

# ***An on-site disposal system for foul water from a house***

## **1 THE MATTERS TO BE DETERMINED**

- 1.1 The matters before the Authority arise out of a doubt as to whether the proposed on-site disposal system for foul water from a house will adversely affect an adjoining allotment by allowing foul water to flow on to that allotment.
- 1.2 The Authority takes the view that it is being asked in effect to determine whether the proposed disposal system complies with the provisions for the protection of other property of clause G13 of the building code (the First Schedule to the Building Regulations 1992).
- 1.3 In making its decision, the Authority has not considered whether the system complied with any other provisions of the building code.

## **2 THE PARTIES**

- 2.1 The applicants were the owners of the other allotment, who had the status of a party under section 16(d) of the Building Act and are therefore entitled to apply for a determination but only in respect of the provisions of the building code that have the purpose of protecting the applicants' property.
- 2.2 The other parties were the owner of the land on which the system is proposed to be installed and the territorial authority.

## **3 THE SYSTEM**

- 3.1 The territorial authority has issued a building consent for a house including the proposed foul water disposal system. The land concerned slopes down to the applicants' land. A building platform has been excavated into the slope. The system's effluent disposal area is between the building platform and the applicants' land.
- 3.2 The disposal system itself consists of a proprietary five-stage aeration treatment plant designed for a flow of 1,080 litres per day resulting from an occupancy of 6 persons. The details of the plant are not relevant, but the proprietor claims that the effluent has a maximum five-day biochemical oxygen demand ("BOD<sub>5</sub>") of 30 mg/l and maximum suspended solids ("SS") also of 30 mg/l.

- 3.3 The effluent is disposed of by trickle irrigation at a maximum rate of 3.5 mm/m<sup>2</sup>/day (35 litres per square metre per day) through emitters on a 1 m grid, requiring a primary disposal area of 310 m<sup>2</sup>.
- 3.4 The proposed primary disposal area is approximately 26 m by 12 m and is 2.5 m inside the boundary with the applicants' land. It is not disputed that surface water flows from the proposed disposal area onto the applicants' land and also on to the land of another neighbour who has not chosen to be a party to this determination.
- 3.5 A surface water diversion drain is to be excavated around the upslope side of the disposal area.
- 3.6 Effluent is to be discharged onto the disposal area through irrigation lines placed on the ground surface and covered with bark or mulch.
- 3.7 A reserve disposal area the same area as the primary disposal area has been identified on the site plan. Irrigation lines will not be installed in the secondary area unless and until it is required to be used.
- 3.8 The building consent was issued on the basis that the system complied with the second edition of the Auckland Regional Council's Technical Publication TP 58 *On-site wastewater disposal from households and institutions* ("TP 58").

## 4 THE LEGISLATION

### 4.1 The Building Act

- 4.1.1 Section 32 of the Building Act provides that "building work", subject to certain exceptions, shall not be commenced without a building consent. "Building work" is defined in section 2 as follows:

"Building work" means work for or in connection with the construction, alteration, demolition, or removal of a building; and includes sitework:

"Sitework" means work on a building site, including earthworks, preparatory to or associated with the construction, alteration, demolition, or removal of a building:

- 4.1.2 The relevant parts of the definition of "building" in section 3(1) read as follows:

. . . the term "building" means any . . . structure . . . and includes any . . . utility systems, attached to and forming part of the structure whose proper operation is necessary for compliance with the building code; but does not include—

- (a) Systems owned or operated by a network utility operator for the purpose of reticulation of other property; or . . .

- 4.1.3 Section 34(3) reads:

(3) After considering an application for building consent, the territorial authority shall grant the consent if it is satisfied on reasonable grounds that the provisions of the building code would be met if the building work was properly completed in accordance with the plans and specifications submitted with the application.

## 4.2 The building code

### 4.2.1 The relevant provisions of the building code are:

**G13.1** The objective of this provision is to:

- (a) Safeguard people from illness due to infection or contamination resulting from personal hygiene activities, and
- (b) Safeguard people from loss of amenity due to the presence of unpleasant odours or the accumulation of offensive matter resulting from foul water disposal.

**G13.3.2** The drainage system [for foul water] shall:

- (a) Convey foul water to an appropriate outfall,

**G13.3.4** Where no sewer is available, an adequate on-site disposal system shall be provided for foul water in the same manner as detailed in clause G14 "Industrial Liquid Waste".

**G14.3.2** Facilities for the storage treatment and disposal of industrial liquid waste shall be constructed:

- (d) To avoid the likelihood of contamination of soils, ground water and waterways except as permitted . . . under the Resource Management Act 1991,

## 4.3 The Resource Management Act

### 4.3.1 Section 30(1)(f) of the Resource Management Act provides that the regional council's functions for the purpose of giving effect to that Act in its region include:

- (f) The control of discharges of contaminants into or onto land, air, or water and discharges of water into water:

## 5 THE SUBMISSIONS

### 5.1 The applicants

5.1.1 The applicants made extensive submissions, including photographs and sketches, expressing their concerns about effluent running onto their land.

5.1.2 They pointed to the slope and the nature of the soil and to the frequent rain experienced in the locality. They had observed that land downhill of similar disposal areas was very wet even in fine weather. They feared that the proposed disposal area would have the same effect on that part of their land downhill of that area.

5.1.3 They said that the soil on their allotment consisted of 100 mm of topsoil overlying clay. They had a similar disposal system, and in their own disposal area the top soil, under the mulch, was "very wet" throughout the year. The mulch itself was dry on top but damp beneath the surface in summer, but "very wet inside" for the rest of the year.

5.1.4 In essence, the applicants' fear was that the effluent would not have enough time to "soak into the clay" before it flowed, or rain washed it, down on to the applicants' land. As they put it "Where does the dirty water stop before our fence line?"

## 5.2 The other parties

- 5.2.1 The territorial authority made no specific submissions but provided copies of the relevant parts of the building consent, including the specification of the system and a requirement that its installation was to be “supervised by the design engineer and confirmation given to the council in writing that the work has been completed in accordance with the approved plans”.
- 5.2.2 The owner responded to the applicants’ submissions by contending that the “wet areas” mentioned by the applicants were low-lying areas that were wet as a result of surface water not effluent.

## 5.3 Report obtained by the Authority

- 5.3.1 The Authority referred the application and building consent documents to a firm of consultants in geotechnical engineering, geology, and engineering geology (“the consultant”).
- 5.3.2 The consultant provided a report that was copied to the parties. That report was in terms of TP 58, and also made reference to US Environmental Protection Agency’s 1982 publication *On-site Wastewater Treatment and Disposal Systems* (“EPA design manual”).
- 5.3.3 The Authority asked for the report to be supplemented by an evaluation of the proposed system’s compliance with AS/NZS 1547: 2000 *On-site domestic-wastewater management* (“AS/NZS 1547”). The supplement was also copied to the parties.
- 5.3.4 The supplemented report was to the effect that the system as designed complied with both TP 58 and AS/NZS 1547.
- 5.3.5 In addition the report also recommended:

- (a) That the surface of the disposal area should be scarified before the effluent lines are placed.

That is not required by TP 58 or AS/NZS 1547, but the Authority accepts that it would assist soakage into the soil and improve the interface between natural ground and the overlaying mulch.

- (b) That a separation distance of 5 m be provided between the disposal area and the downhill boundary instead of the currently proposed 2.5 m.

That is not required by either TP 58 or AS/NZS 1547, and the Authority considers that, taking account of the effect of seepage length on effluent quality mentioned in 6.3.5 below, the current 2.5 m between the disposal area and the boundary gives adequate assurance that any effluent reaching the applicants’ land would be of acceptable quality.

5.3.6 The applicants responded to the report essentially by repeating and expanding on points made in their own submission and emphasising the harm that they would suffer from the proposed system. They commented that the consultant's report did not "guarantee their wastewater does not come on our land".

5.3.7 Neither of the other parties commented on the report.

#### **5.4 Draft determination**

5.4.1 The Authority prepared a draft determination that was sent to the parties for comment. Each of the parties accepted the draft, which is accordingly issued as this final determination.

### **6 DISCUSSION**

#### **6.1 The Authority's jurisdiction**

6.1.1 None of the parties questioned whether the Authority has the jurisdiction to determine the matter.

6.1.2 The Authority considers that the system is part of the building, at least up to the point of discharge of effluent into an appropriate outfall, namely into the soil of the disposal area, and was therefore properly included in the building consent.

6.1.3 The dispute is in effect as to whether the disposal area is an appropriate outfall for the purpose of clause G13.3.2(a). The applicant submits that it is not an appropriate outfall because of the possibility that contaminants will be discharged onto the applicant's land. The discharge of contaminants into or onto land is controlled under the Resource Management Act not under the Building Act. The necessary link between the two Acts is clause G14.3.2(d) of the building code, which says in effect that contamination of soils is acceptable to the extent permitted under the Resource Management Act. The Authority has no jurisdiction to determine whether any particular discharge is permitted under the Resource Management Act, that is a matter for the regional council (or the territorial authority under delegated authority from the regional council) subject to appeal to the Environment Court.

6.1.4 However, in case it is wrong about that question of law, the Authority sets out below the decision it would reach if it had the jurisdiction to do so.

#### **6.2 Means of establishing whether the system complies with the building code**

6.2.1 The building code is supported by a series of Approved Documents issued by the Authority, which specify means of establishing compliance with the building code that, under section 50 of the Building Act, must be accepted by the territorial authority concerned. However, those are not the only means of establishing compliance, and the territorial authority may accept compliance with other documents (frequently referred to as "alternative solutions") as being reasonable grounds on which it may be satisfied as to compliance.

- 6.2.2 Systems for disposing of the effluent from a primary treatment plant by irrigation are well established in New Zealand and overseas, but as yet they are not covered by the Approved Documents. It is therefore up to the applicants for a building consent to establish to the satisfaction of the territorial authority that the system concerned does in fact comply with the building code. In the region concerned, the regional council and the territorial authority use TP 58 (published in 1994). The Authority does not know to what extent TP 58 is intended for use outside the region concerned, but understands that it has been widely used throughout New Zealand at least from 1994 until 2000, when AS/NZS 1547 was published.
- 6.2.3 The consultant was accordingly retained to provide an evaluation of the proposed system's compliance with both TP 58 and AS/NZS 1547.
- 6.2.4 The Authority did not consider the on-going maintenance of the system although it noted that AS/NAS 1547 does include an informative section of maintenance of systems designed to meet the standard. The Authority understands that if in fact the system failed, to the detriment of the applicant, then the applicant would have redress both at common law and under the Resource Management Act. In that respect the Authority observes that the compliance schedule and building warrant of fitness regime specified in sections 44 and 45 of the Building Act does not apply to single residential dwellings such as the house concerned. In making that observation the Authority is doing no more than recognising the importance of proper maintenance of such systems. The Authority is not suggesting that this particular system is likely to fail, nor is it suggesting that similar systems should be included on compliance schedules.

### **6.3 Does this system comply with the building code?**

- 6.3.1 The Authority has carefully considered the applicants' submissions and the consultant's report. However, this determination takes a general approach in that the Authority does not consider it necessary to discuss every point that was raised by the applicants nor to identify every parameter of the system that was checked for compliance with TP 58 and AS/NZS 1547.
- 6.3.2 The applicants' submissions appear to be based on a belief that the type of system concerned will not behave in the way described by TP 58 and AS/NZS 1547. The applicants claimed that various similar systems in the neighbourhood had resulted in effluent flowing beyond the disposal area. The applicant appears to see it as a simple matter of gravity causing liquid, including both surface water and effluent, to flow from the higher to the lower ground.
- 6.3.3 The Authority does not accept that simple approach. The reality is that the effluent is assimilated and treated by evapotranspiration and seepage through the soil both vertically and laterally. As the Authority understands it, the intention is for effluent to enter the aerobic upper layers of the disposal area where its organic matter will be assimilated by a range of biological mechanisms. Indeed, one of the principles of design is to keep infiltrations systems shallow so as to ensure that the effluent undergoes aerobic actions and does not build up

into a clogging mass in the anaerobic conditions likely to prevail at lower depths where there is insufficient oxygen available and insufficient biological activity.

6.3.4 That is not to say that there can be any guarantee that effluent will never flow beyond the disposal area and even into the applicants' land. Heavy rain might result in the disposal area being saturated so that water flows over the surface of the ground onto lower ground. The system as designed guards against that to some extent by including:

- (a) Cut-off drains upslope of a disposal area, so that surface water from higher ground does not flow onto the disposal area, and
- (b) A minimum distance of 2.5 m between the disposal area and any boundary (which is not required by either TP 58 or AS/NZS 1547, nor by the EPA design manual).

6.3.5 Nevertheless, there is a real possibility, as the applicants contend, that in some circumstances effluent might flow onto the applicants' land. However, it is important to recognise that the effluent concerned has already been through a secondary treatment plant and will be very greatly diluted before it reaches the applicants' land. As clause 4.2C5.3(b) of AS/NZS 1547 puts it:

Effluent applied to the soil surface may become part of the runoff component . . . when it rains. However, if the run-off quality is acceptable, the land application system cannot be said to have failed.

As to what is an acceptable run-off quality, Note 1 to Table 4.2B1 of AS/NZS 1547 says:

Field evidence indicates that under unsaturated seepage flow bacterial numbers are reduced by a factor of 10 for each 50 mm of travel path through the soil. Thus a path length of 0.3-0.4 m would be sufficient to reduce numbers to insignificant levels in normal soils.

An increased distance of 5 m between the disposal area and the downhill boundary, (as recommended in the consultant's report, see 5.3.5(b) above) would, if required, add an increased assurance that any effluent reaching the applicants' land would be of acceptable quality, but that is a matter of choice for the owner and is not essential for compliance with the building code.

6.3.6 Thus the Authority considers that the real risk of harm being done to people by the ingestion of surface water contaminated by effluent is so small as to be acceptable. The building code does not have the purpose of preventing all risk, only of preventing unacceptable risk.

6.3.7 The Authority is satisfied from its consultant's report and the other material before it that the system, if properly constructed in accordance with the approved plans and specifications, will comply with both TP 58 and AS/NZS 1547.

6.3.8 The Authority has not considered whether either or both TP 58 and AS/NZS 1547 should be cited in Approved Document G14 as a means of establishing compliance with the provisions of clause G13.3.4 of the building code. However, on the facts of this case, limited

as it is to the question of whether the disposal area is an “appropriate outfall” for the purposes of clause G13.3.2(a), the Authority is satisfied that compliance with TP 58 and AS/NZS 1547, plus the additional safeguard of scarifying the soil before effluent lines are laid, is reasonable grounds on which it is satisfied as to compliance with the building code.

## **7 THE AUTHORITY’S DECISION**

- 7.1 The Authority has been asked to determine whether the outfall of the on-site disposal system is such that contaminants are discharged onto or into land contrary to the requirements of the Resource Management Act. The Authority takes the view that it does not have the jurisdiction to make that determination. However, if it did have jurisdiction then, in accordance with section 20 of the Building Act, it would modify the territorial authority’s decisions to issue the building consent by adding a requirement that the surface of the disposal area should be scarified before the effluent lines are placed.

Signed for and on behalf of the Building Industry Authority on this 24<sup>th</sup> day of April 2002

W A Porteous  
Chief Executive