BUILDING PERFORMANCE

Determination 2024/031

Regarding the compliance of building work with Building Code clause E1.3.1 Surface water

57 Pomona Road, Ruby Bay

Summary

This determination considers whether the building work carried out at 57 Pomona Road complies with E1.3.1 as it relates to the protection of 'other property' at 53 Pomona Road. This turns on an assessment of whether the building work has concentrated or directed surface water in a way that could cause nuisance or damage to 53 Pomona Road.

The legislation discussed in this determination is contained in Appendix A. In this determination, unless otherwise stated, references to "sections" are to sections of the Building Act 2004 ("the Act") and references to "clauses" are to clauses in Schedule 1 ("the Building Code") of the Building Regulations 1992.

The Act and the Building Code are available at www.legislation.govt.nz. Information about the legislation, as well as past determinations, compliance documents (eg Acceptable Solutions) and guidance issued by the Ministry, is available at www.building.govt.nz.

1. The matter to be determined

1.1. This is a determination made under due authorisation by me, Peta Hird, Principal Advisor, Ministry of Business, Innovation and Employment ("the Ministry"), for and on behalf of the Chief Executive of the Ministry.[1]

1.2. The parties to the determination are:

1.2.1. L Griffith, the owner of the property at 53 Pomona Road, who applied for the determination ("the applicant")

1.2.2. D Baker, the owner of the property at 57 Pomona Road, where the building work took place ("the owner")

1.2.3. Tasman District Council, carrying out its duties as a territorial authority or building consent authority ("the authority")

1.3. I have also included A Palmer, who designed and oversaw construction of the building work ("the engineer"), as a person with an interest in the matter.

1.4. The determination considers whether new surface water drainage arrangements at 57 Pomona Road, undertaken in conjunction with the construction of a retaining wall, comply with Building Code clause E1 Surface water.

1.5. The determination arises from the applicant's belief that the as-built drainage arrangements, including a new culvert and detention basin[2], do not comply with clause E1.3.1.[3] The applicant is concerned that the drainage arrangements are causing, and will continue to cause, flooding on their property and lead to erosion of the earth underneath their driveway.

[1] The Building Act 2004, section 185(1)(a) provides the Chief Executive of the Ministry with the power to make determinations.

[2] In this determination, the 'detention basin' refers to a basin which has been designed and constructed to retain and disperse water outflows.

[3] Clause 1.3.1 provides that "…surface water, resulting from an event having a 10 per cent 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".

1.6. The matter to be determined, under section 177(1)(a), is whether the building work, relating to the as-built drainage arrangements at 57 Pomona Road, complies with clause E1.3.1.

2. The building work

2.1. The applicant's property at 53 Pomona Road ("applicant's property") is located east and downhill from 57 Pomona Road in the foothills above Ruby Bay, Nelson.

2.2. The boundary at issue is the western boundary of 53 Pomona Road, where it meets the eastern boundary of 57 Pomona Road (see Figure 1). 57 Pomona Road is aligned north-south, with an east facing broad gully at its northern end, and a spur ridge and shallower gully further south.

2.3. The building work in dispute is located on 57 Pomona Road ("the neighbouring property"). The first stage of the development was to establish a driveway on to Pomona Road to gain vehicle access. Due to the topography, it was necessary to add fill. In order to support the new driveway, the downslope side was retained with an engineered timber pole wall (see Figure 1). Three smaller walls were constructed further upslope to provide additional retaining at slope changes.[4]

Figure 1: Photograph of retaining wall and driveway (taken 11 August 2020).

2.4. As well as the construction of the retaining wall, the first stage of development included new drainage arrangements to manage the flow of surface water on site. Subsequent stages of development included building a studio and dwelling on the site (see Figure 1).

[4] The three smaller retaining walls are not relevant to the determination and are not discussed further.

Drainage

2.5. In terms of the pre-existing drainage arrangements, storm water was (and continues to be) collected via overland flow from Pomona and Korepo roads above and from two existing culvert sources.[5] This water discharged onto 57 Pomona Road which, prior to the building work commencing, was undeveloped and covered with grass and scattered trees. The outflow was (and continues to be) via a culvert which runs beneath the applicant's driveway and into the applicant's property (see Figure 2).

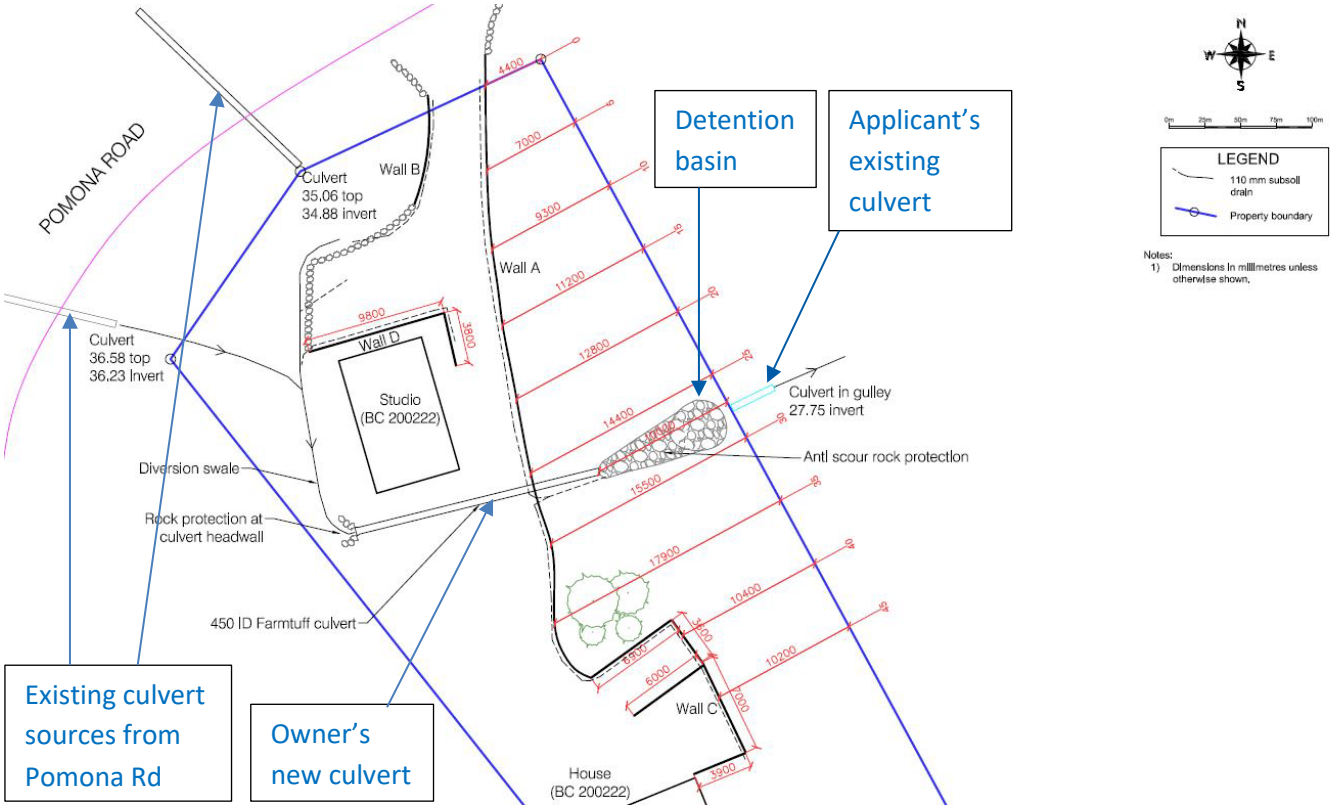

Figure 2: As-built plan (not to scale).

2.6. Following the construction of the retaining wall and new drainage arrangements at the neighbouring property, the drainage arrangements are as follows:

2.6.1. Storm water from the road above and existing culvert sources is channelled down a 'main drain' on the west side and a 'secondary drain' on the northwest side of the neighbouring property (see Figure 2).

2.6.2. Both drains meet on the west of the studio. Storm water then flows through a diversion swale and is diverted underneath the new parking bays and

[5] Being a 300mm diameter RCRRJ pipe from the water table and a 150mm diameter PCV pipe which appears to drain a Tasman District Council valve chamber located on the north side of Pomona Road.

driveway via a 450mm[6] diameter pipe. Outflow is then dispensed eastward via a rock-lined waterway/swale into a detention basin (see Figures 2 and 3).

2.6.3. The detention basin is close to the boundary with 53 Pomona Road. The detention basin measures 3m by 3m, is 500mm deep in the centre and is lined with river stone rocks (see Figures 3 and 4).

2.6.4. A small pipe drains the detention basin into a 300mm diameter culvert pipe which directs water underneath the applicant's driveway (see Figure 4). Water is then discharged to the southeast of the applicant's property.

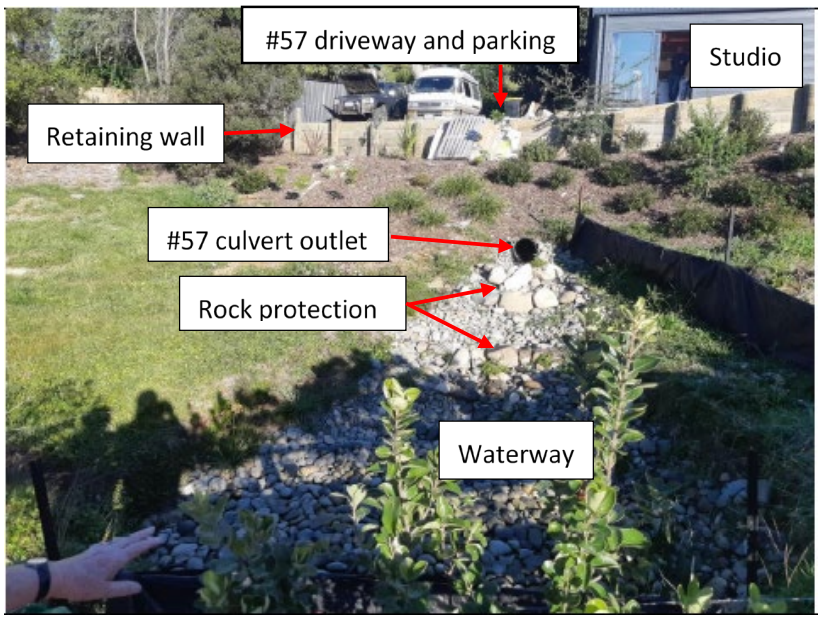

Figure 3: Photograph of as-built drainage arrangements (taken 13 July 2021).

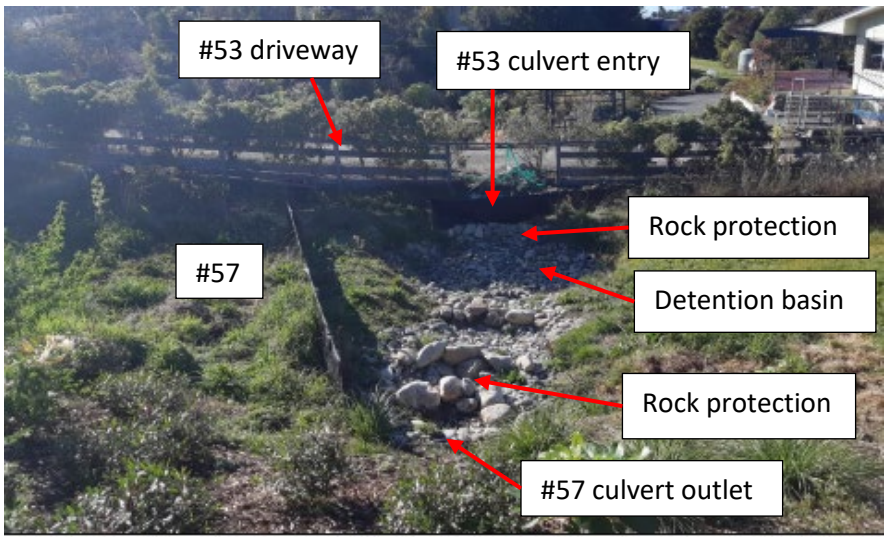

Figure 4: Photograph of as-built drainage arrangements (taken 13 July 2021).

[6] The initial design was for a 375mm pipe to be used. However, in the event, the 450mm pipe was installed.

3. Background

3.1. On 27 September 2019, the owners of 57 Pomona Road applied for a building consent, described in the consent as "Construct a timber pole retaining wall to support new driveway". A Design Report ('Retaining wall & driveway earthworks'), Producer Statement – Design (PS1), and recommendations relating to construction of the retaining wall, fills, drainage, sediment control and planting were submitted.

3.2. Between 30 September 2019 and 1 November 2019, the authority issued a series of 'Requests for Information' (RFIs). With regards to clause E1.3.1, the authority issued an RFI on 23 October 2019, stating:

> All surface water and future stormwater from the dwelling appears to be directed to the culvert running under the [applicant's] driveway. How will this be controlled at the outfall of the culvert thereby reducing the effect on the lower neighbouring site(s).

3.3. The engineer responded on 30 October 2019, noting, amongst other items, that:

3.3.1. Water is currently collected and discharged on the owner's property via overland flow from the road above and from two existing culvert sources. The inflow from these pipes represents approximately 80% of the outflow leaving the property, with the remainder generated from rainfall on the property itself.

3.3.2. The additional peak runoff generated by the new gravel surfacing on the proposed driveway is very small, as the runoff coefficient[7] only changes from 0.4 to 0.5 for the driveway area.[8] The additional run off from the driveway surfacing was calculated to be 0.5 litres per second (l/s).[9]

3.3.3. The outflow from the property is via a 300mm pipe which runs beneath the number 53 driveway. The existing outflow culvert is a "rather *ad hoc* arrangement and is in fairly poor repair". It is undersized for the catchment served, resulting in ponding upslope on number 57.

3.3.4. The proposal is to construct a small detention basin immediately upslope of the culvert entry. This will be lined with river cobbles and made into a landscaping feature. The basin will be 3m x 3m and approximately 500mm deep, providing storage for the calculated excess runoff. The intention is

[7] 'Runoff coefficient' refers to the ratio of runoff to the precipitation received. It is higher for areas with low infiltration (eg pavement), and lower for areas which are permeable and well vegetated.

[8] As prescribed for a change in surface types from 'heavy clay soil types: pasture and grass cover' to 'unsealed roads' in Table 1: Run-off Coefficients, Verification Method E1/VM1, issued 1 January 2017 (page 12).

[9] Calculated using the Rational Method, as prescribed in paragraph 2.0.1 of Verification Method E1/VM1, issued 1 January 2017 (page 11).

"that it will fill up before discharging through the culvert. Once inflow stopped, the detained water will soak away over time".

3.4. On 12 November 2019, the authority issued a building consent subject to construction monitoring requirements related to the wall construction and drainage, filling, the culvert, and inspection requirements.

3.5. Between March and September 2020, the applicant raised concerns with the owners and the authority regarding the potential for the building work to increase the volume of water flowing into their property. The owner acknowledged the applicant's concerns in a letter on 11 March 2020.

3.6. On 13 March 2020, the applicant emailed the authority, requesting the authority undertake a site visit and detailing their concerns that:

3.6.1. There is no reference on file or resource consent "to approve diverting the massive storm water flows that come from the drain under the width of Pomona Road and exiting at the top corner of the 57 property".

3.6.2. The outflow water will be directed to a pipe under the owner's new driveway and directly to the applicant's boundary – "all concentrated, travelling at speed. It will likely burst over much length of my driveway, and rapidly erode the edge of my driveway… and potentially do great damage to my driveway and garden".

3.6.3. This volume of water "is now to be taken off the land almost entirely and delivered in full volume at high speed to my boundary".

3.7. The authority responded to the applicant, noting that it relies on "the qualifications and credentials of the engineers involved and in this instance [the engineer] is a Geotechnical engineer of good standing". It confirmed that the engineer would work with the hydrologist engaged by the applicant ("the consultant") to provide detail and calculations for the storm water design.

3.8. On 24 March 2020, the authority forwarded an email to the applicant, in which the engineer confirmed:

3.8.1. The civil works were designed with reference to Building Code clause E1, the Tasman Land Development Manual (Tasman LDM) and NZS 4431:1989.[10]

3.8.2. The design documentation held on the authority's files has been reviewed by the consultant. The engineer and consultant met on site and "discussed the design philosophy, the catchment calcs and the runoff coefficients". They agreed that "additional energy dissipation measures at the culvert outfall could be easily installed".

[10] NZS 4431:1989 Code of practice for earth fill for residential development.

3.8.3. All parties have agreed that some larger rocks would make the design more robust.

3.8.4. The "roof water from the proposed studio building will be detained via a tank and low flow discharge orifice"; while "the future house roof water will be similarly detained, with the overflow being directed into the next catchment to the south". Also, "the driveway crossing out to the road will be formed in accordance with the Tasman LDM, with a small hump to effectively prevent road runoff from spilling down the driveway... Both [the roofwater and driveway crossing arrangements] will reduce the effective catchment above [the applicant's] garden".

3.9. In an email to the applicant on 24 March 2020, the authority stated it was satisfied the building consent shows compliance with the Act and Building Code. It also noted:

3.9.1. The authority believes "less water will be flowing to 53 Pomona Road than previously" and that "measures put in place to deal with the flow (detention area and use of large rocks and planting) provide suitable measures to deal with discharge flow".

3.9.2. The authority is satisfied that the inspections undertaken by the engineer, in conjunction with scheduled council inspections, provide suitable oversight of the process, and there is "no need for any other council inspectors to attend over and above those specified within the [building] consent".

3.9.3. The authority considers that "there is little [the authority] can do to address the flow of storm water from upslope to number 57 it has been this way for a number of years and is overland flow and an existing drainage system".

3.9.4. It also believes "that the measures put in place to deal with the storm water from upslope that in turn flows across 57 has been dealt with in a suitable manner – in our view no worse than before and if anything better".

3.10. On 17 June 2020, following an on-site visit, the authority sent a letter to the applicant which confirmed it was satisfied that the work was compliant with the Building Code. The letter also stated:

> We are satisfied that the volume of water that will enter your property…is the same or similar to that prior to construction. The rate of flow will be different given the installation of the 375mm pipe under the driveway. This pipe releases water downstream into the constructed [detention] basin which has been rock lined to attenuate the flow. The [detention] basin was made bigger than initially designed following discussions with [the consultant] on your behalf.
>
> We have received evidence that, from time to time, ponding along the common boundary with your property is not new… The pipe under your driveway has been installed higher than the low point on 57 Pomona Road. While the ponded area may be reconfigured as a

> result of the construction works, it does not represent a material change from what existed prior to construction.

3.11. Between March and August 2020, the retaining wall, driveway and drainage system were constructed.

3.12. On 5 August 2020, the owners applied for a code compliance certificate for the work, providing in the documentation a Producer Statement – Construction Review (PS4) from the engineer.

3.13. On 11 August 2020, the authority undertook an inspection. The same day, it wrote to the owners notifying the outcome of the inspection as a "fail" and stating "Please provide confirmation from an approved person to qualify and confirm the installation of drainage behind the retaining wall as correct and as per consented documents". These matters were confirmed by the engineer on the same day.

3.14. On 17 August 2020, the authority issued a code compliance certificate. The Site Inspection Report for the final inspection noted:

> Inspection Summary: Inspection was Final re-inspection for paperwork only. Retaining wall location has changed and an updated plan has been provided, I have considered this as a minor site variation, drainage has been confirmed as installed, work complies with Section 17 of the BA04.....PASS.....CCC can be issued.

3.15. On 20 August 2020, the applicant raised their concerns with the authority, detailing their belief that the building work:

3.15.1. changed "the delivery of the off-road water drainage from Pomona and Korepo Rds across the [neighbouring property] to within 5 metres of [their] boundary"

3.15.2. caused stormwater run-off to be "collected and concentrated down a large pipe, unimpeded to be discharged barely 5 metres from [their] boundary", altering the natural drainage that existed prior to development

3.15.3. created a large detention basin within close to their boundary and their driveway

3.15.4. was not compliant with Building Code clause E1 Surface water.

3.16. The authority replied on 23 September 2020, noting that:

3.16.1. the concerns raised by the applicant regarding the building consent and the process have been assessed appropriately

3.16.2. the building consent was granted appropriately.

3.17. Between 25 September and 4 October 2020, emails were exchanged between a representative of the applicant and the authority, in which concerns were raised

that the stormwater run-off calculations for the siteworks at the neighbouring property were incorrect.

3.18. The dispute remained unresolved and an application for determination was made.

4. Submissions

The applicant

4.1. The applicant believes:

4.1.1. The new stormwater drainage arrangements that divert outflow from the neighbouring property do not comply with clause E1.3.1. The natural flow of water across the neighbouring property has been dramatically altered, and the new drainage arrangements will cause inundation in heavy rain events.

4.1.2. The combination of the new drainage arrangements and the change in land surfaces is contributing to excess outflow into their property. The increase in impervious surface has increased the inflow of surface water into the 450mm culvert pipe underneath the neighbours' new driveway, which has also concentrated the volume of outflow into the detention basin.

4.1.3. The detention basin is causing excess water to go into the ground close to the boundary, which is seeping into the earth under the applicant's driveway and causing erosion.

4.1.4. The surface water run-off rate for the driveway and drainage design was incorrectly calculated by the engineer. The engineer used the run-off co-efficient of 0.50.[11] In the owner's view, the correct water run-off co-efficient applicable to the new driveway is 0.85, as they believe it is (or will be) an asphalt surface. The applicant notes "although the owners say they are not going to seal this area they have the right to do so and there is no condition in their land title to ensure any future sealing of this area would require appropriate mitigation".

The owner

4.2. The owner clarified a number of points from their perspective:

4.2.1. What has been referred to at times as a 'pond' is a 500mm deep detention basin, as per the site plan. This was initially dug as a temporary sediment control measure during construction and has now been backfilled to design level to act as a permanent detention basin. Drainage is provided from the basin via an outlet pipe.

[11] Which is the co-efficient prescribed for 'Unsealed roads' in Table 1: Run-off Coefficients, Verification Method E1/VM1, issued 1 January 2017.

4.2.2. The culvert running under the applicant's driveway was in poor condition prior to the owners buying the property and commencing the building work. At that time, there was already an eroded hole to the left of the applicant's culvert. The owners provided a photo of the culvert taken after a storm, which shows water flowing through the eroded hole and damage to the steel pipe at the entrance of the culvert (see Figure 5). The owners state that the condition of the culvert at that time was the same as when they bought the property.

Figure 5: Photograph of the number 53 culvert entrance (taken 21 November 2020).

4.2.3. As of 8 November 2020, the owners have had no flooding in or around the studio since it was built, and storm water has travelled through the channel at the back of the building during a storm as intended by the engineer.

The authority

4.3. The authority considers:

4.3.1. The building work complies with clause E1.3.1 and the building consent was issued appropriately. The building consent process included significant requests for information regarding clause E1 Surface water.

4.3.2. The code compliance certificate was issued because the authority was satisfied on reasonable grounds that the building work complies with the building consent.

4.3.3. The measures put in place to deal with the stormwater that flows across the neighbouring property are better than what existed prior to the building work, and "less water will be flowing to 53 Pomona Road than previously".

4.3.4. The measures put in place to deal with the flow, including the detention basin and use of large rocks and planting, are suitable. As outlined by the engineer, some of these measures have been increased to allay any fears.

4.3.5. The runoff co-efficient of 0.5 submitted by the engineer as part of the building consent process was correct. The detention basin is capable of holding the estimated volume of water delivered via the 450mm drainage culvert and dispensing it at a rate that meets the performance requirement of clause E1.3.1.

4.3.6. The surface-water run-off and impervious surface estimates enabled a Building Code compliant design, and the design has been constructed to plan. The authority is of the view that the works will, and do, manage surface water in a way that avoids the likelihood of damage to the applicant's property.

The engineer

Water flow calculations

4.4. The engineer submits that the as-built drainage arrangements meet the performance requirements of clause E1.3.1. They submit that the drainage designs were based on correct surface water flow calculations, noting that:

4.4.1. The inflow from the existing culvert sources above the neighbouring property accounted for approximately 80% of the total outflow leaving the property, with the remainder generated from rainfall on the property itself.

4.4.2. The additional peak runoff created by the new gravel surfacing on the driveway is very small as the runoff coefficient only changes from 0.4 to 0.5.[12] The coefficient 0.4 was used for the previous heavy clay-based soils with grass cover, and 0.5 was used for the new metalled driveway, "specifically based on the owners' desire not to have a sealed driveway".

4.4.3. The additional run off from the driveway surfacing amounts to 0.5 litres per second (l/s).[13]

4.5. Regarding the detention basin, the engineer noted:

4.5.1. In order to mitigate sediment runoff during construction, a small "pond" was dug below the culvert outlet as a temporary measure to catch and retain silt. Following construction of the driveway and studio, the upper part of the sediment pond was formed into the detention basin.

4.5.2. The detention basin was designed to mitigate the increased runoff due to the construction of the driveway surfacing. It works by detaining a portion of the runoff from the 450mm culvert pipe, which then drains off slowly through a small pipe into the applicant's culvert.

[12] As prescribed in Verification Method E1/VM1 (1 January 2017) – Table 1: Run-off Coefficients.
[13] Calculated using the Rational Method for the Q10 ten minute event in the RCP6.0 scenario.

4.5.3. The engineer considers that measurements of the detention basin were built to the correct size and allow for an adequate volume of water to be retained and then drained from the property. The calculations indicated that a volume of 900 litres would need to be detained in the design storm to mitigate the effects of the increased runoff from the metalled driveway. However, it was found that around 2700 litres of detention could easily be provided, and so the detention basin was built to that size. Subsequent checks of the of the driveway and parking bays revealed that the as-built dimensions were larger than designed and required a detention volume of 1200 litres, which is still amply catered for by the basin as constructed.

4.6. The engineer notes that the 450mm culvert pipe delivers water more quickly down the slope than previously. However, due to the construction of the rock-lined swale drains that redirect flows around the studio, the flow path is now longer than it was. The engineer's calculations indicate that:

> the overall effect is that water travels across the site only 5% quicker overall than previously, which is deemed to be negligible in the overall catchment calculations. The additional velocity of the water discharging from the culvert is dissipated by the addition of large baffle boulders in the formed rocky swale that leads down from the culvert exit to the detention pond.

Pre-existing damage to applicant's culvert

4.7. The engineer also described the water outflow arrangements on to the applicant's property. The applicant's driveway is constructed on a shallow embankment fill, approximately 700mm high on its upslope side. The embankment crosses the drainage path, making a culvert necessary. The culvert comprises of 300mm diameter concrete pipes, with a short, galvanised steel sheet rolled into a tube at the culvert entry to provide an extension.

4.8. The engineer submits that there was pre-existing damage to applicant's culvert and erosion of the embankment next to the culvert entrance (see Figures 5 and 6). Prior to any work taking place at the owner's property, inspection of the culvert pipe indicated that:

> the steel sheet had rusted away, the main culvert had partially collapsed and water was entering through a broken joint about halfway along the barrel. Stormwater has eroded the embankment next to the steel sheet extension and a hole has developed here, allowing water to flow down the outside of the culvert before entering the barrel at the broken joint and exiting the culvert at the downslope end.

Figure 6: Photograph of pre-existing boundary-line drainage arrangements, with arrow pointing at eroded hole (taken 24 October 2019).

4.9. The engineer submits that "the culvert and piping situated on the applicant's property has been damaged for some time and that this damage has occurred gradually and imperceptibly over a period of years due to settlement of the fill forming [their] driveway at this point". The engineer states that "none of this damage has occurred as either a direct or indirect result of the works undertaken on the neighbouring property".

5. Experts' report

5.1 The Ministry engaged a firm of Chartered Professional Civil, Geotechnical and Stormwater Engineers ("the experts") to provide advice on the building work undertaken at 57 Pomona Road. The experts were asked to assess compliance with clause E1.3.1, in terms of the likelihood of damage or nuisance to 53 Pomona Road arising from any concentration of stormwater runoff by buildings, building work or site work at 57 Pomona Road.

5.2 A site visit was conducted on 13 July 2021.

Drainage and erosion protection

5.3 The experts assessed the 450mm culvert beneath the owner's new driveway, noting it has been installed in the correct position as per the consent. Although there is no practical secondary flow-path other than over the driveway, substantial ponding upslope would be required before water would overspill the driveway, and it is understood that this has not occurred. The wall and fill are designed to accommodate temporary ponding without significant damage.

5.4 Rock protection has been placed at the inlet of the culvert and there are no signs of erosion. Appropriately sized anti-scour rock protection has also been placed below the outlet (see Figure 3).

5.5 The section of waterway between the culvert outlet and the boundary has also been lined with rock to provide erosion protection. The bed protection layer is understood to have tolerated strong rainfall events, despite the rock being small and rounded. The upper section of the waterway also includes larger boulders to dissipate the force of the flow from the culvert outlet (see Figures 3 and 4).

5.6 Following construction, the sediment pond has been altered to function as a small detention basin (see Figures 4 and 7). It is approximately 3.5m in diameter with shallow sloping sides. The base of the detention basin is filled with rock, allowing a degree of water storage. The basin does not provide the full 500mm depth of storage as per design, as the culvert invert through the number 53 driveway has been lowered (by the applicant).

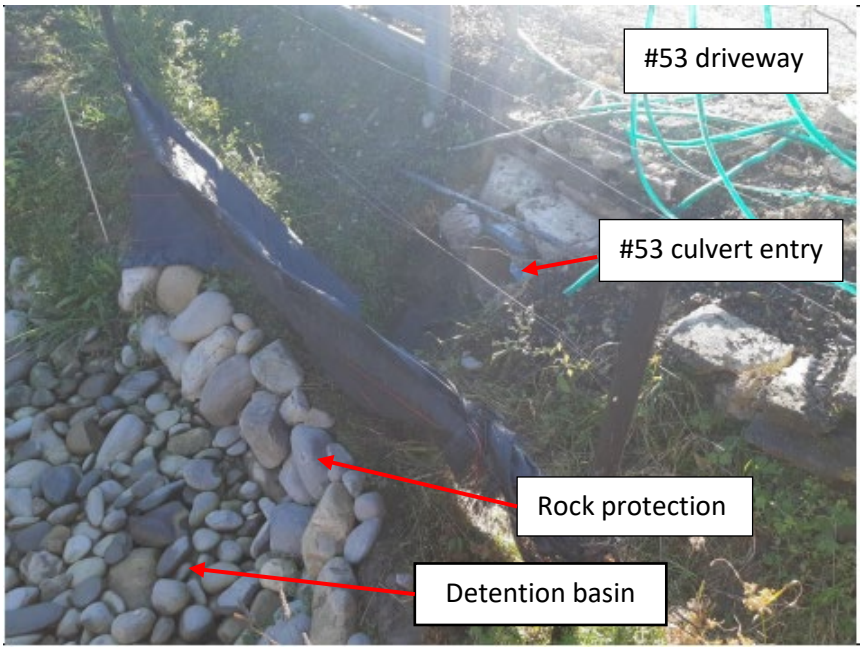

Figure 7: Rock protection at downstream rise of detention basin (taken 13 July 2021).

5.7 The detention basin's function is "energy dissipation by abrupt rise". Medium sized rock protection has been placed against the downstream rise of the basin (see Figure 7). The report notes that this is compliant with E1; however, the size and placement of the rock will need to be monitored as small rocks may become displaced over time by the force of the water.

5.8 Evidence of minor scour to the applicant's culvert entry was noted, which is likely a result of an inadequate headwall arrangement providing a transition of flow into the culvert.

Water volume calculations

5.9 Stormwater from the studio roof is discharged to a rainwater tank. Stormwater from the main house is to be discharged to the south of the property, away from the area under consideration.

5.10 The stormwater contribution to the culvert under consideration is collected and discharged onto the property via overland flow from the road above and from two existing culvert sources. Table 1 shows the estimated size of the various catchment areas.

Table 1: Estimated size of catchment areas.

Upstream of Pomona Road	3400 m²
On Pomona Road	540 m²
Between road and boundary	770 m²
Upper Section of 57 Pomona Road (excluding 54m² roof area to rain tank)	380 m²
Driveway of 57 Pomona Road	200 m²
Beneath retaining wall	450 m²
Total contributing catchment	**5740 m²**

5.11 The experts undertook a Rational Method water volume calculation[14] to derive the expected levels of flow:

5.11.1 The contribution in flow from upstream of Pomona Road and the road itself amounts to 36 litres per second ("l/s"). The catchment upstream of the retaining wall contributes a further 13 l/s. This amounts to a total expected flow from the culvert of 49 l/s. The experts note that the capacity of the 450mm culvert pipe is sufficient.

5.11.2 The runoff from the area beneath the retaining wall is expected to be in the order of 4 l/s.

5.11.3 The impact of the hardened surface of the owner's driveway was found to be an increase of 0.48 l/s.

5.11.4 The overall expected runoff reaching the boundary is in the order of 54 l/s.

5.12 The outflow drains to a 300mm galvanised flue pipe which runs beneath the applicant's driveway. This pipe (or at least the entry section) was recently replaced and relayed at a flatter grade.

[14] As prescribed in Verification Method E1/VM1 (1 January 2017) – paragraph 2.0.1.

Is surface water causing a nuisance to other property?

5.13 Stormwater nuisance may arise where overland runoff is collected or concentrated prior to crossing a property boundary. Clause E1.3.1 applies to concentrated flow occurring during rainfall events with a 10% annual probability. Any rainfall events with a lower annual probability are outside the scope of clause E1.3.1.

5.14 The experts concluded that the owners have taken reasonable steps to prevent nuisance from surface water crossing to the applicant's downstream culvert drain. They noted that:

5.14.1 The driveway metal surfacing work done at 57 Pomona Road has increased the contributory flow to the 53 Pomona Road culvert by only 0.48 l/s, in keeping with the design calculations.

5.14.2 The construction of the driveway and the associated culvert result in a reduction of overland flow that would have previously flowed down the gully, due to detention occurring in the channel at the head of the culvert.

5.14.3 The construction of a shallow swale between Pomona Road and the parking area directs flow to the channel at the rear of the studio. Detention in the channel reduces the flow that would have made its way to the common boundary.

5.14.4 The velocity of the flow in the waterway is reduced by the rocks placed at the culvert outlet for energy dissipation. The detention basin at the downstream end of the waterway further reduces the velocity.

5.15 Given the surface water mitigation measures outlined above, the experts found that the work at 57 Pomona Road is likely to have resulted in a net decrease in contributory stormwater flow to the culvert at 53 Pomona Road.

The expert's conclusions

5.16 The experts found that the culvert beneath the owner's driveway has sufficient capacity to discharge flows from the 57 Pomona Road catchment in a 1 in 10-year rainfall event. They concluded that the stormwater mitigation works undertaken at 57 Pomona Road are compliant with clause E1.3.1.

5.17 To ensure continuing compliance, ongoing maintenance of the energy dissipation feature at the boundary of the properties will be required. The medium sized rock protection could become dislodged and reduce the feature's effectiveness over time.

6. Discussion

6.1. The matter to be determined is whether the as-built work complies with the requirement in clause E1.3.1 to avoid the likelihood of surface water causing damage or nuisance to other property.

6.2. This involves considering:

6.2.1. whether surface water resulting from a 10% AEP[15] event has been (or will be) collected or concentrated by the owners' building work, and if so

6.2.2. whether this surface water is disposed of in a way that avoids the likelihood of damage or nuisance to the applicant's property.

Compliance of the proposed work with E1.3.1

6.3. The relevant performance requirement is clause E1.3.1:

> 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.

6.4. "Surface water" is defined in the Building Code[16] as:

> all naturally occurring water, other than sub-surface water, which results from rainfall on the site or water flowing onto the site, including that flowing from a drain, stream, river, lake or sea

6.5. The objective of clause E1 includes to "safeguard… other property from damage, caused by surface water". Its functional requirement is that "Buildings and sitework shall be constructed in a way that protects people and other property from the adverse effects of surface water."

6.6. "Other property" is defined in section 7 of the Act as:

> **other property**—
> (a) means any land or buildings, or part of any land or buildings, that are—
> (i) not held under the same allotment; or
> (ii) not held under the same ownership; and
> (b) includes a road

[15] AEP refers to 'annual exceedance probability', being the probability of an event occurring in any given year. For example, a 10% AEP means there is a 10% chance in any given year of the event occurring. This is the terminology used in Clause E1.3.1.

[16] In clause A2 – Interpretation.

6.7. Previous determinations have considered the meaning of "likelihood" as it relates to clause E1.3.1 by utilising the reasoning given in *Auckland City Council v Selwyn Mews Ltd*[17] ("*Selwyn Mews*"), in which McElrea J. stated:

> [47]…In cl B1.3.3 "a low probability of becoming unstable or collapsing" means that the risk of such events is no more than an appreciable risk (as distinct from a slight risk) or is at most a low risk (as distinct from a very low risk).

6.8. As discussed in previous determinations,[18] I consider that "other property" is not limited to the protection of buildings and that the land itself must also be protected from the likelihood of damage. With respect to the "likelihood of damage" I refer to the reasoning in *Selwyn Mews*, where the Judge stated:

> [47]…In cl B1.3.6 "the likelihood of damage to other property" refers to a real and substantial risk of such damage.

6.9. The term "nuisance" is not defined in the Building Act or Code. A previous determination[19] considered the term "nuisance" and described it as:

> [6.1.5] The term "nuisance" is not defined in the Act or the Building Code, and it appears only in Clauses E1.3.1 and G4.3.4.[20] The term "nuisance" has a particular common law meaning which is 'the unreasonable interference with an individual person's use or enjoyment of land or of some right connected with that land'. The question of whether a nuisance is unreasonable is a question of fact and must be considered in relation to factors such as the nature of the harm and the locality in which it occurs, and the frequency, duration and intensity of the interference.
>
> [6.1.6] A previous determination[21] held that the word nuisance in clause E1.3.1 should not be given a narrow legal meaning and there 'must be some *significant* nuisance effect before there can be a breach of clause E1.3.1' (emphasis added). I am of the view that any nuisance has to be an *unreasonable interference;* calling a nuisance a significant nuisance is simply reflecting the fact that it is not a trivial or minor interference with a person's use and enjoyment, but must be an unreasonable or significant interference with that use or enjoyment.

6.10. In respect of the disposal of surface water, I hold the same view as discussed in previous determinations[22] that:

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[17] District Court Auckland CRN2004067301-19, 18 June 2003, [2003] DCR 671.

[18] For example, Determination 2015/003: Compliance of a retaining wall between two properties at 34A and 36B Ballin Street, Ellerslie, Auckland. Issued 10 February 2015.

[19] Determination 2015/052: Regarding the compliance of proposed building work at 70B Grand Vue Road, Kawaha Point, Rotorua, in respect of adjacent other property. Issued 12 August 2015.

[20] Clause G4.3.4 – Contaminated air shall be disposed of in a way which avoids creating a nuisance or hazard to people and other property. Clause G4.3.4 is outside the matter for determination in this case.

[21] Determination 2010/059: Disposal of surface water collected behind a retaining wall at 226A Beach Road, Mairangi Bay, North Shore City. See paragraph 6.2.4. Issued 12 July 2010.

[22] For example, Determination 2017/042: Regarding compliance of building work with Clause E1 of the Building Code at 1-5 Saint Bathans Lane, Papanui, Christchurch. Issued 20 June 2017.

> …not all surface water needs to be so disposed of; only surface water resulting from an event with 'a 10% probability of occurring annually' or put another way, a storm or rainfall event of such severity that it only occurs once every 10 years. A 2% AEP storm event is expected to occur only once every 50 years, and falls outside the level of performance required by Clause E1.3.1.

6.11. Clause E1.3.3 is also relevant to the construction of the system being used to dispose of the surface water:

> E1.3.3 Drainage systems for the disposal of surface water shall be constructed to: convey surface water to an appropriate outfall….

6.12. The outfall in this case is the combination of the land, the detention basin and then the culvert at the boundary with 53 Pomona Road. For this to be considered an appropriate outfall for the purposes of this determination it should be able to contain the surface water flow discharging to it.

6.13. I accept that there has probably been ponding and potentially erosion along the boundary between 53 and 57 Pomona Road in the past and the applicant has concerns that this will continue or be made worse.

6.14. However, in this determination it is only the changes to the collection and concentrations of surface water flows caused by the building work described in paragraphs 2.3 to 2.6 that need to be considered to determine compliance with Clause E1.3.1.

6.15. In terms of the surface water flow rates, I agree with the experts' conclusions on the impact of the building work, which I summarise as follows:

6.15.1 The construction of a shallow swale between Pomona Road and the parking area on 57 Pomona Road partially directs flow to the channel at the rear of the studio. Detention in the channel reduces the flow that would have previously made its way to the common boundary.

6.15.2 The construction of the driveway and the associated culvert result in the collection and concentration of the existing overland surface flow but reduces the surface water that was previously directed to the boundary with 53 Pomona Road.

6.16. From this I conclude the total volume of water reaching the applicant's property is reduced from what existed prior to the building work being completed.

6.17. However I must consider whether the concentration by the building work of the reduced surface water flows still pose a risk of nuisance or damage, as a smaller volume of water concentrated to a specific area or at a higher flow speed could result in a nuisance or hazard that would not come from the previous more generalised surface water flow.

6.18. The owner chose to collect this surface water via the surface water system described at 2.6 and then continue to discharge it through the existing culvert outflow at the applicant's boundary.

6.19. The critical assessment here then is whether any more direct concentration of the surface water will cause a damage or nuisance to the neighbouring property.

6.20. Ultimately, I agree with the expert that the concentrated flow of water directed to the culvert at the boundary has been reduced in velocity by means of the detention basin and the energy dissipation process provided by the rock protection at the owner's culvert outlet, the waterway and the detention basin.

6.21. The existing damage to the land around the boundary culvert has not been caused or exacerbated by the building work and I do not consider building work at 57 Pomona Road has concentrated or directed the surface water flows resulting from a 10%AEP event in a way that will cause damage or nuisance to 53 Pomona Road.

6.22. I note the comments made by the engineer and expert that the rock protection should be regularly maintained to ensure the rocks continue to provide protection to dissipate the flow of water. I consider the work to check and replace any rocks is normal maintenance expected in accordance with Clause B2 Durability.

7. Decision

7.1. In accordance with section 188 of the Building Act 2004, I determine that the building work at 57 Pomona Road complies with clause E1.3.1 as it relates to the protection to other property at 53 Pomona Road.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 7 June 2024.

Peta Hird

Principal Advisory