



Determination 2013/059

Compliance of a waste water disposal system on land subject to inundation at 1 Waipapakauri Domain Road, Waipapakauri, Kaitaia

1. The matter to be determined

- 1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004¹ (“the Act”) made under due authorisation by me, John Gardiner, Manager Determinations and Assurance, Ministry of Business, Innovation and Employment (“the Ministry”), for and on behalf of the Chief Executive of the Ministry.
- 1.2 The parties to the determination are:
- P Sucich (“the applicant”), the owner of an adjoining property (“Lot 11”)
 - Far North District Council carrying out its duties and functions as a building consent authority or territorial authority (“the authority”)
 - Housing New Zealand (“the owner”), the owner of the property in question (“Lot 1”).
- 1.3 This determination arises from the concerns of the applicant as regards an on-site waste water disposal system and disposal field (“the system”) for a dwelling on land that adjoins his property. The applicant considers that the system will not meet the requirements of Clause E1 of the Building Code² (Schedule 1, Building Regulations 1992) in respect of the possible adverse effect of the system on his property. The applicant is of the opinion that Lot 1 is subject to the natural hazard of inundation in terms of the Act.
- 1.4 Therefore, I consider that the matter to be determined³ is whether the system complies with Clause E1 Surface water of the Building Code in respect of the effects on ‘other property’.
- 1.5 A proposed scope of works provided in support of an amendment to the consent identifies the following work to be completed: installation of a 30,000 litre surface water detention tank; relocation of the existing water tank; relocation of the existing secondary effluent system and drainage line; installation of the secondary waste water system; and cleaning the swale drains. This determination considers the system as including this proposed work.

¹ The Building Act, Building Code, Compliance documents, past determinations and guidance documents issued by the Ministry are all available at www.dbh.govt.nz or by contacting the Ministry on 0800 242 243.

² In this determination, unless otherwise stated, references to sections are to sections of the Act and references to clauses are to clauses of the Building Code.

³ Under section 177(1)(a) of the Act

- 1.6 The matters that the applicant can seek to be determined under section 176(e)(i) of the Act are limited to provisions in the Building Code that have the purpose of protecting other property. However, the question of whether the authority should have issued the building consent subject to a section 73 notice was raised by the expert (refer paragraph 5.3). I have therefore discussed this (refer paragraph 7) but I make no determination in respect of the issued consent.
- 1.7 I have not been asked to consider whether the system complies with Clause G13 Foul water.
- 1.8 In making my decision, I have considered the submissions of the parties, the report of an independent expert (“the expert”) commissioned by the Ministry to advise on this dispute, and the other evidence in this matter.
- 1.9 The relevant sections of the Act and the Building Code are provided in Appendix A, and a decision tree relating to building sites subject to natural hazards in Appendix B.

2. The building work

2.1 The site

- 2.1.1 Lot 1 is situated to the northeast of Lot 11 and has adjacent properties to the east and west. Lot 1 is a low lying site with falls away to the southern boundary to a natural tidal watercourse (“the watercourse”) that crosses the boundary between Lot 1 and Lot 11 (refer figure 1). The watercourse has a large catchment area estimated at 5,000,000m².
- 2.1.2 Lot 1 is 825m² in area and is part of a small residential subdivision in rural land. The dwelling constructed on Lot 1 is single-storey, with the ground floor suspended some 2200mm above the ground level and supported on a timber pole construction. The space under the dwelling is open and is used as garage or storage areas.

2.2 The system

- 2.2.1 The system is located at the rear of Lot 1 and immediately adjacent to the watercourse; it comprises a proprietary aerobic on-site management system to accommodate a maximum design flow of 800L/day. The effluent discharge involves high quality secondary treatment via sand filters followed by drip irrigation at 5mm/day to an imported sand bed that is covered with top soil and grassed. The driplines are laid in two equal zones and the sand bed has an area of 160m² and raises the existing ground level by 150mm. The system requires monitoring and maintenance.
- 2.2.2 In addition, a surface water intercept swale has been laid above the effluent disposal area and down the eastern boundary to discharge into the watercourse.

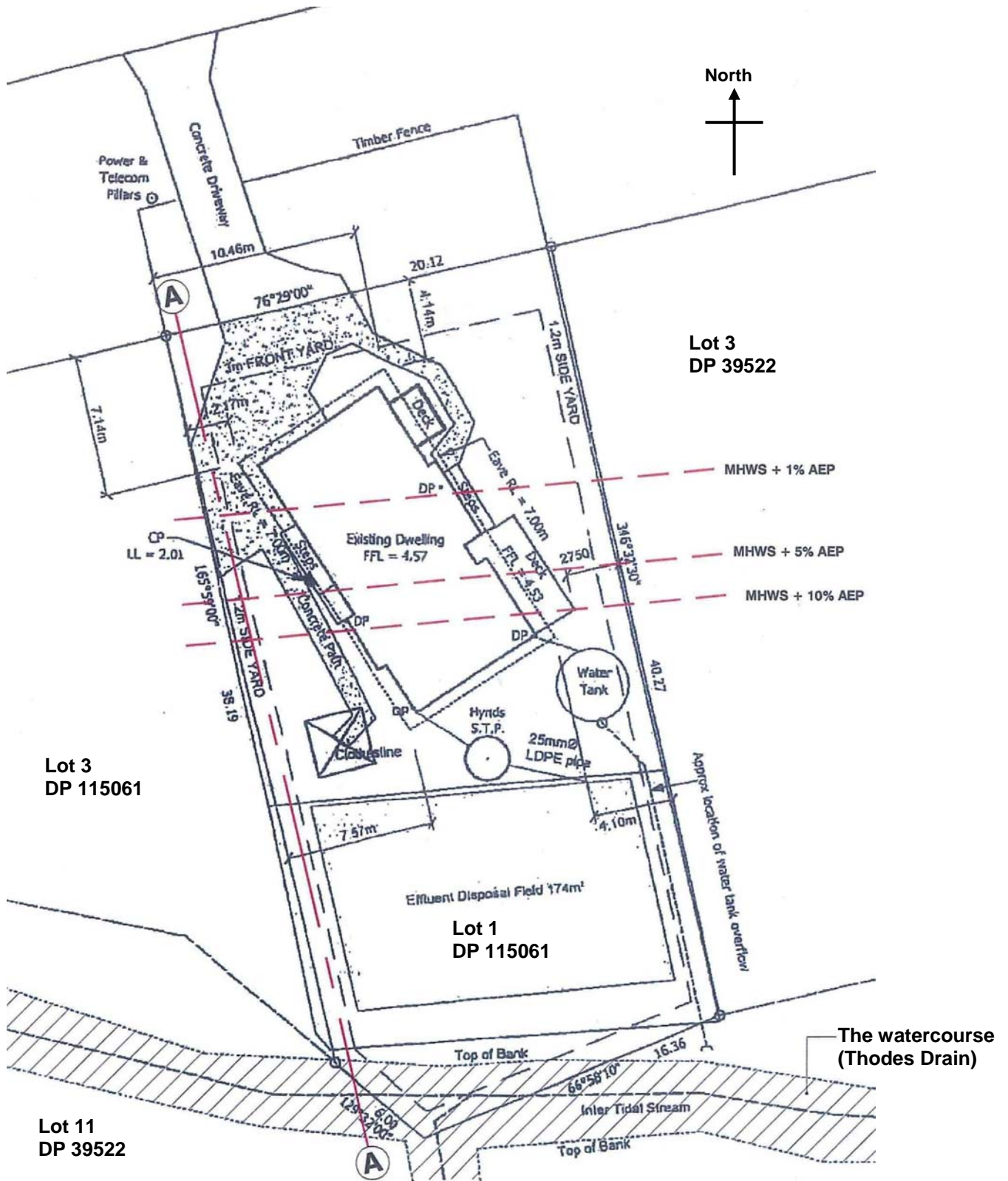


Figure 1: Site plan for Lot 1⁴ indicating estimated MHWS levels

⁴ Site plan taken from a drawing produced by the first consultants. Note: it does not show the proposed work described in paragraph 1.5.

- 2.2.3 A flooding report prepared for the site (see paragraph 3.1) indicates estimated flood levels of the 1%, 5%, and 10% AEP (annual exceedance probability) events and notes that all can impact on Lot 1.
- 2.2.4 Further building work to the system is also proposed by the owner (refer paragraphs 1.5 and 4.4) in response to a report which included recommendations to improve the system (refer paragraph 3.13).

3. Background

- 3.1 A firm of consultants (“the first consultants”) prepared a “Flooding Report” dated 4 July 2007 that was included in a building consent application for the dwelling. The report gave estimated flood levels in the event of 5% and 10% AEP events and inferred a level for a 1% AEP event. The report called for a minimum floor level to be set and also recommended that because of the extent of a 100-year flood (a 1% AEP event), a proprietary aerobic wastewater treatment would be required.
- 3.2 On 4 October 2007 the authority issued building consent No BC- 2007-1119 for the dwelling. The consent notes that Lot 1 is within the Northland Regional Council’s indicative flood zone and the authority had assessed the flood level as medium. Accordingly, the authority required the floor level of the dwelling to be 1 metre above the R. L. (reduced level) of the road directly in front of the property.
- 3.3 Construction of the dwelling was commenced in March 2008, but the work was stopped by order of the authority, due to concerns regarding the system at that time.
- 3.4 The first consultants prepared a new “On Site Wastewater Discharge Application Report” dated 22 July 2008.
- 3.5 Following the issuing of resource consent, the authority issued building consent No BC -2009-950/0 on 19 February 2009 for the system, which was described as a “New Replacement Effluent Disposal System”.
- 3.6 In a letter to the authority dated 24 March 2009, the applicant set out his concerns regarding the authority’s approval of the system. He also listed perceived errors in the building consent documentation, noting that:
- the positioning of the watercourse as shown on the authority’s documentation was incorrect, as this drain was not in fact situated on the applicant’s property
 - the applicant queried whether it was acceptable to the authority that the lower part of the soakage area was flooded by higher-than-average tides that were not affected by any other external factors.
 - the system did not comply with the authority’s land drainage bylaw.
- 3.7 The authority responded in a letter dated 21 April 2009, acknowledging that the watercourse had been incorrectly indicated on the plans and accepting that the disposal field could be inundated in extreme circumstances. The authority also stated that no additional surface water run-off would result from the building work and that access for drainage maintenance could be made via the adjoining farmland.
- 3.8 After the modification of one condition, the resource consent was re-issued on 19 May 2009.

- 3.9 The dwelling was completed, and the system completed in accordance with the 2009 consent when the first consultants issued a Producer Statement–PS4--Construction Review dated 14 May 2009.
- 3.10 In a letter to the applicant dated 7 August 2009, the authority confirmed that resource consent had been issued for the dwelling.
- 3.11 Following a series of on-site inspections, the authority wrote to the owner on 10 September 2009 requesting further information in respect of the system and the site flood levels.
- 3.12 On 28 June 2010 the first consultants issued an addendum to their previous reports, based on a survey of as-built cross sections through the site and the watercourse. The addendum accepted that the previous site plans contained errors. It also stated that the affect of the raised disposal field levels would be ‘less than minor’, as the cross-sectional area of the flood plain was reduced by only 4.1% for the 5% AEP event. It was also recommended that the effluent be treated to improve the water quality of the field discharge.
- 3.13 The owner commissioned a second firm of consultants (“the second consultants”) to peer-review the previously issued documentation. The second consultants prepared a report dated 16 August 2010 that included recommendations to improve the system.
- 3.14 Following a request from the authority, the first consultants prepared a “Stormwater Report” dated 5 October 2010, which addressed ‘the impermeable surfaces issue incorporating detention into the rain tank system to mitigate site run off back to the permitted 15% impervious cover’. The report recommended that a water tank be installed that was fitted with detention storage and other modifications.
- 3.15 On 27 February 2012, the authority issued an amended resource consent (2120210-RMALUC/DIS) that took into account its previously recorded concerns.
- 3.16 In a letter to the contractor dated 16 April 2012, the authority granted an extension of time for the obtaining of a code compliance certificate for the building work.
- 3.17 Responding to a request, the authority wrote to the applicant on 22 June 2012 stating that it was happy with the design and did not consider that a section 73 notice was necessary.
- 3.18 The application for a determination was received by the Ministry on 12 September 2012.

4. The submissions

- 4.1 In a covering letter to the Ministry dated 4 September 2012, the applicant described the background to the dispute, noting his concern that by obstructing the overland flow path of the watercourse the owner had compounded flooding that could not be mitigated in a high-risk area. The applicant was of the opinion that the consented work did not comply with Clause E1.3.1, and as it was acknowledged that the raised effluent disposal bed would be inundated in a 10% AEP event it must obstruct the overland flow path in such an event. The applicant was of the view that the calculations that had been provided understated the risk of inundation on what could be regarded as a high-risk site.
- 4.2 The Ministry sought further information from the applicant who responded by way of letter dated 28 September 2012. I summarise the main points of that letter as follows:

- To the best of the applicant's knowledge, there had not been a 10% AEP event in the three-and-a-half years since construction was completed. However, historical evidence and the various reports indicated that such an event was inevitable.
- As Lot 1 was located downstream of the applicant's property, the effects of surface water entering the applicant's property were minor. The reason for the determination request was to establish the effects of obstructing water that flowed off the applicant's property.
- Parts of Lot 1 were below the mean high-water spring ("MHWS") level before the installation of the system. The amount of earthworks undertaken could be assessed by comparison with adjoining areas, which showed that the effluent field obscured the natural inundation.
- The design, consent, and construction were based on the assumption that Lot 1 was above the 5% AEP event. However, much of Lot 1 was now correctly identified as being inundated in a 10% AEP event and this situation has not been taken into account.
- The applicant was of the opinion that Lot 1 should be subject to the natural hazards section of the Act.
- The applicant did not accept that this was a case that dealt with 'an existing system that needed replacement' as put forward by the authority.

4.3 The applicant forwarded copies of

- building consent No BC-2007-1199 dated 4 October 2007
- building consent No 2009-950/0 dated 19 February 2009
- resource consent No 2120210-RMALUC/DIS dated 27 February 2012
- the first consultants' addendum of 28 June 2010
- the second consultants' report of 16 August 2010
- correspondence with the authority, the Ombudsman, and the then Minister of Housing
- some aerial photographs of the local area.

4.4 In a submission to the Ministry dated 16 October 2012, the owner described the background to the dispute and stated that the dwelling and the system were completed 'in compliance with the original reports and design' and that the owner intended to complete as soon as possible the work recommended by the second consultants, namely the provision of a larger water tank, installation of an ultraviolet disinfection system and 'tidying up' the swales. (I note here that the swales will require maintenance to remain fully operational and that such maintenance is the responsibility of the owner.) The owner had a reasonable expectation that a code compliance certificate would ultimately be issued. The owner had constructed the dwelling and system in the manner approved and consented by the authority and had co-operated with the authority to ensure that any concerns had been met.

- 4.5 The owner forwarded copies of
- the plans, specifications, and other consent documents
 - building consent No BC-2007-1199 dated 4 October 2007
 - resource consent No 2120210-RMALUC/DIS dated 27 February 2012
 - the correspondence with the authority
- 4.6 The authority did not make a formal submission but provided copies of
- documentation relevant to the resource consents and building consents
 - the first consultants' reports of 22 July 2008 and 5 October 2010
 - the first consultants' PS4 dated 14 May 2009
 - correspondence with the applicant, the owner, and the contractor.
- 4.7 Copies of a draft determination were sent to the parties for comment on 21 February 2013.
- 4.8 The authority responded by way of a letter received on 1 March 2013, accepting the draft subject to minor amendment. The authority clarified that an application to amend the consent had been sought and provided the scope of works as described in paragraph 1.5.
- 4.9 In a response received on 14 March 2013, the applicant did not accept the conclusions of the draft determination. The applicant submitted (in summary):
- There were a number of inaccuracies in the site plan included in the expert's report (and replicated in the draft determination) which 'combine to understate the extent of obstruction caused by the effluent system.
 - In reference to the addendum report by the first consultants (refer paragraph 3.12) the applicant commented on the data used to calculate the levels and the exclusion of a correction for climate change.
 - The catchment is not 'large' and would be defined by the Ministry for Environment as 'small'.
 - The determination should be based on MSL + 10% AEP flood level. This event, in velocity and discharge, would 'now be confined by the high ground and the effluent system' which will disrupt channel flow.
 - Any building or siteworks that 'confines or concentrates surface water below a 10% AEP event' would not comply.
- The applicant also disagreed that the dwelling and system were completed in compliance with the original reports and design (refer paragraph 4.4), and stated that if the level of inundation was known at the time of consent application the consent would have been notified as subject to a natural hazard.
- 4.10 In a further email dated 18 September 2013 the applicant sought assurance that the determination's conclusion regarding section 73 notification would remain (refer paragraph 7.11). The email sought to correct some matters that the determination recorded as reported by the expert.

5. The expert's report

- 5.1 As described in paragraph 1.8, I engaged an independent expert, who is a Chartered Professional Engineer, to assist me. The expert visited the site on 7 November 2012 and produced a report completed on 17 January 2013. Copies of the report were forwarded to the parties on 18 January 2013.
- 5.2 The expert described the background to the dispute and attached photographs and copies of plans prepared by a firm of land surveyors and the second consultants. The expert also included a site plan indicating the approximate extent of 1%, 5% and 10% AEP events (refer figure 1).
- 5.3 I summarise below the expert's observations:

The building work

- The disposal field is noticeably higher than the adjoining properties, this being accentuated by the drainage swales running down the side boundaries.
- The floor levels of the dwellings on the adjoining (east and west) properties are lower than the floor level of the dwelling in question.
- The expert was of the opinion that the wastewater disposal field constituted "siteworks". Clause E1.3.1 required other property to be protected from the effect of surface water on a 10% AEP event.
- The increase in surface water run-off from the increase in impermeable surfaces from Lot 1 has been mitigated by 'a combination of water re-use and detention'.
- While Clause E1.3.2 calls for the 2% AEP event to be considered in the event of surface water entering buildings, the expert was of the opinion that this did not apply to other than the dwelling. It was clear that the floor level of the dwelling was set sufficiently high above the level resulting from a 2% AEP event.

The effect of the siteworks on other property

- The issue to be addressed in this respect was the effect of a 10% AEP on other property.
- The expert had no reason to question the results that the first consultants had reached in their addendum report of 28 June 2010 regarding a 5% AEP event. The expert also concurred with their assessment that in respect of the raised disposal field there was a minor 4.1% reduction in the cross sectional area of the flood flow for that event.
- While the reduction in cross-sectional area for the 10% AEP event will be greater than 4.1%, its effect will still be minor.
- The addendum report estimated that there was a relatively small difference between the flood levels for the 1% and 10% AEP events and the expert considered this was indicative of the large size of the catchment. Accordingly, the expert accepted that the volume of water displaced by the system was insignificant and would have little or no effect on adjoining buildings.

Sections 71 to 74 of the Act

- While the expert noted that the plan forming part of the first consultants' Flooding Report of 4 July 2007 contained some errors, it clearly showed that the 1% AEP event flood line extended well onto Lot 1.
- The site plan prepared by the second consultants and attached to the report showed the 1%, 5%, and 10% AEP events were estimated to extend over large areas of Lot 1.
- The expert was of the opinion that Lot 1 was clearly subject to the natural hazard of inundation, and should a 1% AEP event occur, access to Lot 1 may well be restricted and the system could be flooded, making it unusable until flood levels drop.
- Accordingly, the expert believed that sections 71 to 74 should have been considered when the building consents were being processed.

6. Compliance with Clause E1

6.1 Compliance with Clause E1.3.2 (in respect of the house)

- 6.1.1 Clause E1.3.2 requires that surface water resulting from 2% AEP event shall not enter buildings.
- 6.1.2 As shown on the supplied documentation, the dwelling in question has been built with a floor level set at RL 4.71. The cross-sectional plan produced in the first consultant's June 2010 addendum shows estimated RLs for MHWS as 2.18 in a 10% AEP event, 2.25 in a 5% AEP event, and 2.43 in a 1% AEP event. While an equivalent RL for a 2% AEP event is not indicated, it must fall within the parameters of the 5% and 1% AEP events.
- 6.1.3 This information indicates that as the ground floor of the dwelling is more than two metres above the 1% MHWS event surface water will not enter that level. While the lower floor level is at risk from flooding, none of this level can be considered as constituting a habitable room. In Determination No 98/003⁵ issued by the Building Industry Authority (a predecessor of the Ministry), it was determined that surface water does not enter a residential building until it reaches the floor level of the lowest habitable room in that building.
- 6.1.4 Accordingly, I am of the opinion that the dwelling complies with Clause E1.3.2.

6.2 Compliance with Clause E.1.3.1 (in respect of other property)

- 6.2.1 Clause E1.3.1 requires surface water resulting from an event having a 10% probability of occurring annually, and which is collected or concentrated by buildings or siteworks, be disposed of in a manner that avoids the likelihood of damage or nuisance to other property.
- 6.2.2 I now need to consider whether the effects of obstructing, by way of the siteworks carried out to Lot 1, the surface water that flows off the applicant's property has or will create a nuisance or cause damage in terms of Clause E1. In so doing, I note that the terms "nuisance" and "damage" are not defined in the Act or in the Building

⁵ Determination 98/003: Surface water requirements for a residential development

Code. In Determination 2011/027⁶ I accepted, based on previous determination decisions, that ‘nuisance must be considered in the broadest sense of the word’. I continue to hold that view and believe it is relevant to this situation.

- 6.2.3 The common law definition of nuisance is ‘the interference with an individual person’s use or enjoyment of land or of some right connected with that land’, which in this case relates to the effects of obstructing the surface water that flows off the applicant’s property.
- 6.2.4 Accepting the expert’s opinion, which was in agreement with the reports of the first consultants, I find that in relation to a 10% AEP event, the volume of water displaced by the system would have little or no effect on the applicant’s or other adjoining land or buildings.
- 6.2.5 Accordingly, I am of the opinion that the system does not constitute a nuisance and therefore complies with the requirements of Clause E1.3.1.

7. Application of sections 71 and 72 of the Act

- 7.1 With respect to the application of sections 71 and 72, I refer to the process described in the Act which is illustrated in Appendix B.
- 7.2 The authority has stated that based on specific design and suitable mitigation, it was satisfied with the system and accordingly considered that a section 73 entry was not required. With respect, I cannot accept that a code-compliant design by itself satisfies this requirement.
- 7.3 Based on my findings in paragraphs 6.1.4 and 6.2.5, I accept that both the dwelling and the system are code-complaint in respect of Clause E1. However, I note that section 71 also refers to “the land on which the building work is to be carried out”. This term was defined, in relation to a small urban site, in *Auckland City Council v Logan* [1/10/99, Hammond J, HC Auckland AP77/99] as:
- When the statute refers, as it does, to ‘the land on which the building work is to take place’, is it referring to the area contiguous to the building or to the land in general? Plainly, the circumstances may vary greatly. The ‘land’ may be a 1000 acre property, on which a new house is to be built. The house may be far away from any potential inundation. Or, as here, the site may be a smallish suburban one, which is earmarked for higher density use, and it is very difficult to dissociate the building from the entire parcel of land.
- 7.4 This interpretation has been followed in previous determinations (see Determination 2011/034⁷), and I hold the view that it is relevant to the current situation.
- 7.5 I note that the dwelling and the system occupy a majority of the area of Lot 1 on which they are situated. Therefore, I consider that the building work is difficult to dissociate from the land on which the building work is constructed, as was the situation in the case referred to above. As shown from the various consultants’ reports, the majority of the property will be inundated in the case of any of the 1% to 10% AEP events.
- 7.6 Accordingly, I accept that the land intimately connected with the building site is subject to a natural hazard and that section 71(1)(a) applies. I also am of the opinion

⁶ Determination 2011/027: Surface water runoff onto other property

⁷ Determination 2011/034: Does work to an existing building constitute ‘major alterations’, and therefore should a section 73 notice be issued in respect of land subject to natural hazards

that as no provision has been made to protect Lot 1 in terms of section 71(2), that section 71(1)(a) continues to apply.

- 7.7 Having accepted that Lot 1 is subject to a natural hazard in terms of section 71, I now consider the provisions of section 72. This section states that a building consent authority must issue a building consent if all the requirements set out in subsections 72(a) to (c) are met.
- 7.8 In the present circumstances, I am of the opinion that, in terms of section 72(a) the building work will not accelerate, worsen, or result in the natural hazard on the land on which the building work is to be carried out, or on any neighbouring property.
- 7.9 As I have already decided that Lot 1 is subject to inundation, then it follows that section 72 (b) also applies.
- 7.10 With regard to section 72(c), and based on my decisions in previous determinations (see Determination 2007/110⁸), I am of the opinion that the authority should not require the owner to apply for a waiver as the dwelling and the system are code-compliant. Accordingly, I am of the opinion that section 72(c) is satisfied even though no waiver or modification is required.
- 7.11 Taking into account the opinions set out above, I consider that both building consents BC- 2007-1119 and BC -2009-950/0 should have been subject to a section 73 notification.

8. The decision

- 8.1 In accordance with section 188 of the Act, I hereby determine that the on-site waste water disposal system and disposal field when completed, as described in paragraph 1.5 of this determination, will comply with Clause E1 Surface water of the Building Code.

Signed for and on behalf of the Chief Executive of the Ministry on 23 September 2013.

John Gardiner
Manager Determinations and Assurance

⁸ Determination 2007/110: Building consent for a house on land subject to coastal hazards

Appendix A: The legislation

A.1 The relevant sections of the Act are:

71 Building on land subject to natural hazards

- (1) A building consent authority must refuse to grant a building consent for construction of a building, or major alterations to a building, if –
 - (a) the land on which the building work is to be carried out is subject or is likely to be subject to 1 or more natural hazards: or
 - (b) the building work is likely to accelerate, worsen or result in a natural hazard on that land or any other property.
- (2) Subsection (1) does not apply if the building consent authority is satisfied that adequate provision has been or will be made to –
 - (a) protect the land, building work, or other property referred to in that subsection from the natural hazard or hazards; or
 - (b) restore any damage to that land or other property as a result of the building work.
- (3) In this section and sections 72 to 74, natural hazard means any of the following:
 - (d) inundation:

72 Building consent for building on land subject to natural hazards must be granted in certain cases

Despite section 71, a building consent authority must grant a building consent if the building consent authority considers that-

- (a) the building work to which an application for a building consent relates will not accelerate, worsen, or result in a natural hazard on the land on which the building work is to be carried out or any other property; and
- (b) the land is subject or is likely to be subject to 1 or more natural hazards: and
- (c) it is reasonable to grant a waiver or modification of the building code in respect to the natural hazard concerned.

73 Conditions on building consents granted under section 72

- (1) A building consent authority that grants a building consent under section 72 must include, as a condition of the consent, that the building consent authority will, on issuing the consent, notify the consent to,—
 - (c) . . . the Registrar-General of Land.

A.2 The relevant provisions of the Building Code are:

PERFORMANCE

E1.3.1 Except as otherwise required under the Resource Management Act 1991 for the protection of other property, surface water, resulting from an event 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 an event having a 2 percent probability of occurring annually, shall not enter buildings.

Appendix B: Decision tree in relation to building sites subject to hazards

