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**PWC SYSTEM “ON PROPERTY” INSTALLATION WORKS****565 HYDRAULIC DESIGN FOR PWC SYSTEMS**

**565.1** The PWC system on property design will include:

- installation of a pumping unit on the residential property on the basis of only one pumping unit per residential property.
- the private pressure main connecting the pumping unit to the boundary kit.
- connection of the pumping unit to the household/building electrical control board.
- connection of the gravity household drains to the pumping unit.

**565.2** The size of the private pressure main will be the size recommended by the manufacturer of the particular pumping unit as being applicable to that pumping unit but where not stated will be a 40 mm polyethylene class 16 pipe [PE 100 PN16].

**565.3** The hydraulic design is to be carried out with the property owner with the owner's reasonable needs being accommodated in the overall design

**565.4** For more complicated non-domestic property designs, such as industrial applications and even bodies corporate, these will be carried out by a specialist designer and the sizes of the pipelines will be fixed by those designs. This may also include the sizing of the pumping unit or the multiple applications for this unique design.

**565.5** In general the pumping unit is to be located in a position, as close as practical to the building and within a clear line of sight of the Alarm/Control panel.

**565.6** Where there is more than one building on the site, the pumping unit will be located next to the building contributing the greatest flow volume to the pumping unit, assuming it is the building which houses the power board if there is only one such power board servicing all of the dwellings.

**565.7** If the property owner wants to locate the pumping unit at another location and this can be practically achieved, then the owner's wishes will be accommodated and included in the quote to the owner who will be meeting the costs of the installation.

**565.8** Where there are multiple units on the property the above principles of locating the units close to the buildings will essentially remain the same, excepting that where practical, the units will also be laid out in such a manner so that any private pressure main (joining these units) is minimised in its overall length or multiple connections are to be used.

**565.9** As indicated in the sections on design, the property service line should be parallel to the property boundaries approximately 1.0 m from the side or rear properties where practical, but can be diverted to accommodate the following typical obstacles:

- unique or solid structures, in the case of existing homes.
- unique or prized gardens in the case of existing homes.
- proposed structures or driveways in the case of new homes.
- rock outcrops on the property.
- topographical features such as sudden inclines or falls.
- future property extensions or structures such as swimming pools.
- unique features where the property is quite large and the pipeline is not in a close proximity to property boundaries.

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**565.10** Where the properties are large and this 1.0 m requirement may be unreasonable, the private pressure main will be laid essentially perpendicular to the reticulation mains, but should essentially be a straight line. It will be laid in a position sympathetic with the current property usage.

**566 APPROVED PWC PRODUCTS AND APPROVED PWC INSTALLERS**

**566.1** Council will maintain a list of the Approved PWC Products for the information of Developers and Home Owners and other persons lodging a building consent application.

**566.2** The Approved PWC Products will meet all the requirements regarding materials, equipment and installation procedures and as laid down in the Wastewater Drainage Bylaw. In addition to this, indicative volumes of the storage vessel are as follows:

| Size of House | Typical Occupation | Storage Volume (ℓ) |
|---------------|--------------------|--------------------|
| 3 bed rooms   | 4 persons          | 630                |
| 4 bed rooms   | 5 persons          | 800                |
| 5 bed rooms   | 6 persons          | 1000               |

NB: Actual volumes of the storage vessel may vary from the above on an individual basis subject to specific design submission. Minimum volume will be 600ℓ.

**566.3** The following are indicative operating volumes of the storage vessel:

The retained storage in the tank will not be more than 100ℓ.

The operating storage will be between 100ℓ and 200ℓ.

The total volume storage will not be less than 600ℓ.

**566.4** Council will maintain a list of Approved Installers to carry out the on property works for the PWC systems and will provide that list to all persons lodging a building consent application.

**566.5** The Approved PWC Installers will:

- carry out a basic design of the on property layout locating the pumping unit and private pressure main.
- audit an existing property if the connection is to service a property with an existing building on it that has some form on site wastewater system attached and specify correct tank capacity for 24 hours storage.
- provide a quote to the property owner before undertaking the works.
- supply all materials including the pumping unit, pipe and fittings, install, test and commission the pumping unit.
- provide all as built information to Council.
- invoice the owner after the work is completed.

**567 PROPERTY DRAWINGS**

**567.1** The property drawing will be an A3 drawing and depict the proposed on-property layout. This drawing at minimum must show the following:

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- location of the pumping unit, relative to the dwelling/s, including tie lengths to any suitable reference points, not closer than 2m from the edge of the building and 1m to boundary, dimensioned or to scale.
- the pipeline route, including ties at any change of direction, in the pipeline.
- The location of the boundary kit and valve arrangement.
- the location of the overflow relief gully.
- any proposed directional drilling and approximate depths of lines.
- position of electrical control box
- route of electrical cabling between pump and control box
- a property number and any other identification that is required to positively identify the property the layout applies to.
- any unique features in the house, which have impacted the design such as gardens/ structures.
- the make and model of the Approved PWC Product installed

**567.2** The layout drawing is to be in plan view only as it will be assumed the property main will be constructed minimum depth. Where this is incorrect, a plan view will be included.

**568 HOME AUDITS**

**568.1** Where the connection is to an existing dwelling a formal audit will need be conducted on the following components:

- the property power board to which the pump is to be connected.
- the household drains to ensure both the adequacy of these and that no stormwater is gaining access to the system.

**568.2** These audits should be carried out before the on property design work is commenced and will be carried out by the Approved PWC Installer. If the audit finds that there is work to be done on either of these two connections (to bring them to compliance with current standards requirements for these connections) the Approved PWC Installer will provide the property owner with a detailed list of the works and price to remedy these problems.

**569 INSTALLATION OF THE PUMPING UNIT**

**569.1** The pumping unit is to be installed at all times in accordance with the Approved PWC Product's Instructions. A basic guide as to Council's minimum requirements is as set out below:

1. Excavation of hole as per the of the Approved PWC Product's Instructions i.e. minimum diameter of hole and depth. Excavation via an auger is preferred to minimise the on-property damage and auger to be rubber tyred/ tracked.
2. Cut the inlet hole into the storage vessel at the desired location.
3. Insert the storage vessel housing the pump in the excavated hole, carrying, not rolling it into place. This should also be done in accordance with the Approved Product's

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Instructions..

4. The storage vessel is to be buried to the depth of the burial level decal on the tank. However the final ground level of the storage vessel should be such that it is not located in a position where stormwater might naturally collect.
5. Pour the concrete ballast around the base of the pumping unit in accordance with the Approved Product's Instructions and ensure the concrete ballast, bonds with the storage vessel material.
6. The pumping unit hole is to be back filled with sand up to a depth of 200mm below the burial level decals.
7. The remaining 200mm to be filled with an acceptable quality topsoil.
8. The storage unit is to be visually inspected during the installation phase to ensure that no damage has been done to the unit in the transportation and installation process.
9. The pump and inlet/ other pipelines to be installed in the storage vessels in accordance with the Approved Product's Instructions.
10. The Alarm/Control panel is to be installed on the house/ shed garage or on a dedicated post if away from the above.
11. The Alarm/Control panel is to be wired into property power board.
12. The storage vessel is to be filled with water and allowed to stand overnight or a minimum of 2 hours to confirm that there are no leaks.
13. The pumps and all electrical connections are to be tested and the unit made operational and a Certificate of Compliance issued to the Owner..
14. As built information to be compiled and forwarded to the property owner and a copy to be provided to Council.
15. Final restoration of property.

**569.2** Excavated holes for the pumping unit are not to be left open overnight, therefore excavation on the property should not be commenced unless the Installer can guarantee that the pumping unit will be installed and backfilled that day.

**569.3** The installation of the unit is only to be done by an Approved PWC Installer. If Council discovers technology installed that has not been installed by an Approved PWC Installer then the system may be replaced at the property owner's expense and the property may be disconnected from the PWC reticulation.

**569.4** If Council discovers a non approved technology installed on a property it will be replaced immediately with approved technology at the property owner's expense.

**569.5** Council requires that a formal Producer Statement be submitted for each pumping unit installation once they are operational. This certificate and the date of it will be the basis of any warranty that is to apply to the pumping units.

## **570**      **INSTALLATION OF THE ALARM/ CONTROL PANEL**

**570.1**      The basic methodology for installing the Alarm/Control panel is:

1.      Agree the location of the Alarm/Control panel with the homeowner, as part of the property installation.
2.      Determine if a stand alone post to accommodate this panel is required and if so obtain one.
3.      Determine the 1 in 100 year flood level (if applicable) and mark out a location for the Alarm/Control panel so that the bottom of the panel is a minimum of 400mm above that level.

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4. Install the Alarm/Control panel in accordance with the Technology Supplier's instructions and the relevant standards and codes. The Alarm/Control panel is to be in clear site of the pumping unit and preferably no more than 7-8meters away (max 10m). The Alarm/Control panel is then to be connected to the household power board.
5. The connection of the electrical cable to the Alarm/Control panel is to be bottom glanded to prevent moisture entering the Alarm/Control Panel.
6. Once all connections have been made the protective cover is to be inserted into the panel.
7. The Alarm/Control panel is to be tested both for normal operation of the pump and for the alarm modes.
8. Assuming all test requirements have been met, the control box is locked and a sticker with the emergency contact numbers is to be affixed to the outside of the box by the Installer.

## **571 INSTALLATION OF THE PRIVATE PRESSURE MAIN**

- 571.1** The route of the private pressure main should be documented on the property plan after it has been agreed between the Installer/ Designer and the property owner. The route is then not to be altered during the installation process unless unforeseen circumstances are encountered, such as underground structures.
- 571.2** Where a modification to the design is necessitated, the Approved PWC Installer should seek to agree on any new route with the property owner before making that change.
- 571.3** The following steps represent the basic acceptable installation process for the private pressure main:
1. Confirm layout diagram for the property
  2. Determine if any of the pipeline excavation should involve directional drilling.
  3. Mark out the pipeline, cut and remove any high quality turf before commencing trench excavation. If the weather is hot this turf is to be watered, sufficiently often to keep it alive and appropriate for restoration.
  4. The trenches are then excavated to obtain the appropriate minimum cover for the pipeline.
  5. The pipeline is to be installed in the trench and joined by electro- fusion to the length of pipe that is protruding from the pumping unit. A tracer wire capable of being energised is also to be installed.
  6. The excavation is to be carried out using rubber tyred trench diggers where possible.
  7. Pipe bends or significant changes in direction of the private pressure main are to be tied to fixed locations on the properties where possible, for marking on the "As Built" drawings.
  8. Trenches are to be backfilled
  9. Trenches to be compacted to a minimum depth of 100mm below surface level. They are to be filled to the surface with topsoil and seeded with a grass similar to the existing lawn.
  10. Replace any cut out turf, placing it carefully and filling any gaps with topsoil and grass seed. The trench should have been compacted before replacing the grass to avoid subsidence.
  11. Clean up the site, picking up all excess material (if any.)

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**572 LOCATING THE PRIVATE PRESSURE MAIN**

**572.1** The as built diagrams should clearly indicate the route of the pipeline but in general the following should be included to assist with the subsequent location of this private pressure main.

- The pipeline is to be laid in fixed locations, where possible with appropriate tie measurements at any point where direction changes.
- Marker plates are to be installed.
- Install a marker tape indicating that pressure wastewater has been laid 250 mm below the tape. The tape should be brightly coloured, and have the words pressure wastewater collection or PWC printed on it.

**572.2** A copy of the “Asbuilt” drawing is to be provided to the property owner and the Council after the works is completed.

**573 CONNECTING THE PUMP TO THE PROPERTY POWER BOARD**

**573.1** The pump is to be connected into the property’s power board in accordance with the following:

- The pump is to be installed on a separate circuit to all other household uses. Residents should be capable of isolating all of the other house power supplies if so required. This circuit is to be clearly and professionally labeled.
- This connection is to include the connection to the Alarm/Control panel, which must be in accordance with the approved product supplier’s requirements. Ideally both should be within a line of site of one another, but this is not always possible.
- The connection should be in accordance with any local energy supplier’s requirements.
- The household power board must comply with relevant New Zealand Standards.
- Caution over asbestos in power boards is to be exercised, in accordance with local energy supplier’s requirements.

**574 NOT IN USE****575 TIMING FOR INSTALLATIONS**

**575.1** The PWC pump is to be installed after all of the major construction works on the property have been completed and there are no trade people coming onto the property for fit out purposes. The connection however needs to be carried out before occupancy of the home.

**575.2** The coordination for the installation timing is to be between the property owner’s builder and the Approved PWC Installer.

**575.3** Any damage to the pumping unit as a result of building activities will be repaired at the property owner’s cost

**576 BUILDER SERVICE**

**576.1** The PWC system is not to be used to support a builder service under any circumstances and must only be connected to the property for which it is intended.

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- 576.2** If Council discovers that an approved PWC Installer has permitted the use of a PWC pumping unit as a builder service Council will seek to have the Installers accreditation revoked and may ban them from carrying out further installations in The Rodney District Area even if this accreditation is not revoked.—
- 577** **CONNECTING NEW HOMES**
- 577.1** There is a need to flush out the new household gravity drainage lines prior to the connection to the storage vessel to ensure that all building debris is flushed from the system, before the connection to the pumping unit is made.
- 577.2** This flushing should be carried out after all construction activity has been completed.
- 577.3** Any baths on the property are to be filled and all internal taps turned on immediately after the bath plugs are released. The taps will be left to run for approximately 5 minutes to flush away building debris from the system, before connection is made to the storage vessel. The 5 minute period is a guide only and the flushing period will be governed by what is coming out of the pipelines. This flushing period can be lengthened if debris is still being flushed out of the pipelines at the end of the suggested 5 minute period. The pumping unit is NOT to be installed in the storage vessel where construction debris is or will be present.
- 578** **TESTING THE PUMPING UNITS**
- 578.1** All operational tests are to be conducted using the reticulated water supply with the pumping unit only being connected to the PWC system after these tests have been successfully carried out. The tests are set out in the Approved Product's Installation Instructions, but Council requires the following tests also be performed on all on-property works:
- 578.2** **Leakage Test:** Once the installation is completed the pump storage vessel should be filled to a set (but high) level and then that level should be observed for a minimum period of 2 hours if the overnight filling (as per 569.1) has not been done. If there is no leakage then the Installer can proceed to the simulated power failure test, set out below.
- 578.3** **Simulated Power Failure Test:** It is expected that the leakage test will be conducted immediately before other tests. It will thus be expected that the pump should commence in an alarm mode, when the alarm is switched on. This test will determine if the alarms will automatically turn on and then off, as the pump reduces the volume stored in the storage vessel, as per a simulated power failure and recovery.
- 578.4** **A Time Based Operational Test:** The pumps will be considered operationally ready when they have successfully operated for a period of one hour with a constant inflow rate of around 0.1 to 0.2 l/s (this is the typical inflow from a garden hose operated at reasonable pressure). Such a test should involve several on and off cycles of the pump itself.
- 578.5** **An alarm test:** The Installer will discharge water quickly into the pumping unit's storage vessel such that the high level alarm level is exceeded. The pumping unit is then observed to see if the alarm initially comes on and subsequently if the alarm will automatically shut off after normal pumping levels have been achieved. This cycle should be repeated at least three times, and be part of the overall time based test.
- 578.6** **Pump Protection Test:** The pump is also to be tested against a closed valve to ensure that the pump's safety cut outs are working satisfactorily. This test need be conducted only once and due precautions should be taken against sudden pipe failure.
- 579** **COMMISSIONING OF THE PUMPING UNIT**
- 579.1** The pump will not be deemed to have been fully commissioned until it has been certified by the Approved PWC Installer and a formal Producer Statement provided to Council with a copy provided to Householder.

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579.2 The date shown on the Producer Statement will be:

- The commencement date for the warranty.
- The commencement date for any defects liability period that might apply to the on-property works.

#### 580 NOTIFICATION OF ALARMS

580.1 The following will be the notification and response mechanisms for those properties where a PWC system is installed and where a problem is experienced with the pressure wastewater pumping unit.

- Resident to contact the 24 hour emergency call centre of the Approved PWC Installer
- Call Centre Operator to enquire if:
  1. Alarm has activated.
  2. If the alarm has activated following a power outage.
  3. If an overflow is occurring on the property.
  4. If there is anything else that the resident may wish to report

580.2 Customer services will email/page/phone the repair agency of the Approved PWC Installer, who then shall respond within twelve hours ~~one hour~~. The call operator will draw the resident's attention to the relevant sections of homeowner's manual over what to do if an alarm activates.

580.3 If the alarm follows a power outage then resident will be asked to call back in one hour's time, if the alarm has not cleared itself. If the resident calls back, then the actions will be as above.

580.4 If the resident indicates there is a discharge from the overflow relief gully, then the repair agency will respond immediately.

#### 581\ MAINTENANCE OF THE PUMPING UNITS

581.1 This work is to be carried out by the Approved PWC Installer's repair agency in accordance with the levels of service defined in the Council Code of Practice on PWC Systems.

581.2 The property owner is to be responsible for all repairs but there must be no delays in reporting the problems with the pumping unit.

#### 582 INFORMATION REQUIRED BY COUNCIL

582.1 The following is seen as the minimal information to be provided to Council in the on-property information file:

- asbuilt plans based upon the property design, highlighting any deviation from this design. It is assumed that the layout design will become the "As Built" drawing unless there have been significant changes made.
- the date the pump made operational.
- nature of any additional storage provided.

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**583 SPA POOLS**

**583.1** The size of the spa pool (volume contained) will essentially determine what is required to discharge from the spa without setting off the high level alarm or generating overflows from the Overflow Relief Gully.

**583.1.1 Spa Pools with less than 250 litres in normal operating volume:** These should require no special provisions be made and as such they can be treated as a standard household water using appliance.

**583.1.2 Spa Pools between 250 litres and 700 litres capacity in normal operating volume:** These may require that some additional measures be fitted to the pumping unit to avoid system alarms annoying neighbours unnecessarily. Typically these could involve the following and will be dealt with on a case by case basis but will typically involve:

- Time delays to the alarm switch
- Restricting the discharge rate of the spa pool into the pressure unit.
- Other approved measures.

The Approved PWC Installer is to advise the property owner on what is required in the particular application

**583.1.3 Spa Pools with a normal operating volume in excess of 700 litres:** These will require that differing flow restriction devices be added to the system. Typically these will involve the following and will be dealt with on a case by case basis.

- Providing some form of upstream storage with a limited discharge rate to more closely match that of the pressure wastewater unit.
- Providing a larger pressure wastewater storage unit.
- Time delays on the alarm.
- Other approved measures.

The Approved PWC Installer is to advise the property owner on what is required in the particular application

**583.1.4 Spa Pools with a backwash facility:** These will be dealt with the same as for a swimming pool.

**583.2** An alternative to the above might be to regulate the outlet of the spa to limit the flow-rate that can be discharged from the spa pool. Where such an arrangement is permanently installed this might overcome the need for any of the actions above.

**583.3** The nature of any such devices must be conveyed to Council for inclusion in the Asbuilt information being held by Council on the property.

**584 SWIMMING POOLS**

**584.1** There will be a need to provide additional storage when the discharge from the pool backwash pump exceeds 0.45l/s, and the pump operates for sufficient time to fill the pressure wastewater storage vessel to a level, that it causes an alarm to be generated. The additional storage will have a controlled discharge of less than 0.45l/s and will be located between the pool's discharge pump and the wastewater pumping units.

**584.2** This additional storage will not be required where the discharge from the pool pump can be regulated to below 0.45l/s.

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**584.3** The interconnection of the swimming pool into the PWC system on the property will be designed on a case by case basis by the Approved PWC Installers, but the property owners will need to provide the Sub Contractor with the following information to allow them to determine the size of any additional storage.

- Pump backwash/ discharge rate in l/s.
- Duration of time the backwash is operated for.
- What arrangements will the owner make to empty the pool, if it ever becomes necessary to do that.

**584.4** Council recommends that cartridge filters be used in all new pools to avoid sand getting into the pumping units, but if this is not possible then sand filters may be used.

**585 OVERFLOW RELIEF GULLY**

**585.1** An overflow relief gully (ORG) is required to be fitted to each pumping unit to prevent internal overflows. This is to be included by the property owner's plumber, and it must not be covered once the pump is operational. It will also include an inspection opening as appropriate.

**586 IDENTIFICATION OF EMPLOYEES**

**586.1** As a significant amount of the pressure wastewater works occur on the property, all installers or repair employees will be required to have with them at all times photographic identification issued by the Council.

**586.2** When the Approved PWC Installers employees first enter the property they must show this photographic identification to the resident.

**586.3** An employee without identification with them may not enter the property.

**587 PROPERTY DIAGRAMS**

**587.1** Council will retain copies of the property diagrams as a fixed record should residents want to carry out further works on their property which requires the location of the service pipe be determined.

**588 PROPERTY MODIFICATIONS**

**588.1** The pumping unit or private pressure main may be moved subject to:

- The hydraulics on the property allowing the pumping unit to be moved.
- There being a suitable alternative route/s for the private pressure main
- Full details of the "asbuilt" works being provided to Council.
- Any modifications are to be carried out by an Approved PWC Installer.

**588.2** Property Owners wanting to modify their property must first seek Council's permission to do this as part of their building consent application and thereafter must engage an Approved PWC Installer to carry out the work. Any system found to be modified without appropriate permission may be the basis of legal action by Council against the home owner and the Approved Installer.

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**589 HOME OWNER'S MANUAL**

**589.1** The home owner will be provided with a User's Manual that informs the resident what to do if the alarm sounds, what can be safely discharged into the system as well as what access needs to be provided for Approved Installers agents. **589.2** The property owner if not resident on the property is to ensure the resident of the property has a copy of this Manual.

**589.3** Council will maintain a supply of the Manual if required.

**PRESSURE WASTEWATER COLLECTION (PWC) DRAWINGS  
RDC NUMBER/SHEET No. (see over)**

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