications through this period may have diverted focus away from reporting records.)

The flow data in the records submitted as part of the application material to date indicates impressively low water usage per person and low average occupancy per unit requirements. The water usage/wastewater flow per person ranges from 71 litres per person per day up to 156 litres per person per day, with an overall average of the peaks per month over ten months of 139 litres per person per day. (These being figures based on the peak recorded daily flows per month then averaged out to provide a per person equivalent flow (refer data in Ormiston Table 1 in end of Appendix 2).) When the total whole monthly flows are averaged out on a per occupant basis, the per person water usage/wastewater flow is significantly less ranging from monthly averages ranging from an average of 80 litres per person per day to an average of 104 litres per person per day (refer data in Ormiston Table 2 in end of Appendix 2).)

Further reasons for the need for a system performance review as promoted by condition 68 is that despite the reassuring actual flow data there is an inherent risk in the acceptance of a low design flow based on both low average occupancy numbers and on the variable low water usage figures. This means that there is then little contingency left in the system design if expectations are not met over time. The records are based on flows for the first 20 to 28 units out of the now proposed 56 units. They may be representative of families living by Buddhist conservative and precautionary cultural principles but may not be representative of water usage practices of non-Buddhist people should any of the new apartments be sold to the general public which remains an option. The certainty provided by the applicant that the design flow is appropriate, in addition to the confirmation of relatively low flows in the 2019 flow records, is in the form of assurances of improved suitable water saving fixtures and assurances of low water usage contractual arrangements to be imposed on the new unit owners.

A further concern with the reduced contingency in the design is that the confidence in the validity of the maximum design loading rates promoted by TP58 and as such considered to represent conservative system designs is linked to the fact that in reality most dwellings are not fully occupied at all times and most wastewater systems do not discharge at their maximum design flow rate/loading rate at all times. But they are more likely to run near maximum conditions where average figures are used to set the design flows as is the case here, and similar would then apply to the corresponding loading rates.

Also the decrease in the maximum day visitor numbers to the Buddhist temple facilities from 126 to 50 people for peak events is based on views that there will be fewer off-site visitors as more people of Buddhist faith occupy units on the site. But this is also speculative as the maximum visitor numbers to the site is not yet proven so will need careful controls over time. The latest design has only a limited provision for the increase in occupancy numbers, with the design occupancy increasing by 18 people, from 196 in the current consent to 214 in the current proposal. This is only enabled through the slightly reduced per person water usage provisions in some but not all units and significantly reduced provision for off-site visitors comparted to the equivalent provisions design covered by the current consent. Compliance with the maximum permitted discharge volume will be very reliant on the consent holder controlling the low water usage/wastewater flow practices that have been demonstrated to date across all new and existing units and ongoing constraints on access by additional off-site visitors.

The recommended changes to the conditions include a requirement that the consent holder makes the unit owners aware of the design water usage/wastewater flow allocation applicable to their unit type and the importance of not exceeding their respective allocations.

In my opinion there is very limited contingency capacity left in the system design or elsewhere on the site to provide for significant flow exceedances beyond those specified and provided for in the design. While an apparent ample reserve area has been provided, there are concerns with the actual suitability of some parts of the reserve areas for disposal purposes as indicated above. This is in comparison to the levels of contingency in most other consented community systems in the region which

are generally designed for maximum occupancies and maximum rather than averaged per lot flows and often with 100% effective reserve area . This then provides for peaks in the actual flows which can occur over time for multiple reasons. This may include inflow & infiltration from poor connections, standard urban non-forecast/unpredictable increases in off-site visitor numbers and/or resident population numbers etc.

For all these reasons, there remains a potential issue of the design and scale/density of the temple and residential facilities over time. As such the review of the flow rates and performance of the wastewater system remains essential. In light of the generally non conservative approach taken to establish the design flow for the development, condition 68 and the other precautionary conditions already included in the existing consent are considered both adequate and crucial to enable early detection and responses to elevated flows or breaches of the discharge limits.

Environment and Public Health Risks

The existing system was assessed by a Council specialist on 6 March 2020. There hasn't been significant rain for over two months and the system was considered to be in a very good condition and the land well maintained. There were no signs of prior ponding or runoff or potential locations where there could be any potential for irrigated wastewater to seep into a stormwater drain. The irrigation lines are buried and as long as the land is not overloaded it is considered unlikely to be adverse effects on surface or ground water quality or public health. But the soil is of poor quality in terms of soakage and there have been reports of problems with overloading and poor soakage at least in the early days of its development. It is presumed that such risks are adequately mitigated by the proposed restrictions on total water usage, the design loading rate and reasonably well-established vegetation now thriving across the site.

The disposal area does lie in close proximity to access ways, boundaries and land on the site here people may cluster outside the temple or elsewhere readily accessed by residents including children. There is also a constructed operating stormwater treatment pond and piped and filled prior overland flow path/stream through the lower portion of the property (between the residential dwellings and the temple area), but the setbacks meet minimum TP58 requirements.

Parts of the reserve areas lie very close to site boundaries and on filled land which could reduce its soakage capacity, in addition to roadside drains and community cluster areas. There is at least 72% reserve area which means there are options in which part/s should be used if required. The conditions also require that a change to the discharge consent is obtained if use of the reserve area for disposal purposes is required. This provides an opportunity for adequate assessment to be undertaken if it is required.

Risks to the environment and public health will mostly relate to risks of flow exceedances that could lead to breakout or ponding in the disposal area that may be accessible to residents and temple visitors. However the irrigation lines are buried and well protected from exposure by healthy vegetation. The wastewater is also consistently treated to a high advanced secondary standard according to the limited data collected to date and the proposed additional UV treatment will further protect against public risks in the event of any direct contact.

Conclusion

Overall it is considered that there are adequate precautions in the proposal and available to the consent holder through careful system management and further required by the conditions of consent to avoid flow exceedances and to manage the irrigation area in a manner that should avoid breakout and avoid adverse environmental and public health effects.

The extension of the treatment system capacity and the modifications to the irrigation disposal area layout are collectively considered appropriate to adequately accommodate the flows from the proposed additional 24 connections to the wastewater treatment system beyond the 32 authorised by the existing consents. But this remains subject to compliance with the more stringent recommended consent conditions to ensure the required controls are maintained in place. The recommended changes to the conditions are necessary to avoid any significant increase in adverse environmental effects beyond those already accepted under the current consent.

4.3 Affected Parties

No written approvals relevant to the management of stormwater have been provided, nor requested.

5.0 STATUTORY CONSIDERATIONS

5.1 Objectives and Policies

In accordance with section 104(1)(b) of the Resource Management Act 1991, the proposal is consistent with the relevant policy statements and plans or proposed plans, including the relevant objectives, policies and assessment criteria of the National and Regional Policy Statements and Plans, specifically the New Zealand Coastal Policy Statement (NZCPS) 2010, National Policy Statement for Freshwater Management 2011 (NPSFM), and the AUP(OiP).

The relevant provisions the operative plan must be considered. The relevant objectives and policies of the operative AUP(OiP) are contained in Parts E1 – Water Quality and Integrated Management and E5 – On-site Wastewater.

Overall, the information provided indicates that the proposed changes to the discharge activity subject to these being in accordance with the recommended changes to the conditions, should have no more than minor adverse environmental effects.

5.2 Matters relevant to Discharge or Coastal Permits (Section 105) and Restrictions on Certain Permits (Section 107)

The provisions of Section 105 have been met as it has been determined that there are no significant effects on the receiving environment as concluded in Section 4 of this memo. It has been assessed that the applicant's methods of wastewater collection, treatment and disposal are appropriate in the circumstances and sufficient regard has

been had to alternative methods of discharge applicable in this case.

Section 107(1) of the RMA places restrictions on the granting of certain discharge permits that would contravene Sections 15 or 15A of the RMA. The proposal will not give rise to any of the effects listed in Section 107(1).

5.3 Duration of consent: Section 123

RMA s127(1)(b) specifically excludes the consent holder from changing the duration of a consent (and the associated expiry date). The expiry date will remain 31 December 2037, as indicated in existing consent DIS60068345.

6.0 RECOMMENDATION AND CONDITIONS

6.1 Adequacy of Information

The above assessment is based on the information submitted as part of the application. It is considered that that information should be sufficiently comprehensive to enable the consideration of the above matters on an informed basis:

a. The level of information provides a reasonable understanding of the nature and scope of the proposed activity as it relates to the relevant regional plan.

b. The extent and scale of any adverse effects on the environment are able to be assessed.

6.2 Recommendation

The assessment in this memo does not identify any reasons to withhold consent to the main aspects of the proposal considered by this memo, being the proposed change in the lot numbers to be connected to the system or the on-lot pre-treatment, off-lot collection network, and main treatment system. While the change to consent should be granted to provide for these changes, the actual changes to be made to the conditions should be in accordance with the detailed recommendations in section 4 of this report. Overall the reasons for this recommendation is for the following reasons:

1. It is considered that the overall adverse effects on the receiving environment are will have no more than minor. Subject to the compliance with the recommended conditions, the effects can be further avoided, remedied or mitigated.

2. The sensitivity of the receiving environment to the adverse effects of the discharge should not be compromised given the extent of treatment, the extent of the suitable land for wastewater disposal, the application of suitable control technology and appropriate on-site system management techniques.

6.3 Conditions

Pursuant to section 108 of the RMA, consent to discharge domestic wastewater should be subject to the following conditions. Conditions are also recommended for wastewater

but non-discharge related matters that are more suited to the subdivision, land use and earthworks consents under application.

RECOMMENDED CHANGES TO CONDITIONS FOR SUBDIVISION

Specific Conditions relating to DIS60068435 (Wastewater Discharge)

Please refer to the list of changes to the discharge consent conditions sought by the applicant and further changes recommended as part of this assessment listed in section 2 above and indicted as marked changes in the separate version of proposed changes to conditions titled dated 12 March 2020 provided alongside but separate to this report.

7.0 REVIEW

7.1 Technical Review Memo Prepared by:

Robyn Floyd	
Senior Wastewater Specialist, Specialist Input, Resource Consents	
Date:	

7.2 Technical Review Memo, Reviewed and Approved for Release by:

Rod Dissmeyer	
Team Leader, Stormwater, Wastewater & Industrial Trade, Specialist Unit, Resource Consents	
Date:	

8.0 DEFINITIONS

AC:	means the Auckland Council
AUP(OiP):	Means Auckland Unitary Plan (Operative In Part)
Council:	means The Auckland Council

I&I	means Inflow and Infiltration
NES:	means National Environmental Standard
NPS:	means National Policy Statement
NRSI:	means Natural Resources and Specialist Input Unit
NZCPS:	means New Zealand Coastal Policy Statement 2010
RMA:	means Resource Management Act 1991 and all amendments
Team Leader:	means an Auckland Council Compliance Monitoring Team Leader as specified in the text and/or nominated Auckland Council staff acting on the relevant Team Leader's behalf

APPENDIX 1

SUMMARY OF PREVIOUS LAND USE AND DISCHARGE CONSENT APPLICATIONS

SUMMARY OF WASTEWATER DISCHARGE ACTIVITY COVERED BY EXISTING CONSENT

&

WASTEWATER SYSTEM SITE PLANS
(by Ormiston Associates Ltd. & Cadiz,
dated 2017 & 2020)

&

&

SITE LOCATION PLAN

SUMMARY OF PREVIOUS LAND USE AND DISCHARGE CONSENT APPLICATIONS

Background

Resource consent has been obtained for the construction and operation of a Tibetan Buddhist temple, associated household units and unit title subdivisions and a number of further consents to make changes to the original consents under section 127 of the RMA, details of each consent are as follows:

Land-Use and Subdivision Consents R/JSL/2013/1569, 41699, 41700, 41701 and 41789
Resource consent was granted on 29 November 2013 for a non-complying application to establish, construct and operate a Tibetan Buddhist temple and 28 household units on the site at 1 Wastney Road, Ardmore. The application covered matters under both the District and Regional plans and was limited notified with six submissions received, five in opposition and one "neutral". The decision was made on behalf of Auckland Council by Commissioners.

R/VCC/2013/1569/5 (LUC60121582-E and DIS60084241) Page 3

Consent was required under the Auckland Council Operative District Plan (Papakura Section) for the following matters:

- Establishment of a church in the future urban zone;
- Establishment of more than one household unit on the site;
- Unit title subdivision;
- Earthworks exceeding an area of 250m² with a volume exceeding 500m³; and
- Buildings not complying with development controls being:
    - Maximum height of 19.53m (10m permitted)
    - Site coverage of 3134m² (750m² permitted)
    - Maximum impervious/paved surfaces 8984m² (1000m² permitted)
    - Separation of dwellings from a boundary of 12.9m (25m permitted).

Under the Auckland Council Regional Plan: Sediment Control consent was required for undertaking earthworks over a land area that exceeds 1 hectare on land with a gradient of less than 15 degrees.
Under the Auckland Council Regional Plan: Air, Land and Water consent was required for:

- Establishing between 5000m² and 10000m² of impervious surfaces on rural land which is not within an area that has an approved Comprehensive Integrated Catchment Management Plan;
- The discharge to land of more than 6m³ of wastewater per day;
- The retention of an existing off-stream dam; and
- Earthworks within a sediment control area and possibly within a watercourse.

Figure 2 below provides the overall site plan as approved under R/JSL/2013/1569, 41699, 41700, 41701 and 41789 (noting that this plan is inconsistent with the landscape plan and different to that tabled at the hearing).

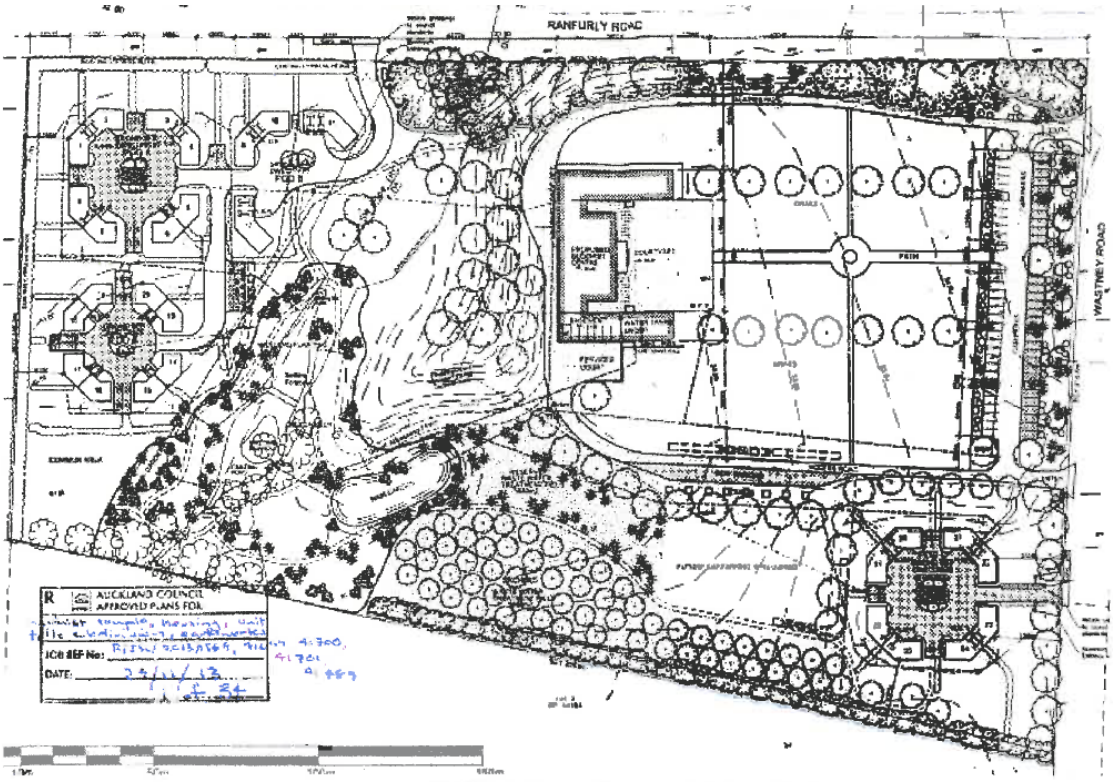


Figure 2: Overall site plan for R/JSL/2013/1569, 41699, 41700, 41701 and 41789

Resource Consent R/VCC/2013/1569/1 – Variation to Conditions

Resource consent was granted on 11 March 2015 for changes to conditions 1 and 178 of R/JSL/2013/1569 under section 127 of the RMA. The changes provided for the following:

- To change the approved scheme plan to include the reserve drainage field as part of the Future Development Unit of the Temple Building; and
- To allow for the applicant to register an encumbrance document at head unit level on Units and Future Development Units until such time as the head Principal Units are created. When the head Principal Units are created the encumbrance will be replaced by 'right to drain' easements as was contemplated by R/JSL/2013/1569.

The application was processed on a non-notified basis.

R/VCC/2013/1569/1 had no effect on the approved landscape plan or the approved effluent disposal fields.

Resource Consent R/VCC/2013/1569/2 – Variation to Conditions

Resource consent was granted on a non-notified basis on 21 July 2015 for changes to conditions 126(b) and 133 of R/VCC/2013/1569/1 under section 127 of the RMA. The changes provided for the following:

- To change which habitable rooms within the Gonpa had to be completed prior to inhabiting the Grong Seb dwellings; and
- To allow construction vehicles to access the site form Wastney Road as well as Ranfurly Road.

Resource Consent R/LUC/2014/1566 – Water Bore

Consent was granted on 14 May 2014 to drill a 104mm bore at a depth of 200m to take 8m³ of water daily for the purposes of domestic irrigation of lawn and planting/gardens. The location of the bore is near the Ranfurly Road boundary. The consent expired on 20 May 2015.

Resource Consent R/VCC/2013/1569/4 – Variation to Conditions

Resource consent was granted on 6 March 2016 for changes to conditions 1, 2, 66, 67 and 70 of R/VCC/2013/1569/2 under section 127 of the RMA. The changes sought to:

- Change the height of the parapet on the roof of the second floor of the Gonpa;
- Increase the number of three bedroom + study units to four
- Introduce a new dwelling typology
- Install first floor balconies on Units 1 to 20;
- Authorise changes that were tabled on plans at the hearing for R/JSL/2013/1569, 41699, 41700, 41701 and 41789 but were not stamped as 'approved';

- Increase the wastewater discharged from 29.6m³/day/person to 30.0m³/day/person in order to account for the increase in the number of three-bedroom dwellings;
- Increase the size of the effluent field from 4,966m² to 11,166m² and to increase the primary disposal area from 9,866m² to 19,854m².

The proposed changes resulted in total building coverage of 3,299m² (from previously consented 3,134m²) and total impervious surfaces coverage of 9,280m² (from previously consented coverage of 8984m²).

The application was processed on a non-notified basis.

The stages of development of the site would provide for:

- Stage 1 Construction:
  - 12 one bedroom temple accommodation units
  - 7 two bedroom units
  - 11 three bedroom units
  - 2 four bedroom units
  - 150 day visitors
- Stage 2 Construction:
  - 36 one bedroom temple accommodation units
  - 7 two bedroom units
  - 11 three bedroom units
  - 2 four bedroom units
  - 126 day visitors

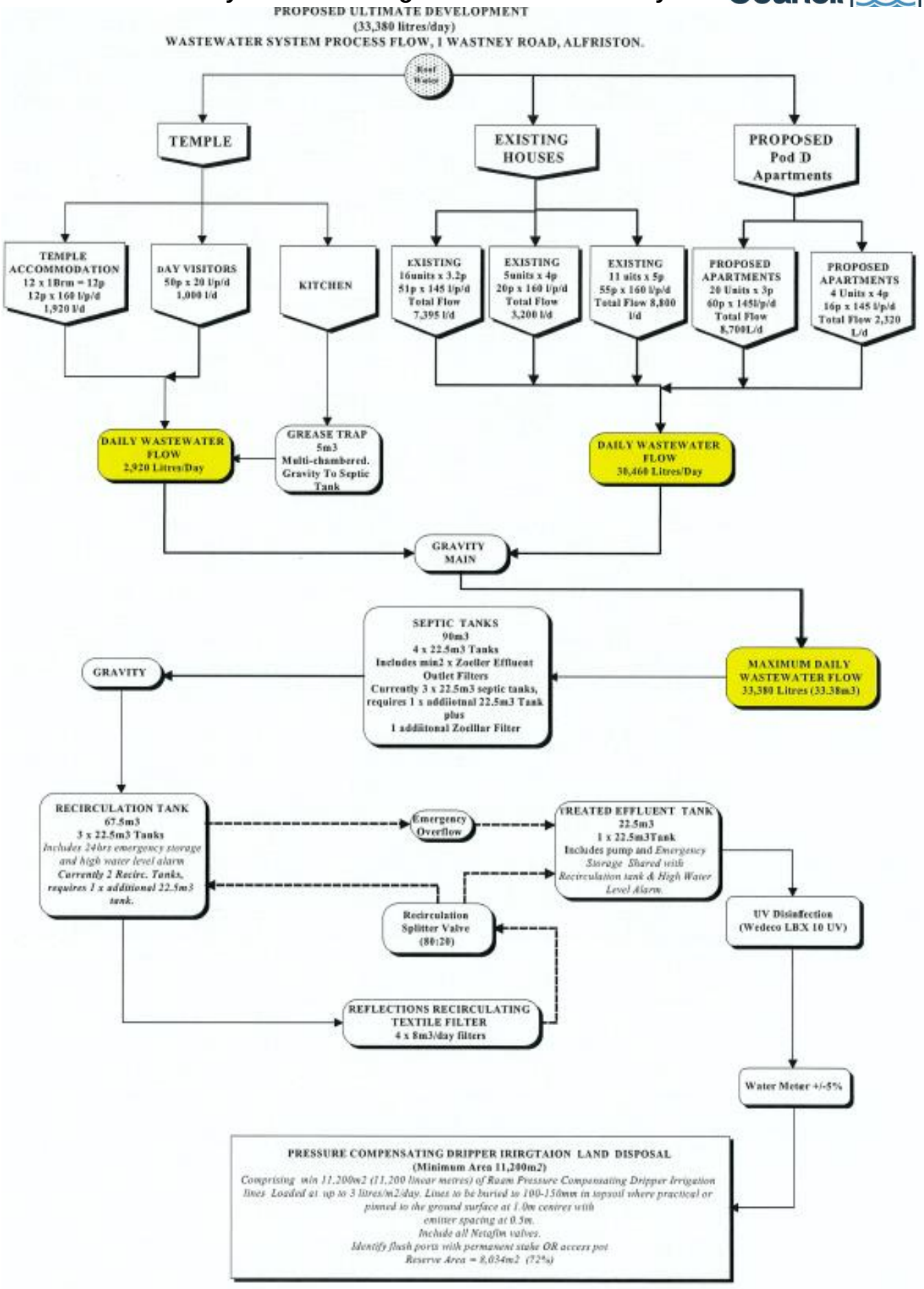
The maximum occupancy rates were restricted to 4 persons for a 2 bedroom dwelling, 5 persons for a 3 bedroom dwelling and 6 persons for a 4 bedroom dwelling.

R/LUC/2017/933 – New application

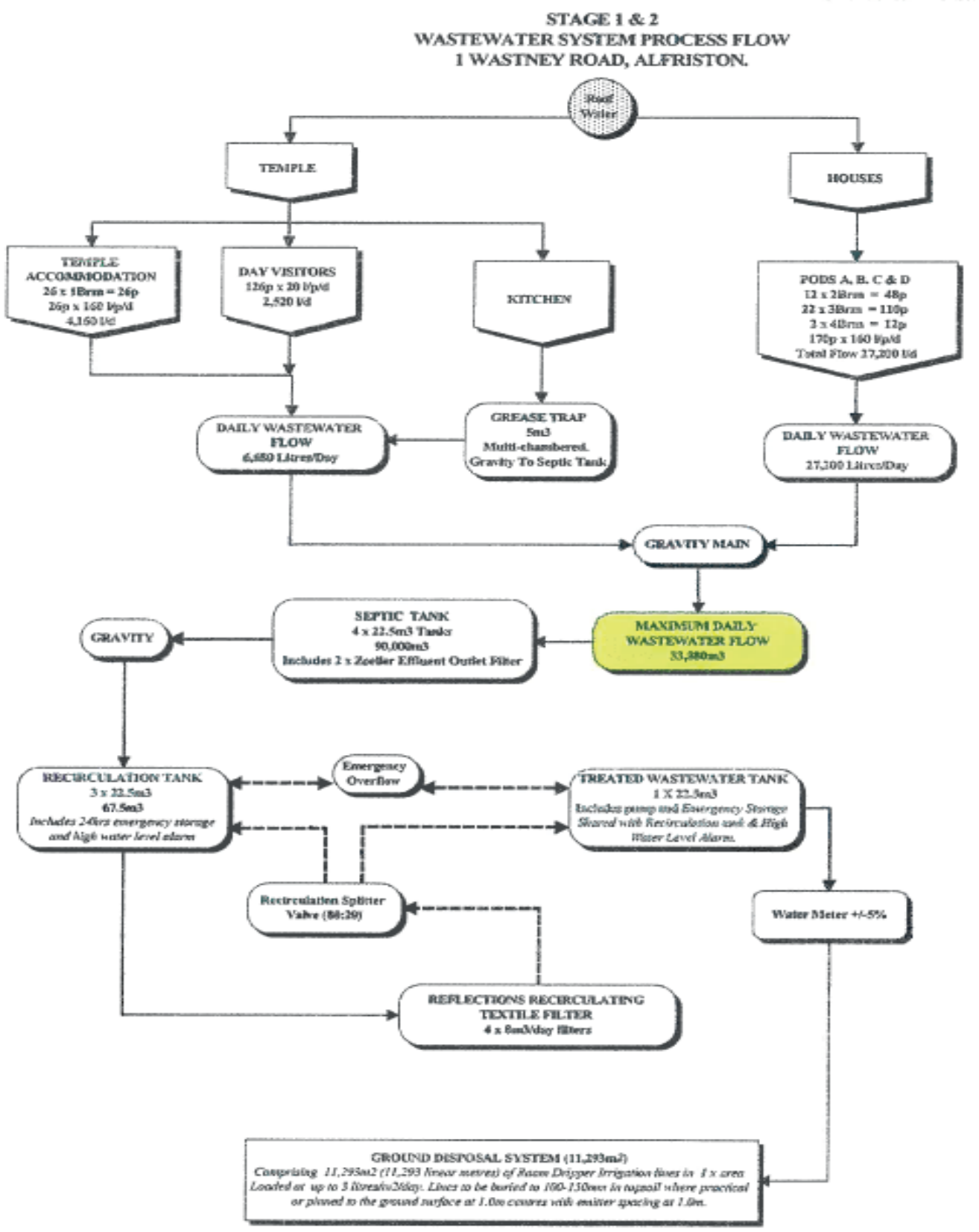
In conjunction with this application a new application has been applied for in relation to the construction of 12 two-level dwellings and a two-level visitor accommodation unit block containing four two bedroom units in the south-west corner of the subject site. The dwellings and visitor accommodation are directly associated with the Tibetan Buddist Temple partially constructed on the site.

This variation application reflects the increase in wastewater treatment required to accommodate the additional dwellings and accommodation units as proposed under R/LUC/2017/933.

New Wastewater System Flow Diagram dated 20 February 2020

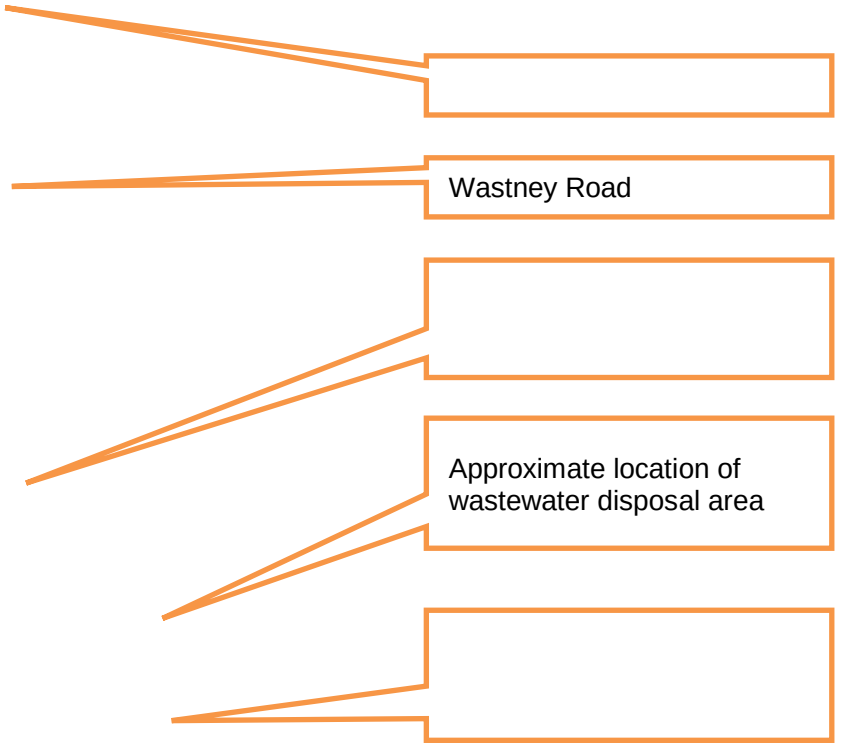


Wastewater System Flow Diagram (as per current consent DIS60084142, dated March 2017)



GIS SITE LOCATION PLAN (*with the location of the wastewater disposal area*)

INSERT



APPENDIX 2

- **Email from applicant's consultant David Hay for Applicant of Changes Sought to Wastewater Consent Conditions**
- **Copies of Actual Water/Wastewater Flow Records and Calculations used for Design Purposes**

1. Email from applicant's consultant David Hay for Applicant of Changes Sought to Wastewater Consent Conditions

Note this email was received on 3 September 2020 before the defining detail of the proposal were received so the changes specified still need updating. The further information from Ormiston Associates dated 31 October 2019 and 20 February 2020provided clarification in terms of:

- The final scale of the new Pod D development
- The scale of the development to date versus still outstanding as part of the Stage 1 & Stage 2 developments defined in the current consent (number of dwellings and size in terms of bedroom numbers)
- The actual vs design occupancies of the various dwellings vs design occupancies for new apartments
- The actual vs design water usage in the current dwellings and future apartments etc.

From: David Hay [mailto:david@osbornehay.co.nz]
Sent: Tuesday, 3 September 2019 10:07 a.m.
To: Lucia Tugaga
Subject: Wastney Road - Response to Email Outlining Changes to Conditions

Good-morning Lucia

Firstly thank-you to yourself and Robyn for the email below. This has now clearly identified Robyn's opinion on what consent conditions may require to be modified as part of the current s127 applications. It is very helpful that Council has now defined this and this email is in response to those conditions which Council has identified may need to be modified.

I address each of the six conditions which Council has identified below. In a couple of cases, the application already covers the modification of those conditions, for a couple I am in agreement that a change is now required and final there are xx where no change is required or being sought.

Condition 67 The s127 application already seeks a change to Condition 67. For clarification, the change sought is:

Stage 2 Construction ~~(full development)~~:
~~14~~ 12— one bedroom temple accommodations
5 — two bedroom units
~~11~~ 7 — three bedroom units
Apartment Block (20 x 2 bedroom, 4 x 3 bedroom)
126 day visitors

Condition 68 No change is required or sought to Condition 68. This condition relates to the monitoring requirements for stage 1 which has been completed and the requirements of this condition fulfilled.

Condition 71 A change to this condition is already being sought but the documents to

now be included are “Ormiston Associates Ltd, Revised Occupancy and Daily Flow Memorandum, 18 June 2019” and “Comparison Between Original Consent Conditions and Current Proposed Development, Ormiston Associates Ltd, Dated 25 July 2019”should be added to this list of documents. This is a new modification being sought under s127.

Condition 107 Condition 107 lists the information which is to be submitted annually. No change to this condition is being sought. If Council is now forming the opinion that this condition needs to be modified then this should be done through Condition 113(b) (the review condition).

Condition 111A Council is correct in that a new row for the apartments needs to be added to this condition. This would read (and the applicant is now seeking under s127):

“Apartments –
2 bedroom - 3 people and 400l/d
3 bedroom - 4 people and 500l/d”

Condition 112(a) Council is correct in that a new row for the apartments needs to be added to this condition. This would read (and the applicant is now seeking under s127):

“Apartments –
2 bedroom - 400l/d
3 bedroom - 500l/d”

In addition Condition 70 still needs to be modified (which was part of the original application) but the nature of the modifications has changed. The changes now required are:

70. The key components of the wastewater treatment systems shall be consistent with that described in the application and shall comprise at least the following minimum components, dimensions and standards:
Stage 1 Wastewater Treatment System:
Wastewater treatment plant consisting of:
(1x) 5,000 litre grease trap
(2x) 22.5m^3 septic tanks with outlet filters
(2x) 22.5m^3 recirculation tanks
(3x) 8m^3/day recirculating textile filter
(1x) Recirculation splitter valve
(1x) 22.5 m^3 treated wastewater tank
(1x) Ultra violet disinfection system
(1x) Effluent discharge flow meter (+/-5% accuracy)
(1x) High water level audible/visual alarms
(1x) Automated alarm and flow monitoring system (e.g. telemetry or similar)
Land treatment system consisting of:
(1x) 6,500m^2 primary effluent disposal area with pressure compensating drip irrigation (PCDI). Designed for peak hydraulic loading rate of 3mm/day.
(1x) 4,966m^2 reserve effluent disposal area (76% of Stage 1 primary effluent disposal area). Designed for a peak hydraulic loading rate of 3mm/day.

Stage 2 Final Wastewater Treatment System
Wastewater treatment plant consisting of:
(1x) 5,000 litre grease trap
(4 x) 22.5m^3 septic tanks with outlet filters
(3 x) 22.5m^3 recirculation tanks
(4 x) 8m^3/day recirculating textile filter
(1x) Recirculation splitter valve
(1x) 22.5 m3 treated wastewater tank
(1x) Ultra violet disinfection system

(1x) Effluent discharge flow meter (+/- 5% accuracy)
(1x) High water level audible/visual alarms
(1x) Automated alarm and flow monitoring system (e.g. telemetry or similar)
Land treatment system consisting of:
(1x) 11,~~29~~300m^2 primary effluent disposal area with pressure compensating drip irrigation (PCDI). Designed for peak hydraulic loading rate of 3mm/day.
(1x) ~~10,566~~ 8034m^2 reserve effluent disposal area (~~90~~72%). Designed for a peak hydraulic loading rate of 3mm/day.
Providing that equivalent components, dimensions and standards may be used that achieve similar or better performance standards if such is approved in writing by the Team Leader Rural and Wastewater Consents, NRSI.

I note that Condition 1 does not include a Site Plan - Wastewater. For future reference it may be helpful to now included the Ormiston Associates Ltd Plan 3639-1 Dated 25 July 2019 in the table of drawings.

Council then lists a number of conditions which may or may not need to be changed. These are now addressed:

66 – No change to the discharge volume (of 33.8m^3 per day) is being sought.
72 – This condition relates to the requirement for wastewater flow meters. No change to this condition is required nor is being sought.
77 – This condition relates to the required emergency storage volume and no change to this is being sought (as it is based on the 24 hour peak flow volume rather than a specified volume).
85 to 88 – These conditions relate to as-builts and certification etc. These conditions still apply and no change to these conditions are necessary or being sought.
105 – The condition relates to monitoring frequency and no change is being sought. If Council now considers this condition needs to be modified then this needs to be done via Condition 113(b) rather than the s127 process.

We look forward to receiving the draft conditions from you shortly.

Regards,

David Hay
Planning Consultant

Osbornehay
Resource Management Practice

Phone: 09 425-9844
Mobile: 027 425-0234
Skype: osbornehay01
Postal: PO Box 16, Warkworth 0941
Web: www.osbornehay.co.nz

2. Water/Wastewater Flow Records and Calculations from Ormiston Associates Memo dated 31 October 2019

(Refer Ormiston Memo for more information)

TABLE 1
PEAK FLOW PER DWELLING AND PER PERSON
JANUARY TO SEPTEMBER 2019

Max Month & Daily Metered Discharge (Litres)	Visitors[1] and Temple Rooms[2] (Peak litres/day)	Actual Daily Discharge (Litres)	No. Dwellings	No. Occupants in Dwellings [3] (less 6p for temple Rooms)	Average Flow per 2, 3 & 4 Brm Dwelling (litres)	Flow Per Person (litres)
January 2019 12,720	1,960	10,760	22	80p - 6p 74p	489	145
February 2019 12,110	1,960	10,150	22	80p – 6p 74p	461	137
March 2019 13,460	1,960	11,500	23	86p – 6p 77p	500	149
April 2019 13,980	1,960	12,020	23	83p – 6p 77p	522	156
May 2019 13,550	1,960	8,590	24	83p – 6p 77p	358	112
June 2019 12,060	1,960	10,100	25	83p – 6p 77p	404	131
July 2019 12,810	1,960	10,850	26	89p – 6p 83	417	131
August 2019 11,970	1,960	10,010	27	92p – 6p 86p	370	116
September 2019 13,520	1,960	11,560	28	94 - 6p 88p	412	131
October 2019 (part) 5,160	1,960	6,200	28	94 - 6p 88p	221	71

Notes.
1. Visitors only on days with peak wastewater flow of 50p (varies) being 50 x 20l/p = 1,000 litres
2. Temple rooms based on 6 occupants 6p x 160 l/p/d = 960 litres
3. The number of dwelling occupants calculated by subtracting 6people from total occupants per day.

Max·flow·per·month¶ =·MAX·litres/day?¤	¤	3.4p/dwelling·&·3.6p/dwelling·top·2·rows·¤	522·MAX·AVE·L·/D·/·DWLG¤	156·MAX·AVE·L·/P·/·Day¤

TABLE 2 Per Capita Wastewater Production Review January 2019 To October 2019				
Month 2019	Total Flow Per Month (Litres)	Average Daily Flow (Litres)	Number of People[1]	Average Flow Per Person (Litres/person)
January	258,100	8,300	80	104
February	220,800	7,900	80	99
March	258,500	8,600	83	104
April	256,960	8,570	83	103
May	240,100	7,740	83	93
June	234,000	7,800	94	94
July	246,000	8,197	89	92
August	267,000	8,614	92	94
September	275,000	9,170	94	98
October[2] (part month)	166,190	7,550	94	80
AVERAGE	221,205	8,234	80	96

Notes:

1. Includes all residents occupying houses and temple rooms
2. October flows up to 24/10/2019

TABLE 3 TOTAL DAILY FLOW PROJECTION					
Existing Houses Number of Bedrooms	Design Average No People/House	l/p/d	No of Houses	Wastewater Flow/House (Litres)	
2 Bedroom[1]	4	160	5	640	3,200
2a Bedroom[2]	3.2[3]	145	7	465	3,255
3 Bedroom	5	160	11	800	8,800
3a Bedroom	3.2	145	7	465	3,255
4a Bedroom	3.2	145	2	465	930
				Total	**19,440**
Proposed Pod D Apartments					
2 Bedroom	3	145	20	435	8,700
3 Bedroom	4	145	4	580	2,320
				Total	**11,020**
Temple Number of Bedrooms					
1 Bedroom	12	160			1,920
External Visitors	50	20			1,000
				Total	**2,920**
				TOTAL COMBINED DAILY FLOW	**33,380**

Notes.

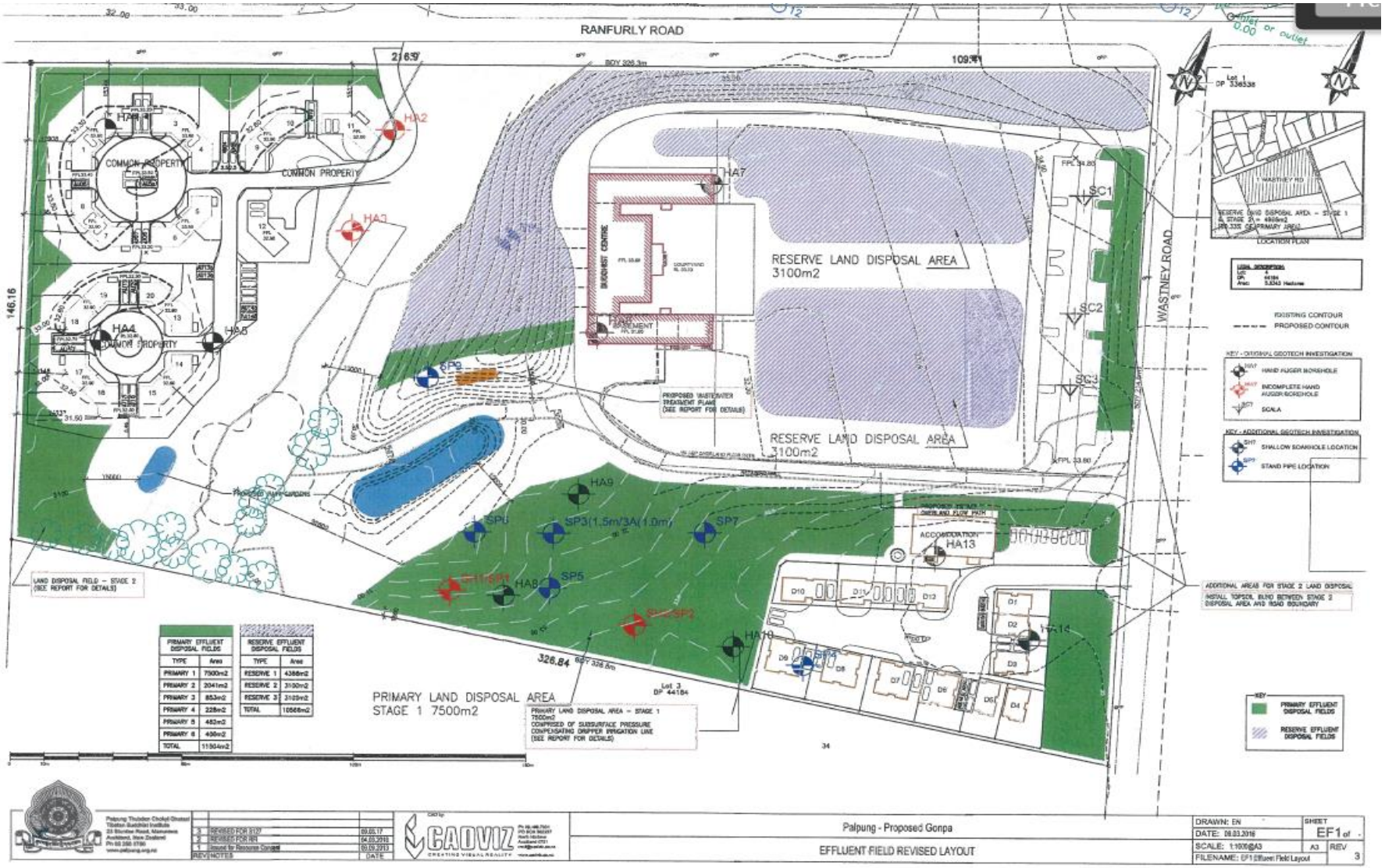
1. Existing occupied dwellings for which maximum daily discharge is limited to the volume stated above and cannot be changed.

2a[2]. Dwellings for which daily maximum discharge can be revised to a reduced flow level based.

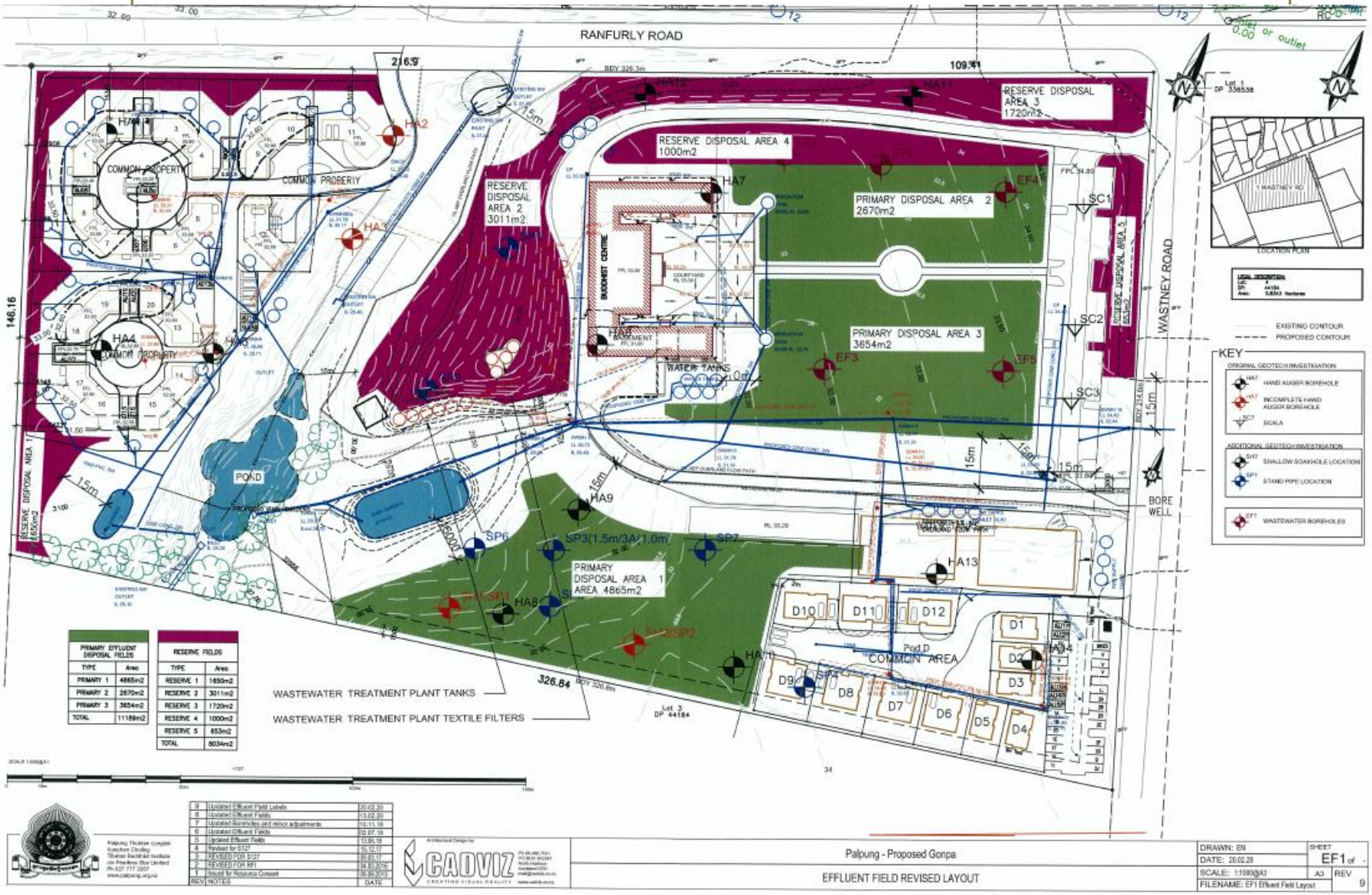
2. Average occupancy over all the occupied dwellings(excluding Temple Rooms) as recorded for August, September and October 2019 with 27-28 houses and having an occupancy of 86p – 88p.

PRIOR CONSENTED SITE PLAN (CADVIZ EFFLUENT FIELD PLAN - Sheet EF1 Rev 3', dated 09 March 2017

(Attached only for comparative purposes. Plan actually dated 2016 not 2017 but attached to correct Ormiston March 2017 report.)



WASTEWATER SITE PLAN FOR CURRENT APPLICATION (CADVIZ Sheet EF1 Rev 9', dated 20 February 2020)



Site Address : 1 Wastney Road, Ardmore