



Determination 2019/022

Regarding the decision to issue a code compliance certificate in respect of surface water drains to a house at 17 Flavell Street, Heathcote Valley, Christchurch

Summary

This determination considers the compliance of an as-built surface water drainage system to a new house. The system as consented did not provide a compliant solution and the work as installed is not considered to be compliant by the building owner.

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, Katie Gordon, Manager Determinations, 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:

- the owner of the property, B and R McLean (“the applicants”)
- Christchurch City Council (“the authority”), carrying out its duties as a territorial authority or building consent authority.

1.3 I consider the following are persons with an interest in the matter:

- the builder, Landmark Homes Limited (“the builder”)
- the architectural firm, Warren Architectural Limited (“the designer”)
- the insurer, Southern Response Limited (“the insurer”), represented by the Project Management Office for Southern Response, Arrow International Limited (“the PMO”) as its agent
- the drainlayer, Drainworks Solutions Limited (“the drainlayer”).

1.4 The determination arises because the applicants are of the view that the surface water drainage system does not comply with the Building Code Clause E1 Surface water² and that the authority was incorrect to issue the code compliance certificate for the construction of the new dwelling at the property in respect of the surface water drainage work.

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

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

1.5 The matter to be determined³ is therefore:

- whether the surface water system, as constructed, complies with Clause E1 Surface water of the Building Code in respect of:
 - the surface water system on the western side of the property, including the drain and western bubble-up chamber
 - the surface water system on the eastern side of the property, including the drain and eastern bubble-up chamber
 - the driveway sump to the south east of the property and associated field drain located at the north of the property
- whether the authority correctly exercised its power of decision in issuing a code compliance certificate in respect of the surface water system.

1.6 In making my decision, I have considered the submissions of the parties and the report of the independent expert commissioned by the Ministry to advise on this dispute (“the expert”) and the other evidence in this matter. The relevant clauses of the Building Code and diagrams from the Acceptable Solution for Clause E1 Surface Water, E1/AS1, are provided in Appendix A.

2. The building work and background

2.1 The building work

2.1.1 The building is a newly constructed two-storey dwelling with a low-pitched roof. The building has weatherboard, plastered concrete block, and fibre-cement claddings with aluminium joinery and a metal-clad roof.

2.1.2 The site is nearly flat. The dwelling covers most of the site’s width, with a garden on the north side of the dwelling. There is a 84m² paved area in front (south) of the dwelling.

2.1.3 The as-built surface water system consists of:

- downpipes from the building that connect to a surface water drain on the west side of the property (“the western drain”). The western drain connects to a bubble-up chamber located in the pavement outside the property (“the western bubble-up chamber”), which connects to an existing drain leading to the a channel⁴ running between footpath and the roadway (“the road channel”)
- downpipes from the building that connect to a surface water drain on the east side of the property (“the eastern drain”). The eastern drain connects to a bubble-up chamber located on the south-east corner of the property, behind the garage (“the eastern bubble-up chamber”), which connects to an existing drain discharging to the road channel
- a sump to the western side of the driveway (“the driveway sump”) connected to a drain, which runs to a field drain on the north of the property.

³ Under section 177(1)(a), 177(1)(b) and 177(2)(d)

⁴ This is also commonly referred to as the “kerb and channel”

2.1.4 The surface water system is shown in Figure 1 below.

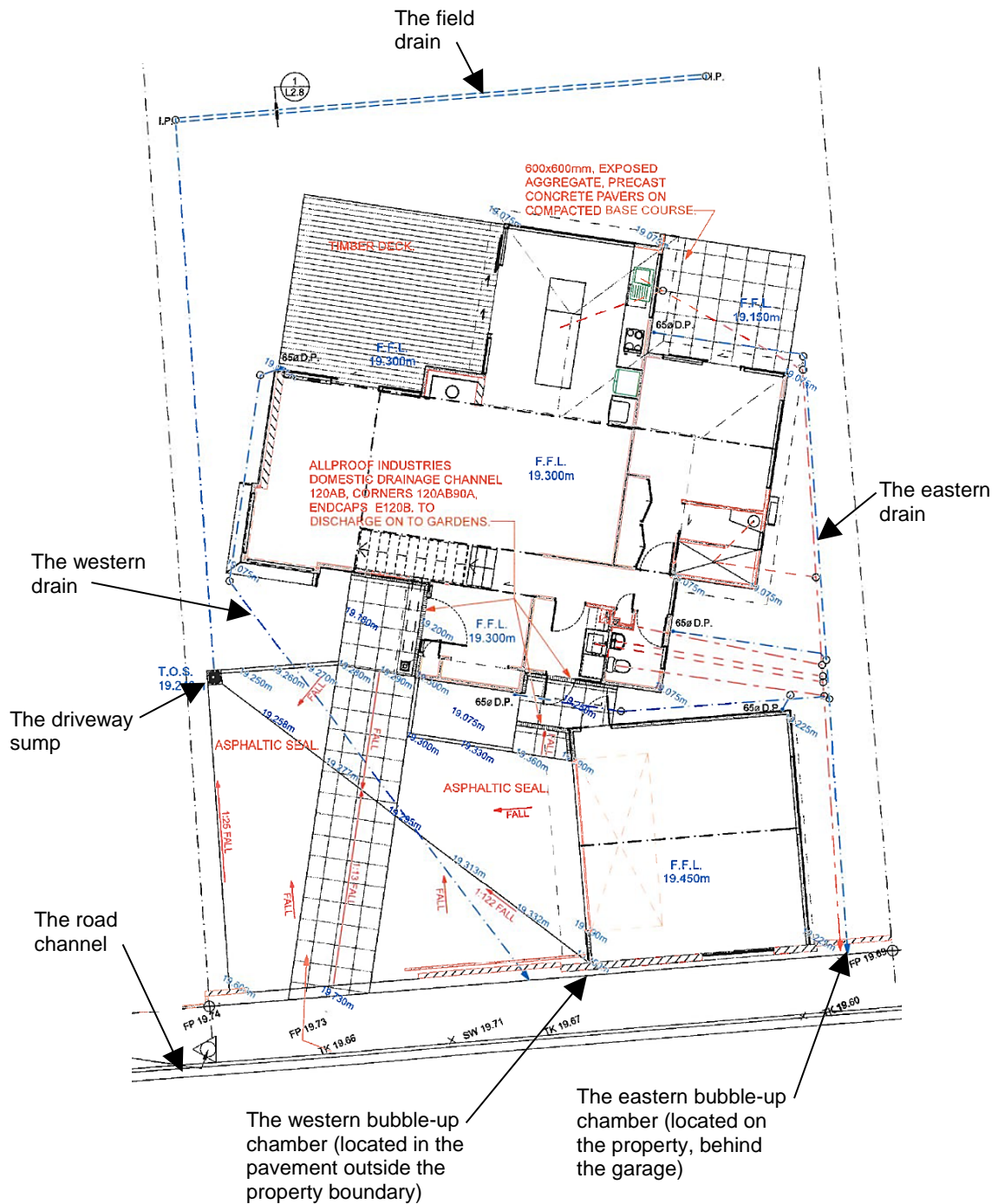


Figure 1: The surface water drainage system taken from the amended drainage plan⁵ dated 1 October 2015 (not to scale)

2.2 Background

2.2.1 The original dwelling on the site was damaged during the 2010/2011 Canterbury earthquake sequence⁶. On 12 March 2015, the authority issued building consent No. BCN/2015/1960 for the construction of a new dwelling.

⁵ Refer paragraph 2.2.4

⁶ The Canterbury Earthquake Sequence includes the 'Darfield Earthquake' of 4 September 2010 with a moment magnitude of 7.1, followed by a series of aftershocks that included a 6.3 magnitude shake on 22 February 2011.

- 2.2.2 The consented plumbing and drainage plan (Drawing L2.4, dated 10 March 2015) shows:
- downpipes from the building connected to surface water drains with a 1:120 minimum fall connecting to existing laterals adjacent to the road at the southern boundary
 - a type one sump⁷ in the paved area connecting to the western drain.
- 2.2.3 On 8 September 2015, the designer contacted the authority about the surface water driveway discharge, noting that the drive levels are below the existing laterals. On 10 September 2015, the authority advised:
- [The authority] requires surface water control to be exercised for driveways greater than 80m². ... the driveway is 84m².
- This will require some element of control rather than just allowing discharge over the street frontage.
- 2.2.4 On 1 October 2015, the designer emailed the authority attaching an unidentified document describing a proposed solution for the driveway. The attachment can be reasonably assumed to be the revised drawing No. L2.8 'Levels Plan' dated 1 October 2015 showing the drainage layout as described in Figure 1. (The same revised drainage layout is repeated in revision A of the "Plumbing and Drainage" plan, No. L2.4, dated 26 November 2015 which is after the issue of the building consent on 12 March 2015.)
- 2.2.5 On 7 October 2015, the authority wrote to the designer advising that discharging surface water from the drive via a perforated drain was suitable, provided the drain "[does] not cause a nuisance to neighbouring properties in a 10 year, 1 hour storm event (at minimum)".
- 2.2.6 On 11 November 2015, the authority carried out a drainage inspection. The inspection notes show the system passed the inspection and that the "[surface] water drains" had been "installed in accordance with the consented plans". Against the inspection element for surface water drainage the compliance method was noted as "E1/AS1". The driveway sump was noted as "Not Trapped". Also, against the inspection element "Sumps and Silt Traps" this was noted "Non Compliant & Hazardous (at time of inspection - completion of drainage work the lid was insecure)".
- 2.2.7 A revised plumbing and drainage plan (Drawing L2.4, Rev A, dated 26 November 2015) shows:
- downpipes from the building connected to bubble-up chambers, as described in Figure 6 of E1/AS1, that connect to existing drains discharging to the road channel. The chambers are 450mm diameter and a maximum of 1m deep
 - a sump to the paved area, as described in Figure 8 of E1/AS1, connecting to a field drain to the north of the property. The field drain is detailed as "DN100 uPVC" drilled with 20mm diameter holes and bedded in free-draining material with inspection points at either end. The length of the field drain is not stated.
- 2.2.8 The applicants moved into the house in December 2015.

⁷ A type one sump is described in Figure 8: "Type-one Surface Water Sump" in the Acceptable Solution for Clause E1 Surface water, E1/AS1. The sump is "is suitable for an area of up to 4500/I m² ... where I is the rainfall intensity for a storm with a 10% probability of occurring annually"

- 2.2.9 On 28 January 2016, the authority issued a code compliance certificate for the work done under building consent No. BCN/2015/1960.
- 2.2.10 The applicants then noticed that the two bubble-up chambers were not discharging properly. There was subsequently correspondence with the builder, the PMO and the drainlayer about the issue.
- 2.2.11 On 14 July 2018, the authority wrote to the applicants in response to their queries about the compliance of the surface water system. The authority noted:
- The [authority] granted the building consent because it was satisfied on reasonable grounds that the work would meet the building code if it was completed in accordance with the plans and specifications.
- As per section 94 of [the Act] the [authority] must issue the code compliance certificate if it believes the work aligns with the consented documents. The [code compliance certificate] was issued on [28 January 2016].
- 2.2.12 The Ministry received an application for a determination on 17 July 2018.

3. The submissions and the draft determination

3.1 The initial submissions

- 3.1.1 In the application for determination, the applicants noted:

We have discovered that the two [surface] water drains were consented running uphill and that the [surface] water drains and sumps are not compliant, including the driveway sump.... The CCTV inspection shows damage to the western drain, possibly done while being filled in. The drainlayer has returned twice and fixed a leak at the inlet of the sump of the eastern drain but a downpipe still leaks slowly. The western sump has never filled with water, except by hose - in order to try to determine the cause of the problem.

- 3.1.2 The applicants provided:

- descriptions of each of the drainage issues identified
- photographs of the bubble-up chambers and the driveway sump
- the consented drainage plan (Drawing L2.4, dated 10 March 2015)
- extracts from Acceptable Solution E1/AS1
- the undated as-laid drainage plan by the drainlayer and undated Producer Statement - Construction PS3 for “Sewer and stormwater”
- correspondence with the authority, insurer, and builder about the drainage issues
- the authority’s drainage inspection report
- drainage inspection videos.

- 3.1.3 On 28 July 2018, the applicants provided copies of the consented plans.

3.1.4 The designer made a submission, dated 7 August 2018, and provided copies of the plumbing and drainage plan (Drawing L2.4, Rev A, dated 26 November 2015), and a copy of email correspondence between the designer and the authority. The designer noted:

... further correspondence occurred with [the authority] regarding disposal of [surface] water from the site, when it was determined through more detailed site levelling that conventional discharge of [surface] water to street via gravity system was not possible.

3.1.5 The designer provided an email from the authority, dated 7 October 2015, that said:

...the previous dwelling discharged completely to ground via soak pits and there was never any ponding flooding issues... I consider that discharging the [paved area] to ground via a perforated drain can be an acceptable solution...

3.1.6 The authority made a submission dated 13 August 2018. The authority noted:

- It now considers that if the work had been completed in accordance with the consented plans, then it would not have complied with the Building Code. This is because:

The [driveway sump] is below the level of the [road channel] outside the house, and without a pump, the water would not travel uphill. In addition, the surface water pipes from the roofed areas could not be discharged to the [road channel] without the downpipes being sealed and bubble-up [chambers] being installed.

- Soakage to the ground is permissible on the site as long as it complies with Clause E1.3.1 and does not cause damage or a nuisance to a neighbour in a 1-in-10-year storm event.
- There is no record of an application to amend the drainage details. Any application would have required soakage tests of the ground as evidence of compliance.
- The revised plumbing and drainage plan (Drawing L2.4, Rev A, 26 November 2015) is dated after the drainage inspection was undertaken (on 11 November 2015). The authority does not have a copy of this plan in its records.
- The as-laid drainage plan and PS3 provided as part of the application for a code compliance certificate show the roof drainage to the street via bubble-up chambers, and the driveway sump discharging to a field drain.

3.1.7 The submission also included email correspondence about the collection of water from the paved area, the site levels, the previous use of soak pits on the site, and internal advice that the authority's "soil maps show that this area is not amenable to soakage" and the authority's "preference" for all surface water to go to Council's drainage network.

3.1.8 The builder made a submission on 15 August 2018 supported by site meeting notes, emails, and revised plans (Drawings L2.4 and L2.8). The builder noted:

- Issues with levels on site affecting surface water drainage were raised in September 2015. The parties agreed it would be necessary to install a "fully charged" system using bubble-up chambers.
- The designer provided plans for the revised system, which were retained on site with the building consent documentation. This documentation was made available to the inspector at the final inspection.

- 3.1.9 On 15 August 2018, the applicants made a submission noting that the reference to the previous dwelling discharging completely to ground via soak pits was incorrect. Some roof areas discharged into soak pits 10m from the dwelling, and the remaining surface water flowed in pipes along the outside of the dwelling to two laterals discharging to the road channel.
- 3.1.10 On 6 November 2018, the builder submitted that a camera inspection of the drains had already been carried out. The builder noted with respect to the eastern drain that the drainage inspection video showed that ‘[t]he drain is indeed damaged in the pipe joint at 5m from [bubble-up chamber].’ A copy of the drainage inspection video was subsequently provided and shared with the parties on 10 December 2018.

3.2 The draft determination and submissions received

- 3.2.1 A draft determination was issued to the parties for comment on 20 February 2019.
- 3.2.2 The authority accepted the draft determination on 1 March 2019. The authority made suggestions for minor amendments to the draft determination. The authority also noted there was no commentary on the configuration of the outlet to the driveway sump given the as-built configuration has been identified as different from that described E1/AS1.
- 3.2.3 The applicants made a submission dated 11 March 2019 advising they did not accept the draft determination. The applicants submitted that (in summary):
- The revised plumbing and drainage plan shows inspection points to the field drains (refer to paragraph 2.2.7). There are no inspection points on the field drains, so the state of the drain cannot be checked without digging it up.
 - The silt storage of both bubble-up chambers is less than 10% of the capacity described in E1/AS1. The dimensions mean the chambers must be cleaned using specialist equipment more regularly than if the chambers satisfied the requirements of E1/AS1.
 - The joint between the surface water drain riser and the downpipe on the east side of the house leaks and is not compliant.
 - The provisions of paragraph 3.4.2 of E1/AS1 are not only to push the water through the system. The capacity of the bubble-up chambers has more to do with ease of clearing the silt from the system. The bubble-up chambers should meet the provisions of E1/AS1.
 - The driveway sump as-built does not prevent silt and contaminants from flowing to the field drain.
 - A leaking bubble-up chamber should not be considered to comply, just as a leaking hot water cylinder would not be considered compliant. It cannot be assumed that the western bubble-up chamber does not leak as it has not been tested.
 - “[T]he fact the [eastern drain] is damaged cannot be relied on as the only reason for non-compliance” as there may be other matters of non-compliance.

3.2.4 The persons with an interest in the matter made no submission except for the builder who, in an email dated 22 January 2019, advised that:

- “Both a 300mm and a 400mm [diameter sump or bubble-up chamber] are both accessed by a 300mmx300mm access lid. This lid dimension determines accessibility not the actual pipe size”
- “Acceptable Solution sump depth of 1m is no more able to be cleared physically by hand through a 300mmx300mm access lid than a sump depth of 1.5m.”

3.2.5 I have amended the determination as I consider appropriate.

4. The expert’s report

4.1 As mentioned in paragraph 1.6, I engaged an independent expert to assist me. The expert is a member of the New Zealand Institute of Building Surveyors. The expert visited the site to verify the as-built drains with respect to Clause E1 – Surface Water. The expert visited the site on 8 August 2018 (“the first site visit”) and provided a report dated 28 August 2018. The report was provided to the parties on 29 August 2018.

4.2 The expert revisited the site on 28 November 2018 (“the second site visit”) and provided an addendum to the expert’s report dated 22 December 2018. The expert revisited the site after a period of rain to confirm the location and effect of the system and to compare the site observations against the drainage inspection video provided by the parties. A copy of the addendum to the expert’s report was provided to the parties on 14 January 2019.

4.3 The western drain

4.3.1 The expert inspected and tested the western bubble-up chamber at the first site visit and noted that:

- On arrival to site the water was only up to the invert⁸ of the inlet of the bubble-up chamber (i.e. at the bottom of the lower pipe).
- It took 30 minutes of adding water at full volume from a hose tap to the surface water pipe riser adjacent to the north-west corner of the lounge until the water level rose sufficiently to fill and overflow the riser (the down-pipe was already disconnected from the riser). At the point water was overflowing out of the riser, the water in the bubble-up chamber was 790mm below the top of the bubble-up chamber.
- When the flow of water to the riser was stopped, the water in the bubble-up chamber dropped back to the invert level in approximately 4 minutes. As soon as the water level was down to the invert level it dropped no further, indicating that there is a significant leak in the surface water drain, and that the bubble-up chamber itself was not leaking.

4.3.2 At the second site visit, the expert observed that despite recent prolonged heavy rain, and more rain at the time of the inspection, the water in the western bubble-up chamber was only up to the invert of the inlet.

⁸ The “invert” or “invert level” is the base interior level of a pipe, trench or tunnel. The invert is an important datum for determining the functioning or flowline of a piping system.

4.3.3 The expert considered the drainage inspection videos and reported the conclusions in the addendum report. The expert noted when the photo of the broken drain was compared with the video provided by the applicants (refer to paragraph 3.1.2) this confirmed that the drainage inspection video provided by the builder (refer to paragraph 3.1.10), is of the western drain and not the eastern drain because:

- there is a hole in the top of the pipe at a ‘y’ junction approximately 5m from the footpath bubble-up chamber, however, the eastern bubble-up chamber is not located in the footpath
- the drain branches off to the right at the ‘y’ junction, however, the eastern drain branches off to the left at the ‘y’ junction.

4.3.4 The expert concluded that the videos confirm that the western drain is damaged and needs to be repaired.

4.4 The eastern drain

4.4.1 At the first site visit, the expert observed that the eastern bubble-up chamber was full to the invert of the outlet, and that water was seeping out of the surface water pipe connected to the downpipe on the east side of the house. The expert stated that this indicated that the drain was full of water (i.e. fully charged) and the system was working.

4.4.2 At the second site visit, the expert observed that the eastern bubble-up chamber was again full to the invert of the outlet and water was observed flowing to the road channel.

4.5 The bubble-up chambers

4.5.1 The expert compared the bubble-up chambers to the recommended sizes in Acceptable Solution E1/AS1. The expert noted that E1/AS1 provided only one means of compliance, however, there was no evidence to indicate that an approved alternative solution had been used. The expert also noted the as-built plan indicates that the system has been built to the E1/AS1, however, this is not the case because:

- the bubble-up chambers as-built are 300mm diameter, compared to 450mm described in E1/AS1
- the chambers as built are 1360mm deep, compared to 1000mm maximum described in E1/AS1
- the invert of the inlets is 40mm above the bottom of the chambers, compared to the minimum 200mm described in E1/AS1. The storage silt capacity of the chambers as-built are 2,830cm², compared to 31,810cm² described in E1/AS1 (less than 10% of the required capacity).

4.6 The driveway sump and field drain

4.6.1 The expert inspected the driveway sump at the first site visit. The expert noted the consented documents specify a ‘Type 1 sump as per E1/AS1 Figure 8’, however the sump is not a Type 1 sump because:

- the driveway sump does not have a submerged outlet, as detailed in E1/AS1
- the driveway sump is only 300mm diameter, compared to 375mm detailed in E1/AS1

- the outlet was not sealed to the chamber (given that outlet pipes to the bubble - up chambers were sealed at the inside and this was not).

4.6.2 At the second site visit, the expert noted that despite the heavy rain, there was no surface water visible in the backyard area, or on the neighbour's driveway that would indicate that the field drain receiving the discharge from the driveway sump was not working.

4.7 The responses to the expert's report

4.7.1 On 29 August 2018 the applicants noted a typographical error in the expert's report, and on 14 January 2019 said they had no comment in response to the expert's addendum report.

4.7.2 On 30 August 2018 (refer to paragraph 4.1) the authority questioned the scope of the expert's original report and noted that one of the questions for the determination is whether the work complies with Clause E1.3.1 as it was indicated by the applicants that the field drain could lead to flooding on other property.

4.7.3 On 18 January 2019, in response to the addendum to the expert's report, the authority submitted that it did not dispute the observations contained in the report, however, noted it did not accept that specialist suction equipment is the only method of maintaining the bubble-up chambers and clearing blockages. The authority noted the detail in Figure 6 of E1/AS1 states it allow the 'convenient collection' of debris, however the Building Code requirement is contained in Clause E1.3.3(d) and requires the provision of "reasonable access for maintenance and clearing blockages". The authority considers the as-built bubble-up chambers comply with the 'reasonable access' provision, while accepting that maintenance may not be as convenient as a "larger and shallower chamber".

4.7.4 The persons with an interest in the matter made no comment on the expert's report.

5. Discussion

5.1 The legislation

5.1.1 The relevant provisions of the Building Code include:

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

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

E1.3.3 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,
- (b) ...
- (c) avoid the likelihood of leakage, penetration by roots, or the entry of ground water where pipes or lined channels are used,
- (d) ...

5.2 The compliance of the surface water system as-built

5.2.1 The surface water system as-built consists of:

- downpipes from the building to the western drain, connecting to the western bubble-up chamber, which discharges via an existing surface water lateral to the road channel
- downpipes from the building to the eastern drain, connecting to the eastern bubble-up chamber, which discharges via an existing surface water lateral to the road channel
- a driveway sump connecting to the field drain located at the north of the property.

Bubble-up chamber systems generally

5.2.2 Bubble-up drainage systems are a proven means of discharging surface water to an outfall in cases where “the road channel or other *outfall* is at too high a level to allow the gradient required⁹” subject to conditions described in E1/AS1. Figure 7 in E1/AS1 illustrates the features of the bubble-up chamber system (refer Appendix A.2).

Compliance of the western drain

5.2.3 The observations of the expert and the drainage inspection videos confirm that the western drain is damaged (refer to paragraphs 4.3.1 to 4.3.4) and is leaking to a significant extent. The western drain is not conveying the surface water to an appropriate outfall, as required by Clause E1.3.3(a) and (c). (I note the western bubble-up chamber is located outside the property boundary.)

5.2.4 I am therefore of the view that at the western drain does not comply with Clause E1 of the Building Code.

Compliance of the eastern drain

5.2.5 The observations of the expert confirm the eastern drain is working correctly. I note that the expert observed on the first site visit that water was seeping out of the riser on the east side of the house (refer to paragraph 4.4.1). I do not consider this minor leak to be a breach of Clause E1, however, the applicants may wish to consider having this fixed.

5.2.6 I am therefore of the view that the eastern drain complies with Clause E1 of the Building Code.

Compliance of the bubble-up chambers

5.2.7 The expert found the eastern and western bubble-up chambers had not been built as detailed in the revised drainage plan, which show a solution taken directly from E1/AS1, (refer to paragraph 2.2.7) because of the chambers’ diameter, depth, depth of the inlet invert, and silt capacity (refer to paragraph 4.5.1).

5.2.8 Although the drains and associated bubble-up chambers were designed to E1/AS1 but installed at variance to this, I have considered whether the chambers as built comply with Clause E1.

⁹ Refer paragraph 3.4.2 “Restricted fall to outlet” in the Acceptable Solution for Clause E1 Surface water E1/AS1

- 5.2.9 In evaluating the system as-built, it is useful to make some comparisons with E1/AS1.
- 5.2.10 The bubble-up chamber solution in paragraph 3.4.2 of E1/AS1 requires that:
- a) the ground level adjacent to any downpipe discharging to the bubble-up chamber is at least 150mm higher than the level of the top of the chamber outlet.
 - b) The connections between the drain and downpipes are sealed.
 - c) The total chamber depth does not exceed 1.0m.
- 5.2.11 These provisions ensure there is sufficient water pressure in the system to push the water through to the drains and the bubble-up chambers to the outfall.
- 5.2.12 The as-built system does not meet these provisions. However, while each individual bubble-up chamber has less capacity than the solution described in E1/AS1, the as-built system is configured with two separate bubble-up chambers serving the house, whereas E1/AS1 describes a solution with only one bubble-up chamber.
- 5.2.13 The expert observed that the eastern drain was working as required and therefore I consider that the configuration of the as-built system is sufficient to deliver surface water to the designed outfall. As the bubble-up chambers serve to convey surface water to the road channel outfall, I am of the view that the chambers themselves comply with E1.3.3(a).
- 5.2.14 As to whether the bubble-up chambers have sufficient diameter to facilitate ready maintenance, I note Clause E1.3.3 of the Building Code requires surface water drainage systems to be constructed to ‘[p]rovide reasonable access for maintenance and clearing blockages’.
- 5.2.15 I note the applicants’ comment that the dimensions and capacity of the bubble-up chambers means the chambers will need to be cleaned more regularly with specialist equipment than if the chambers complied with E1/AS1 (refer to paragraph 3.2.3). While I accept this might be the case, this does not of itself affect my view that the work complies with the Building Code. I note that the chambers can be cleaned and maintained using specialised equipment, such as a suitably-sized wet vacuum cleaner, and I am therefore of the view that the requirement of Clause E1.3.3 is met.
- 5.2.16 I am therefore of the view that the eastern and western bubble-up chambers, in themselves, comply with Clause E1 of the Building Code.
- 5.2.17 The applicants commented that a leaking bubble-up chamber should not be considered compliant, just as a leaking hot water cylinder would not be considered compliant (refer to paragraph 3.2.3).
- 5.2.18 In response to this, I note that the nature of surface water systems are such that a compliant system is not required to collect and convey all surface water to a designated outfall in all events, but rather to ensure that buildings, property, and people are protected from the adverse effects of surface water.
- 5.2.19 This is reflected in the Building Code obligations for surface water systems in Clause E1. Clause E1.3.1 requires surface water from a 1-in-10 year event to be disposed of in a way that avoids the likelihood of damage or nuisance to other property; and Clause E1.3.2 requires surface water from a 1-in-10 year event to not enter buildings. I also note the Functional Requirement of Clause E1 is that “Building and sitework shall be constructed in a way that protects people and other property from the adverse effects of surface water”.

5.2.20 This is in contrast to a foul water system for example, where foul water must be contained within the system, reflected by the Building Code requirement that buildings must have an adequate plumbing and drainage system to carry foul water to appropriate outfalls. It is noted that the while the leak to the western drain is significant and is considered a breach of Clause E1.3.3(a) and (c), there are at present no known effects on people and other property.

Compliance of the driveway sump and field drain

5.2.21 The expert found the driveway sump had not been built to meet the provisions of E1/AS1, as shown in the revised drainage plan (refer to paragraph 2.2.7) because of the diameter of the sump and the configuration of its outlet.

5.2.22 Although smaller in size than the E1/AS1 sump, the expert observed the driveway sump and associated system working during a period of heavy rain. The expert noted that despite the rain, there was no surface water visible in areas that would indicate that the driveway sump was not working.

5.2.23 The applicants questioned the lack of inspection points on the field drain and the lack of invert on the driveway sump to prevent silt and contaminants from flowing to the field drain (refer to paragraph 3.2.3). I note inspection points are not normally provided on field drains, and the outlet to the sump is much higher than the bottom of the sump, so silt and contaminants will drop to the bottom.

Conclusion

5.2.24 I therefore conclude that:

- the as-built surface water system does not comply with Clause E1 in respect of the western drain, because the drain is damaged
- the as-built surface water system complies with Clause E1 in respect of the eastern drain, the eastern bubble-up chamber, the western bubble-up chamber, the driveway sump and the field drain.

5.3 The decision to issue the code compliance certificate

5.3.1 The applicants are of the view that the authority was incorrect to issue the code compliance certificate in respect of the surface water drainage because the work was not completed in accordance with what was detailed in the approved building consent.

5.3.2 Under section 94(1)(a) of the Act, an authority must issue a code compliance certificate for building work carried out under a building consent, if it is satisfied on reasonable grounds that the building work complies with the building consent.

5.3.3 Previous determinations (for example Determination 2008/030¹⁰) have come to the view that where either the as-built construction differs from that consented, or where there is conflicting detail in the consent or information that was not known when the consent was granted, confirmation of compliance of the building work with the Building Code is required before an authority can issue a code compliance certificate.

¹⁰ Determination 2008/030: The issuing of a code compliance certificate for a multi-storey apartment building (5 May 2008)

- 5.3.4 In respect of the building consent, I note that the authority has submitted that it now considers that if the building work had been completed in accordance with the building consent, it would not have complied with the Building Code. I note that the builder's and designer's submissions refer to the need to alter the system from what was consented, due to the levels on site.
- 5.3.5 Records provided by the parties show correspondence with the authority about the surface water system during the construction process. There is evidence to show that the authority received a copy of the drawing L2.8 showing the revised drainage layout (showing the field drain and the bubble-up chambers) and it responded to this (refer paragraphs 2.2.4 and 2.2.5). However, there is nothing to suggest that the authority considered this as a change to the building consent, either as a formal amendment or a minor variation.
- 5.3.6 I also note no application for an amendment to the building consent or a minor variation was submitted by the designer. However, it appears that the authority did not provide any direction that an application for an amendment or a minor variation would be required. I note the authority has stated that it accepts the surface water drainage was not built in accordance with the building consent.
- 5.3.7 The inspection records (refer paragraph 2.2.6) state that the drains had been laid in accordance with the consented plans. The inspection records also indicate that the surface water drainage system followed E1/AS1, but I note the bubble-up chambers and driveway sump are not in accordance with E1/AS1. Despite this I accept that the as-built work would otherwise be considered code compliant if it were not for the defect to the western drain.
- 5.3.8 I note my conclusion (refer to paragraph 5.2.24) that the surface water system complies with Clause E1 in respect of the eastern drain, the bubble-up chambers, the driveway sump and the field drain. However, the surface water system does not comply with Clause E1 in respect of the western drain and I am of the view that the authority's decision to issue the code compliance certificate should be reversed in respect of this work.

6. What happens next?

- 6.1 I have come to the conclusion that the building work does not comply with the building consent and the Building Code, and accordingly this determination reverses the authority's decision to issue the code compliance certificate.
- 6.2 The authority may issue a notice to fix under section 164 of the Act to the owner and specified persons under section 163 requiring the surface water system to be brought into compliance with the Building Code.
- 6.3 Once the surface water system has been brought into compliance, a code compliance certificate will be able to be issued.

7. The decision

7.1 In accordance with section 188 of the Building Act 2004, I hereby determine that:

- the surface water system does not comply with Clause E1 of the Building Code in respect of the western drain
- the surface water system complies with Clause E1 of the Building Code in respect of the eastern drain, the eastern and western bubble-up chambers, and the driveway sump and associated field drain
- the authority incorrectly issued a code compliance certificate in respect of the surface water system, and accordingly, I reverse that decision.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 13 June 2019.

Katie Gordon
Manager Determinations

Appendix A: The relevant parts of the Building Code and the corresponding Acceptable Solution

A.1 The relevant clauses of the Building Code include:

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 an event having a 10% 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% probability of occurring annually, shall not enter 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,
- (b) avoid the likelihood of blockages,
- (c) avoid the likelihood of leakage, penetration by roots, or the entry of ground water where pipes or lined channels are used,
- (d) provide reasonable access for maintenance and clearing blockages,
- (e) avoid the likelihood of damage to any outfall, in a manner acceptable to the network utility operator, and
- (f) avoid the likelihood of damage from superimposed loads or normal ground movements

A.2 The relevant diagrams from the Acceptable Solution for Clause E1 Surface water, E1/AS1, include:

