

Determination

under the

Building Act 1991

No. 97/006: Pumped disposal of surface water from a residential property

1. The matter to be determined

- 1.1 The matter before the Authority is whether a building consent should be issued for the construction of a garage and drive associated with an existing house, where it is proposed to dispose of surface water by the use of a pump.
- 1.2 The Authority takes the view that it is being asked in effect to determine whether the proposed building work will comply with clause E1 of the building code (the First Schedule to the Building Regulations).
- 1.3 In making its determination, the Authority has not considered whether the proposed building work will comply with any other provisions of the building code.

2. The parties

- 2.1 The applicant was the owner acting through a firm of designers. The other party was the territorial authority.
- 2.2 Neither party wished the Authority to hold a hearing at which they could speak and call evidence.

3. The proposed building work

- 3.1 The plans and other information submitted to the Authority show that the existing house is on the side of a hill, with access from a road at a higher level. There is currently no vehicular access from the road to the house. The house is surrounded by other houses. Those on the down-hill side have access from another road at the base of the hill. The existing system for disposing of surface water from the house is by way of soakpits.
- 3.2 The proposed building work is the construction of a new garage alongside the house and a new elevated concrete drive structure from the road down to a new paved area in front of the garage. There is a 200 mm high concrete upstand around the relevant lower parts of the paved area. Slots 25 mm by 25 mm at 500 mm centres in the top of the upstand serve to distribute any overflow. (While this determination was being processed, the applicant submitted to the territorial authority an amended plan. The

territorial authority repeated its refusal to issue a building consent. This description and the discussion and decision below are in terms of the amended plan.)

- 3.3 The applicant was unable to obtain permission from any of the down-hill neighbours to discharge surface water through drains on their property. The proposed building work therefore includes provision to collect surface water in two holding tanks under the paved area and pump it from those tanks through a pipe which discharges through a backflow prevention valve into a sump which in turn discharges into the channel of the road. A float switch operates an alarm when the tanks are approaching full capacity. When the tanks are full, surface water will pond on the sealed area before reaching a level at which it will overflow onto other property.
- 3.4 The Authority understands that a storm having a 10 percent probability of occurring annually (“the 10% event”) and lasting for 2 hours would result in a surface water flow of approximately 2 l/s from the catchment area served by the pump. The pump has a capacity of 4 l/s.
- 3.5 The Authority understands that the storage capacity is adequate to contain the surface water resulting from 2 hours of rainfall in the 10% event.
- 3.6 The relevant reduced levels are:
- | | |
|------------------------------|--------------|
| Ground floor of house: | 20 m (datum) |
| Floor of garage | 19.85 m |
| Overflow onto other property | 19.775 m |
- 3.7 The plan includes notes which say that the pump and the alarm system are to be “subject to a warrant of fitness and to be maintained at half yearly intervals”.
- 3.8 To assist it in understanding the technical points involved, the Authority obtained a report from a firm of consulting engineers with experience in drainage matters. The firm expressed the opinion that, with certain suggested modifications, the proposed surface water disposal system was satisfactory.
- 3.9 That report was copied to the parties. The applicant accepted some of the firm’s suggested modifications, which were incorporated in the amended plan mentioned in 3.2 above. The territorial authority made submissions which are outlined in 5 below.

4. The legislation

- 4.1 The relevant provisions of clause E1 read as follows:

OBJECTIVE

E1.1 The objective of this provision is to:

- (a) Safeguard people from injury or illness, and other property from damage, caused by surface water, and
- (b) Protect the outfalls of drainage systems.

FUNCTIONAL REQUIREMENT

E1.2 Buildings and sitework shall be constructed in a way that protects people and other property from the adverse effects of surface water.

PERFORMANCE

E1.3.1 Except as otherwise required under the Resource Management Act 1991 for the protection of other property, surface water, resulting from a storm having a 10 percent probability of occurring annually and which is collected or concentrated by buildings or sitework, shall be disposed of in a way that avoids the likelihood of damage or nuisance to other property.

E1.3.2 Surface water, resulting from a storm having a 2 percent probability of occurring annually, shall not enter buildings.

Performance E1.3.2 shall apply only to Housing, Communal Residential and Communal Non- residential buildings.

E1.3.3 Drainage systems for the disposal of surface water shall be constructed to:

- (a) Convey surface water to an appropriate outfall using gravity flow where possible . . .
- (e) Avoid the likelihood of damage to any outfall, in a manner acceptable to the network utility operator

5. The submissions and the Authority's responses

5.1 The applicant submitted that the proposed building work complied with clause E1. The proposed work included a pump to convey surface water to an appropriate outfall because the neighbours' refusal of consent prevented the use of gravity.

5.2 In correspondence with the applicant and in submissions to the Authority before and after receipt of the report mentioned in 3.8 above:

- (a) The territorial authority said that it "will not allow pumping of stormwater in the magnitude that is proposed", and subsequently said that "the amount of stormwater being collected is too large for a pumped system without a safe secondary flow path".

If the territorial authority was referring to the amount of the proposed discharge into the road channel, the Authority notes that it is open to the territorial authority, in its role as the network utility operator for surface water disposal, to impose reasonable conditions so as to prevent the likelihood of damage to the outfall into which the pump discharges. Those conditions, if any, will presumably depend on the capacity of the road channel and of the territorial authority's drain into which it discharges.

If the territorial authority was referring to the amount of the flow onto other property which could result from pump failure, that is discussed in 6.3 below.

- (b) The territorial authority quoted Australian Standard AS 3500 Part 3 as follows:

Pumped discharge shall be used only for minor areas for which a gravity connection is not possible. Note: The Regulatory Authority may limit the extent of the area contributing to the pumped discharge.

The Authority points out that AS 3500 Part 3 is not cited in Approved Document E1 and has no legal status in New Zealand.

- (c) The territorial authority expressed concern about maintenance of the pump. If the pump failed for any reason, then until it was repaired or replaced surface water might be discharged onto other property contrary to clause E1.

The question of pump failure is discussed in 6.3 below.

- (d) The territorial authority said that it did not believe that “any person/organisation can knowingly create a situation where the secondary flow path is into another person’s property”.

The Authority disagrees for the reasons set out in 6.3 below. It is common, and acceptable, for a secondary flow path to be into other property in an event with less than 10% probability, and in a higher probability event if it is not likely to cause damage or nuisance.

- (e) The territorial authority said: “Creating the above situation does not ‘protect other property from the adverse effects of surface water’ and therefore contravenes the building code”.

The Authority disagrees. The quotation is from clause E1.2, which is the functional requirement. That is not an absolute requirement but is to be satisfied to the extent provided by the performance criteria specified in clauses E1.3.1, E1.3.2, and E1.3.3.

- (f) The territorial authority envisaged a scenario in which the pump has failed, the storage tanks are full, and a storm strikes with the result that all of the rain collected by the house, the garage, the drive, and the paved area flows into the next-door property and damages it. Who, asked the territorial authority, would be liable then? In the territorial authority’s opinion, it “would wear the major blame”.

The Authority is not a court of law and cannot give a binding answer to that question. However, the Authority understands that if a territorial authority carries out its statutory functions in good faith and with the appropriate skill and care then it cannot incur liability.

- (g) The territorial authority detailed the occasions to date when it had “allowed the pumping of stormwater”, emphasising that in each of them “every possible precaution has been taken to prevent stormwater from transgressing into the neighbouring properties” and that the territorial authority “therefore had no reason to refuse the application”.

The Authority recognises that the territorial authority has given careful consideration to the matter, but appears to be applying too high a test when it requires “every possible precaution” to be taken. As discussed in 6.3 below, the Authority takes the view that the building code does not require that surface water collected or concentrated on one property cannot possibly flow onto another property, it merely requires that in the 10% probability event such water shall not be likely to cause damage or nuisance on another property.

6. Discussion

6.1 General

6.1.1 The points at issue are whether gravity disposal of surface water is possible, and if not whether the proposed pumped disposal is likely to result in damage or nuisance to other property in the 10% probability event.

6.1.2 For many years subdivisions for residential purposes should not have been permitted unless adequate provision had been made for drainage. Until it was revoked by the Resource Management Act, the former section 274 of the Local Government Act provided that:

274. Subdivision not to be permitted in certain circumstances - (1) The council shall refuse to approve any scheme plan where it is satisfied that . . .

(g) In the case of an allotment (other than one to be used solely or principally for rural purposes), adequate provision has not been made or is not practicable for stormwater drainage . . .

There is no equivalent provision in the Resource Management Act, but the Authority understands that procedures under that Act achieve similar results. Of course, what is considered “adequate provision” at the time of subdivision might subsequently prove to be inadequate.

6.1.3 Where, as in this case, a residential allotment does not have adequate provision for drainage, the territorial authority has the power to rectify the situation under section 460 of the Local Government Act, which reads as follows:

460. Construction of private drains through adjoining premises- (1) Where, in the opinion of the council, the only practical route of any new private drain is through one or more adjoining premises, and any owner or owners of any of those premises will not consent to its construction, the council may, pursuant to a resolution in that behalf, of which notice shall be given to the owner or owners withholding his or their consent as aforesaid, enter upon his or their premises and execute, provide, and do all or any of the works, materials, and things which the council considers necessary, in order that the drain shall be laid in an efficient manner.

(The rest of section 460 is concerned with procedural matters and the recovery of costs.)

6.2 *Is disposal by gravity possible in terms of clause E1.3.3(a)?*

- 6.2.1 Gravity disposal is clearly physically possible. It is also legally possible because it is open to the territorial authority to use its powers under section 460 of the Local Government Act. However, it is not within the owner's powers to achieve.
- 6.2.2 The Authority does not know whether the territorial authority has turned its mind to the use of its powers under section 460 of the Local Government Act, and if it has then the Authority does not know why it decided not to use those powers.
- 6.2.3 For the purposes of this determination, the Authority takes it that the territorial authority does not deny the applicant's contention that gravity disposal is not possible.
- 6.2.4 The Authority takes the view that in this context the words "where possible" in clause E1.3.3(a) of the building code are to be read as including the meaning "where it is within the power of the owner".
- 6.3 *Is there likelihood of damage or nuisance to other property?*
- 6.3.1 The Authority considers that clause E1.3.1 does not require that surface water from one property shall never enter another. The clause applies only in respect of the 10% probability event. In that event, the clause requires only that surface water collected or concentrated on one property shall not be likely to cause damage or nuisance to other property. For the purposes of this determination only, the Authority is prepared to assume that if water overflows onto other property then that water is likely to cause damage or nuisance.
- 6.3.2 Overflow of surface water onto other property in the 10% probability event will occur only if the pump is out of action during that event and the storage tanks contain a significant amount of water which has not been pumped out before the event occurs. The probability of that combination is low. On balance, however, the Authority considers that combination cannot be described as "unlikely". It could well happen.
- 6.3.3 The next question, therefore, is what if any alterations to the system would make it unlikely. Possible alterations could be to improve the reliability of the pump or to increase the storage capacity so that even if the pump were out of action during the 10% probability event nevertheless water would be unlikely to overflow onto other property.
- 6.3.4 As to increasing the reliability of the pump, the Authority accepts that regular maintenance of submersible pumps is advisable to prevent failure from causes other than a failure of the power supply. That is recognised by the owner's proposal that the pump and the alarm system would be "subject to a warrant of fitness and to be maintained at half yearly intervals". However, the Authority also accepts that a power failure is the most probable cause for the pump being out of action, and regular maintenance cannot prevent power failures. For that reason, and also because of enforcement difficulties, especially with future owners, the Authority considers that it would be inappropriate to impose a condition that a compliance schedule is to be issued in respect of the house as if it came within section 44(1).
- 6.3.5 Another possibility would be to install a second pump as a standby, although that would not guard against power failure. The report obtained by the Authority said:

The need for a standby pump would usually only arise when the potential impact of failure was significant, ie very large flows. In this case the flows are relatively small, particularly from a low intensity long duration event, and we therefore conclude that a second, standby pump would not be required.

- 6.3.6 As to increasing the storage capacity, the Authority considers that the appropriate approach is to assume that at the time of the 10% probability event not only is the pump out of action but also the storage tanks are full although the paved area is dry. Thus a suitable precaution would be to ensure that the total pond storage available on the paved area and the floor of the garage will accommodate 2 hours of rain at the appropriate intensity for the 10% probability event without the water overflowing onto other property or entering the floor of the house. Such ponding would also mean that any occupier of the house would have an additional incentive to replace or repair the pump.
- 6.3.7 Rough calculations from the information supplied to the Authority indicate that such storage could be provided by raising the upstand less than 200 mm. It might also be possible to alter the contours of the paved area to increase the pond storage, but any such alteration must not affect the storage tanks.

7. The Authority's decision

- 7.1 In accordance with section 20(a) of the Building Act the Authority hereby determines that a building consent is to be issued for the proposed building work provided that:
- (a) The total pond storage available on the paved area and the floor of the garage is to be increased as necessary to accommodate 2 hours of rain at the appropriate intensity for the 10% probability event without the water overflowing onto other property or entering the floor of the house; and
 - (b) The discharge from the pump into the territorial authority's surface water drainage system is to be amended to include such, if any, provisions as the territorial authority reasonably requires to avoid the likelihood of damage to that system.

Signed for and on behalf of the Building Industry Authority on this 18th day of June 1997

J H Hunt
Chief Executive