



Determination 2019/044

Regarding the code compliance of a domestic garage and driveway and the issue of a building consent and code compliance certificate for this work at 24 McLendon Green, Christchurch



Summary

This determination considers the compliance of a domestic garage and driveway with Building Code Clause D1 Access routes, including whether their dimensions are appropriate for the intended use. It also considers whether the building consent authority was correct to grant the building consent and code compliance certificate, and whether a proposal to widen the garage doorway (from 2.31 m to 2.8 m) would result in compliance.

1. The matters 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 this determination are:
 - G Mannall, part owner of the property and who applied for the determination (“the applicant”)
 - Christchurch City Council, carrying out its duties as a territorial authority or building consent authority (“the authority”)

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.

- C Lienert, the design Licensed Building Practitioner (“the LBP”) employed by Mike Greer Homes Canterbury for the relevant building work and who is represented by that firm.
- 1.3 I consider Mike Greer Homes Canterbury (“the builder”) to be a person with an interest in this determination.
- 1.4 The determination arises from the applicant’s concerns regarding vehicle access and parking for a property in a new Christchurch subdivision. In the applicant’s view this is not fit for purpose, as the applicant considers it is very difficult to park in the house’s single garage and cars must then be reversed down a long right of way as there is limited room to manoeuvre onsite.
- 1.5 The applicant asked for a determination on whether the property’s parking and access complies with the Building Code² and whether the authority was correct to grant a building consent and code compliance certificate for this work. The authority asked that the determination also assess the compliance of a solution proposed by the builder which involved widening the garage doorway to 2.8 m.
- 1.6 Accordingly, I consider the matters to be determined³ are:
- Matter One – whether the property as-built with the current garage doorway complies with Building Code Clause D1 Access routes⁴; in particular, Clause D1.3.5 regarding vehicle spaces and circulation routes
 - Matter Two – whether the authority was correct to grant the building consent and code compliance certificate for the building work described in Matter One
 - Matter Three – whether the property as-built but with a wider, 2.8 m garage doorway would comply with Clause D.1.3.5.
- 1.7 In making my decision I have considered the submissions of the parties, the report of the independent experts engaged by the Ministry (“the experts”) who include a Chartered Professional Engineer (CPEng) specialising in transportation, and the other evidence in this matter.
- 1.8 Appendix A contains relevant extracts from the legislation and means of compliance. Appendix B contains summaries of the parties’ responses to the experts’ report and to drafts of this determination.
- 1.9 Matters outside the determination**
- 1.9.1 In reaching a determination on the matters described in paragraph 1.6 I have not considered other requirements of the Act and the Building Code. I note that in response to the second draft of this determination the builder provided another proposal that included widening the garage doorway further, to 3.1 m. While I have referred to this additional proposal in the determination, whether it would result in compliance with the Building Code is not one of the matters to be determined.
- 1.9.2 I also note that other issues raised by the applicant are outside the scope of the determination⁵, including those relating to the Christchurch District Plan and Resource Management Act 1991. I acknowledge the applicant’s concerns about

² Schedule 1 to the Building Regulations 1992

³ Under sections 177(1)(a) and 177(1)(b) of the Act

⁴ References to sections in this determination are to sections of the Building Act, and references to clauses are to clauses of the Building Code, unless otherwise stated.

⁵ A party may apply for determination regarding the matters described in section 177 of the Act.

having to reverse down a right of way to the street. However, the determination cannot consider the area beyond the property boundary.

2. The building work

- 2.1 The building that is the subject of this determination is a two-bedroom house at 24 McLendon Green, in the Christchurch suburb of Belfast. The house was built in mid-2017 on a flat section and is located in Stage 1 of the builder's Spring Grove subdivision.
- 2.2 The house has an attached single garage which provides internal access and which also contains a laundry bay. The experts measured this garage during their site visit on 30 July 2018, recording its internal dimensions as 3.2 m wide (excluding the laundry bay) and 5.47 m long.
- 2.3 The external garage doorway has a sectional, slide-over door. The experts measured the clear opening of this doorway between reveals as 2.31 m.
- 2.4 Vehicle access from the garage to the street is via a driveway that runs along the boundary fence for about 40-45 m from the garage, past two houses on a right of way, and out to the street.
- 2.5 The following figures are taken from the experts' report. They show a car entering the garage, and a tracking curve for a vehicle entering the garage (refer to paragraph 5 of this determination for more explanation of these curves).



Figure 1: Forward manoeuvre into the garage (Figure 3 from the experts' report)

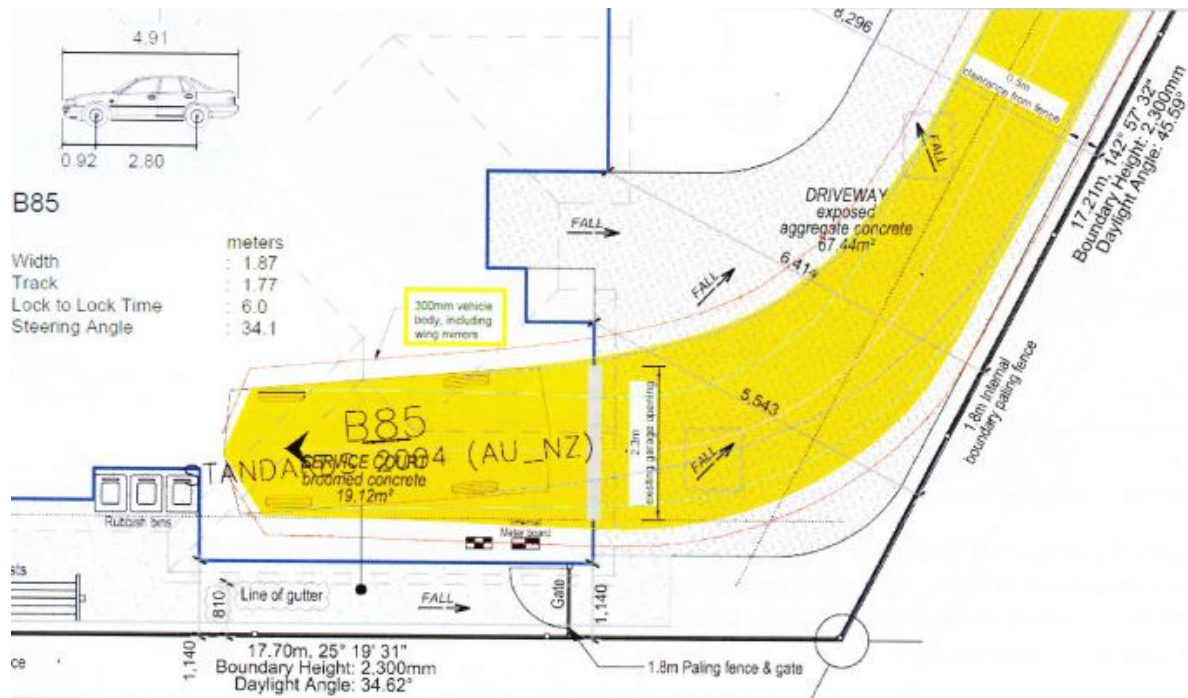


Figure 2: Tracking curve showing vehicle entering garage with opening width 2.3 m (Figure 7 from the experts' report)

3. Background

- 3.1 In late 2016 two family members of the applicant signed a contract for a “house and land” package in a subdivision managed by the builder. The applicant subsequently became a part owner of the property along with them.
- 3.2 On 27 October 2016 the builder, as the owners’ agent, applied to the authority for building consent. The consent application identified Acceptable Solution D1/AS1⁶ as the means of compliance with Clause D1. The consented plans proposed a garage with a clear opening width of 2.4 m⁷. I note here that Acceptable Solution D1/AS1 in turn references the Australia/New Zealand Standard AS/NZS 2890/1: 2004⁸ (“the Standard”), which contains requirements for garage dimensions and for manoeuvrability in and out of the garage.
- 3.3 On 1 December 2016 the authority issued building consent BCN/2016/9166 to construct the dwelling, its attached garage and the driveway. The garage door was constructed with a clear opening between reveals of 2.31 m. The authority issued the code compliance certificate for the completed building work on 13 June 2017.
- 3.4 As the house and driveway took shape the then owners referred to in paragraph 3.1 became concerned about the ability to manoeuvre and park a vehicle in the garage. On questioning the builder onsite (around May/June 2017) the then owners say they were advised for the first time that the driveway was designed as “reverse-only”; i.e. that a car driven onto the property would have to be backed out to the street.

⁶ Acceptable Solutions and Verification Methods provide means of compliance with the Building Code. If followed, they must be accepted by a building consent authority as complying with the relevant Building Code provisions. Refer www.building.govt.nz for more details.

⁷ The consented plans mark “2400 mm” for the garage door (sheet A1.03a) and also specify a 2.4 m ribline sectional garage door (sheet A1.04).

⁸ Joint Australia and New Zealand Standard AS/NZS 2890.1:2004 Parking facilities – Off-street car parking- referred to elsewhere in this determination as ‘AS/NZS 2890.1’ or ‘the Standard’.

- 3.5 In September 2017 the applicant visited the property for the first time. On 16 October 2017 the applicant asked the authority for a copy of the property file, and on 25 October 2017 for a copy of the design page and methodology which the applicant said should have been submitted with the building consent documentation. The applicant said “manoeuvrability” had been ticked in the consent application but the applicant could find no supporting information for this. The applicant said the average car length was 4.9 m and the distance from the garage opening to the boundary fence was 4.5 m at its shortest point: by the applicant’s calculations, this distance should have been at least 6.3 m.
- 3.6 The authority’s initial responses to the applicant (on 30 October and 7 November 2017) were that the garage and driveway complied with the Christchurch District Plan and manoeuvrability details were not needed. It said a house of this size needed one parking space, which could be on the driveway, and onsite turning was not required.
- 3.7 The applicant continued to correspond with the authority over the next few months, asking whether the vehicle access and parking complied with other building legislation and seeking further details.
- 3.8 On 24 January 2018 the authority told the applicant that it had been in discussion with the builder to find a “compliant resolution” for the occupant’s house. It said widening the garage doorway to 2.8 m was a solution that the builder and authority believed would comply with the Standard.
- 3.9 The authority said as this Standard was referenced as an Acceptable Solution:
- As such, this solution is deemed to comply with the Building Code and a higher level of compliance cannot be required under the Building Act 2004.
- 3.10 On 26 January 2018 the authority gave the applicant a copy of the builder’s swept path diagram⁹ based on a 2.8 m doorway opening (“the 2.8 m proposal”) and which it said was for an 85th percentile vehicle, i.e. the design vehicle specified in the Standard¹⁰, at the occupant’s property. The authority said this showed the 85th percentile vehicle could enter the garage directly if it was fitted with a 2.8 m wide vehicle door, as shown.
- We have also confirmed that widening of the garage door is sound from a bracing perspective, as we consider that transferring the load to other parts of the house will achieve compliance.
- 3.11 The authority also said once the garage door was widened the property would comply with the Building Code and Christchurch District Plan. It said neither the Building Code nor the District Plan required that a vehicle must be able to drive in and out in a forward motion for this property.
- 3.12 The authority also said altering the garage door did not require a building consent as this was exempt work under Schedule 1(8) of the Act¹¹. However, it suggested recording this alteration as a formal exemption under Schedule 1(2)¹² to make sure this was sufficiently documented.

⁹“Swept path” refers to the movement of, and path taken by, the different parts of a vehicle during a turn. Swept path templates, also referred to as vehicle tracking curves, are given in AS/NZS 28901.1.

¹⁰ AS/NZS 28901.1 specifies an 85th percentile vehicle which is the design vehicle whose physical dimensions represent the 85th percentile of all cars and light vans on the road. These dimensions include a length of 4.91 m and width of 1.87 m. The design vehicle’s wheelbase, effective front and rear overhang, and a minimum turning circle diameter are also specified.

¹¹ Schedule 1 Building work for which building consent not required, exemption 8 – Windows and exterior doorways in existing dwellings and outbuildings

¹² Schedule 1 exemption 2 – Territorial and regional authority discretionary exemptions

3.13 On 31 January 2018, in response to the applicant's queries, the authority acknowledged that it had not asked the builder to present an 85th percentile car turning design for the initial building consent application and it had not stopped processing the application until this was received.

This is an internal issue for us to work on and we consider resolving the problem to be our priority in communicating with you. We also consider that the solution provided by [the builder] to widen the door will resolve the issue from a compliance and regulation perspective.

3.14 On 8 February 2018 the builder emailed the applicant to suggest widening the garage doorway to 2.8 m at the builder's cost, with the authority's agreement, and in accordance with the plans supplied. The builder said this complied "with the 85% turning circle rule" and would allow easier access to the property.

3.15 The applicant did not accept this proposal and on 14 May 2018 applied to the Ministry for a determination.

4. Initial submissions

4.1 The applicant

4.1.1 With the application for determination the applicant provided a submission, summary of events, and copies of:

- the building consent, extracts from the consented plans and specifications, extracts from the Christchurch District Plan, and the "swept path" diagram from the builder referred to in paragraph 3.10
- supporting statements from the other owners
- correspondence with the authority (16 October 2017 - 9 February 2018) and with the builder (8-16 February 2018).

4.1.2 In the applicant's view, the garage for the occupant's house did not have adequate access and did not meet the requirements of the Building Code.

4.1.3 The applicant said the occupant's car was much smaller than the 85th percentile vehicle specified in the Standard. However, this car was still unable to get into and out of the garage easily: it took a five point turn to get into the garage, and then there was no room to turn on the driveway and drive out front first.

4.1.4 The applicant also questioned why the builder had not included the 85th percentile car tracking curve design page with the rest of the plans submitted to the authority or to the occupant, as this would have demonstrated how access in and out of the garage was achievable.

4.1.5 The applicant did not accept the builder's proposal to widen the doorway to 2.8 m, saying this was "on the grounds that it doesn't actually work geometrically and therefore fails every safety measure". The applicant also:

- said the 2.8 m proposal was unworkable and presented some serious safety hazards for the occupant and people living in two houses also on the right of way
- questioned the authority's provision of what the applicant said was a 60th percentile car tracking design rather than an 85th percentile design as required by the Christchurch District Plan and the Standard

- said the design showed a vehicle travelling up and reversing back down the driveway well off the centre line and just 300 mm off the fence line. Allowing for wing mirrors the applicant said this gave a 50-100 mm clearance, which the applicant did not believe was a safe margin
- said the design also showed a vehicle entering the garage on an angle which, even if possible, was an unsafe practice that would require the driver to get the angle right every time to avoid panel damage. The applicant said the 85th percentile design had the vehicle entering the garage square-on “which is why it is the rule”.

4.1.6 The applicant also described the difficulties in reversing a vehicle out of the garage under this proposal.

We have done a live test using the exact measurements of their “acceptable solution” design and the correct size vehicle for the test and it is not even close to being possible.

4.1.7 In statements accompanying the applicant’s submission, the other owners said it was not until the house was nearing completion that the builder advised the driveway was “reverse only”. They also described practical problems with the current vehicle access.

4.2 The authority

4.2.1 On 21 May 2018 the authority sent copies of the:

- building consent for the property and associated documents including the application form and approved plans and specifications
- final inspection report dated 8 June 2017, which stated “driveway has been completed as per consented plans”
- code compliance certificate for the property, the consent application form and supporting documents including relevant records of work
- correspondence with the applicant (27 November 2017 - 26 January 2018).

4.2.2 The authority said it considered the building had been constructed in accordance with the consented documents.

What is in question is whether the consented documents demonstrated compliance with the Building Code (in particular Clause D1.3.5), and also whether the widening of the garage door to 2.8 m as proposed by [the builder] would comply with the same Code clause.

4.2.3 The authority also identified the builder’s swept path diagram (refer paragraph 3.10) that it said was used to decide the 2.8 m proposal would comply with the Standard, and therefore with Acceptable Solution D1/AS1 paragraph 10.1.

5. The experts’ report

5.1 General

5.1.1 On 18 July 2018 I engaged the experts described in paragraph 1.7 to provide their opinion on the as-built garage and the 2.8 m proposal, taking account of expectations regarding vehicle size and turning circles, and assuming normal driving skills. I also asked the experts to use any appropriate technical information and to consider the

location of the garage in relation to the site and driveway, the ability to move a vehicle in and out of the garage, and the ability to use the driveway to leave the site.

5.1.2 The experts visited the property on 30 July 2018 and sent their final report on 23 August 2018. I note here that the experts' conclusions were expressed in relation to the Standard, which is an Acceptable Solution for Clause D1 regarding car parking areas and circulation routes (refer paragraph 7.1). I also note that from the second draft of this determination I reached a different conclusion to the experts with respect to the manoeuvring clearances specified in an Appendix to this Standard.

5.1.3 On my request, the experts provided further responses as follows: to the applicant's queries about their report, on 27 August 2018 (refer paragraph 5.5); and to a report by the applicant's consultant, on 7 November 2018 (refer Appendix B.2).

5.2 Site visit and computer modelling

5.2.1 During their site visit the experts took relevant measurements and tested vehicle access and parking using the occupant's car. They noted that this car was smaller than the 85th percentile vehicle specified in the Standard (for example, it was 3.5 m long compared with 4.91m for the 85th percentile vehicle).

5.2.2 The experts said:

- driving the occupant's car into the garage currently required a three point turn
- reversing this car out of the garage required a five point turn
- this car could not be turned on the driveway so had to be reversed off the property. This was complicated by the fact that the driveway kerb line deviated away from the fence line.

5.2.3 The experts also used a computer program to ascertain whether the 85th percentile vehicle could enter the current as-built garage "easily", and how it could enter and exit this garage if the garage doorway was widened to 2.8 m. The computer program generated vehicle tracking diagrams which the experts overlaid on the consented plans. These diagrams showed the space that would be traversed by the body of an 85th percentile vehicle (i.e. by this vehicle and its wheels during a turn) as a shaded curved area. The diagrams also identified a 300 mm "clearance envelope" (marked as a red line) on either side of the shaded curve, which the experts said allowed for the vehicle's wing mirrors to clear obstacles and room for "imperfect driving".

5.2.4 As a comparison, the experts also decided to produce a vehicle tracking diagram for the 2.8 m wide garage doorway assuming a right angle approach (which this driveway is not), given that the Standard specifies minimum apron widths for such an approach in paragraph 5.4 and Figure 5.4¹³. The resulting diagram assumed an apron width of 6.07 m (Figure 5.4 provides minimum apron widths for right angle approaches, reducing these by 700 mm for every 300 mm increase in door width. Therefore, 6.07 m is the required apron width under this Figure for a 2.8 m wide garage door).

5.3 The experts' conclusions

5.3.1 Regarding the property as-built with the current garage doorway, in the experts' view this was not in accordance with the Standard:

¹³ Refer Appendix A3: note that Figure 5.4 identifies where the apron width is to be measured.

- The current garage doorway was narrower than the 2.4 m minimum specified in the Standard – the experts said a width of 2.4 m was shown on the consented plans, but they measured the doorway onsite as 2.31 m wide between reveals.
- The 85th percentile vehicle could not enter the garage in one manoeuvre as specified by the Standard, as part of the space traversed by the vehicle body was clearly shown on the vehicle tracking diagram as outside the doorway opening.

5.3.2 Regarding the 2.8 m proposal, in the experts' view and from their vehicle tracking diagrams they concluded this would be in accordance with the Standard:

- The body of an 85th percentile vehicle could enter the garage in one manoeuvre (which the Standard specifies), although the experts said the movement was "tight". The vehicle's wing mirrors clipped the sides of the garage door and the vehicle was parked at an angle, so a three point turn would be needed inside the garage to straighten it.
- Reversing an 85th percentile vehicle could be also done in one manoeuvre (which the Standard also specifies), although the experts said this was also "tight". While the body of the vehicle would clear the garage door they said "there is unlikely to be sufficient space for the wing mirrors".
- The experts reached their conclusion that this was in accordance with the Standard, as they considered the 2.8 m proposal provided "slightly greater" clearances than the Standard allowed, both for forward and reversing manoeuvres. This view was based on their modelling of a right angle approach for a 2.8 m wide doorway and with minimum apron dimensions as specified in Figure 5.4 of the Standard. The experts concluded from this modelling that the Standard was "tight for space": under this scenario, the vehicle body could enter the garage in one movement but there was no allowance for wing mirrors; while in the reversing manoeuvre the vehicle body would touch both sides of the garage door. The experts said this indicated an 85th percentile vehicle driven by a typical driver could not exit the garage in one manoeuvre despite the garage doorway and apron dimensions meeting the Standard.

5.4 Responses to the experts' report

5.4.1 The parties provided responses to the experts' report between 23 August 2018 and 10 September 2018 (refer Appendix B.1). In summary:

The applicant

- regarding the experts' report: the applicant questioned the experts' conclusion that the 2.8 m proposal was acceptable given the turning arc designs showed it was not possible to enter and exit the garage easily and safely without damaging or removing the wing mirrors; queried other aspects of the experts' conclusions (refer paragraph 5.5); described difficulties with the garage access
- regarding the builder's response (refer later in this paragraph): the applicant did not have any evidence the builder supplied or followed a "vehicle turning arc" design page; questioned whether the 2.8 m proposal would work; noted

other safety concerns with the right of way; did not believe the “fit for purpose” benchmark had been met.

The authority

- accepted the experts’ overall conclusion that the existing vehicle access did not comply (with the Standard) but that the 2.8 m proposal did
- said the report’s comments on compliance with the District Plan and onsite manoeuvring were unnecessary for the determination, and as compliant car parking was available onsite without entering the garage it was not necessary for the access to the garage to comply.

The builder¹⁴

- sought a determination that the consented plans (showing a 2.4 m wide doorway) complied with the Building Code and the Standard – or, alternatively, that the 2.8 m proposal would comply with the Building Code (by complying with the Standard)
- accepted that the as-built (2.31 m wide) doorway did not meet the Standard but had offered to extend this to 2.8 m, which the builder considered would be an Acceptable Solution and would exceed the Standard “by a significant margin”.

5.5 The experts’ further responses

5.5.1 On 27 August 2018 the experts provided responses to the applicant’s queries as follows. The applicant had interpreted from the experts’ report that it was not possible to:

- enter and exit the as-built garage at all – the experts said no, it was just not possible to enter and exit the as-built garage in one manoeuvre (my emphasis). The experts said the width of an 85th percentile vehicle was about 2.2 m including wing mirrors so, with some precision driving, such a vehicle could be manoeuvred into the garage (i.e. driven into the garage in more than one manoeuvre). “It’s not easy to show that using the vehicle tracking software though, so we have just shown the one movement.”
- enter and exit the garage with the widened doorway without damaging the wing mirrors – the experts said “again, this is for one forward movement. An 85th percentile vehicle could enter using more than one manoeuvre”.
- reverse out of the widened doorway in one manoeuvre without damaging the wing mirrors – the experts agreed, but considered there was more space than the minimum required by the Standard.
- enter the widened doorway at a 90 degree approach angle (as detailed in the Standard) without damaging the wing mirrors – the experts agreed and said the Standard was “tight”.

5.5.2 The experts also said the Standard was “very tight” but they did not feel they could say the 2.8 m proposal was unacceptable as in their view it would provide more manoeuvring space than the Standard required. They clarified that by “tight” they meant “uncomfortable i.e. precision driving is required”.

¹⁴ The builder’s responses to the expert’s report and draft determinations were provided by a lawyer for the builder, who was the LBP’s representative.

6. Drafts of the determination and responses

6.1 The first draft and responses to this

The findings

- 6.1.1 On 24 September 2018 I sent the first draft of this determination (“the first draft”) to the parties and the builder for comment.
- 6.1.2 The first draft found that the property as-built with the current garage doorway did not comply with Clause D1.3.5 regarding vehicle spaces and circulation routes. However, it found the property would comply with this clause if the garage doorway was widened to a clear opening of 2.8 m between reveals, accepting the experts’ conclusion that the 2.8 m proposal was in accordance with the Standard and therefore met the requirements of Clause D1.3.5 (as this Standard is deemed to comply).
- 6.1.3 The first draft also found that the authority incorrectly granted building consent BCN/2016/9166 and the code compliance certificate for this consent. It reversed the decision to grant the code compliance certificate.

The responses

- 6.1.4 I received responses to the first draft between 25 September 2018 and 15 November 2018: these are outlined below and described in more detail in Appendix B.2.
- 6.1.5 In its submission the authority also asked for guidance regarding the statement in the first draft that after the code compliance certificate was reversed it could issue a notice to fix to bring the building work into compliance. As the authority correctly pointed out, a notice to fix can only bring the work into compliance with the building consent documents, and these specify a garage door width of 2.4 m rather than the proposed solution of 2.8 m. I have revised the determination accordingly.
- 6.1.6 In brief:
- the authority accepted the first draft
 - the builder was supportive of the first draft
 - the applicant did not accept the first draft, saying the decision relied heavily on the experts’ report and its conclusions. However, the applicant disagreed with a number of these, and considered neither the current garage nor the 2.8 m proposal were code compliant. The applicant considered the fairest solution was for the builder to refund the money paid for the house plus expenses, as the applicant had suggested before applying for the determination.

The applicant’s consultant’s report

- 6.1.7 In response to the first draft the applicant also provided a report commissioned from a traffic planning consultant who is a Chartered Professional Engineer (“the applicant’s consultant”). This report, dated 16 October 2018, was described as a traffic engineering review of vehicle manoeuvring to the garage. It considered the requirements of the District Plan for parking spaces and manoeuvrability as well as those of the Building Code. As I have already noted, the District Plan’s requirements are outside the scope of the determination.
- 6.1.8 I engaged the experts to consider aspects of the report by the applicant’s consultant. I received the experts’ response on 7 November 2018 and copied this to the parties.

The report, experts' response and applicant's subsequent feedback are also summarised in Appendix B.2. In brief:

- The report by the applicant's consultant considered that the 2.8 m proposal did not comply with the requirements of Clause D1, could not be considered fit for purpose, and could be labelled unsafe given the risk of a driver hitting parts of the building while manoeuvring. The applicant's consultant's own vehicle tracking analysis indicated that the 85th percentile vehicle could not enter or exit the garage, either as-built or with the wider, 2.8 m doorway, in a single manoeuvre.
- The report by the applicant's consultant also concluded that, even with several manoeuvres, the 85th percentile vehicle could not enter the as-built garage without losing its wing mirrors (as there would only be 50 mm clearance either side of the vehicle body, and wing mirrors typically extended 150- 210 mm from each side of the vehicle body). With respect to the 2.8 m wide garage doorway the applicant's consultant concluded that, even with several manoeuvres, the 85th percentile vehicle entering the garage would only have 230 mm clearance on the left hand side of the vehicle body and 290 mm on the right (i.e. as little as 20 mm and 80 mm respectively after allowing for wing mirrors).
- The experts' response questioned some of the report's findings; did not agree with its comment that "if the manoeuvring area available complied with that indicated [in the Standard], the manoeuvring to enter and exit the garage would be relatively straightforward and easy"; and did not believe the intent of Figure 5.4 of the Standard was to allow space for a vehicle to reverse out and then drive forward.
- The applicant supplied comments from the consultant on the experts' response including that it appeared the experts agreed the 2.8 m proposal did not comply with the Standard; and if vehicle movements to and from a garage designed to the appropriate Standard were not considered "easy" for the vast majority of garage users, this Standard would have been changed to provide more generous manoeuvring dimensions.

6.2 The second draft and responses

- 6.2.1 On 22 January 2019 I sent the second draft of the determination ("the second draft") to the parties and builder for comment. The second draft concluded that the property as-built with the current garage doorway did not comply with Clause D1.3.5 and that the authority had incorrectly granted the building consent and code compliance certificate. However, in a change from the first draft, it concluded that the property as-built but with the wider, 2.8 m garage doorway would not comply with Clause D1.3.5. The second draft also left the determination decision, including whether to overturn the consent, to be established after considering any other remedial options suggested.
- 6.2.2 Between 29 January 2019 and 6 June 2019 I received various submissions and reports in response to the second draft. I have taken these into account and amended the determination as I consider appropriate. These responses are outlined below and described in more detail in Appendix B.3.

6.2.3 The builder:

- did not accept the second draft’s conclusion that the 2.8 m proposal was not compliant, but provided an alternative proposal to widen the garage doorway to 3.1 m (“the 3.1 m proposal”). This proposal was accompanied by a vehicle tracking diagram¹⁵ and preliminary plans¹⁶ – the plans indicated a 500 mm extension to part of the garage wall where it is currently inset near the house’s front door, and the addition of a new portal frame
- had engaged a firm with traffic planning and engineering expertise (“the builder’s engineers”) to review the compliance of the 3.1 m proposal, and considered this would allow single manoeuvre entry for the 85th percentile vehicle with 300 mm clearance either side; considered this the most practical resolution to any determination that building consent should not have been granted, and said as this did not require significantly more work than the 2.8 m proposal there was no need to withdraw the code compliance certificate or determine this had been issued inappropriately
- re the second report by the applicant’s consultant (refer paragraph 6.2.4 below) sent:
 - a response by the builder’s engineers, which said the 3.1 m proposal’s only potential non-compliance with the Standard was in relation to the reversing movement to the road, but they concluded this was a common occurrence and not sufficiently unsafe that approval should not be granted; proposed extra planting to improve visibility of the kerb line; concluded that, with the 3.1 m proposal and extra planting, parking and access arrangements would be considered safe and easy to use
 - an assessment of the builder’s engineers’ response by another engineering firm (“the peer reviewers”), which agreed the 3.1 m proposal met the Standard and that the driveway and access arrangements could be considered “safe” and “easy”.

6.2.4 The applicant:

- wrote initially to accept the second draft, but said the applicant’s submission remained that the builder should buy back the occupant’s house
- sent a further report by the applicant’s consultant (“the second report”) dated 21 March 2019 and which considered the 3.1 m proposal. The second report said the applicant’s consultant had reviewed the 3.1 m proposal and concluded this provided enough room for the 85th percentile vehicle to drive into the garage and reverse out with appropriate clearances. However, the required manoeuvring from the garage and associated use of the driveway area failed Clause D1’s functional and performance requirements; the garage and access was not fit for purpose and could be labelled unsafe; and the authority should not have granted the building consent
- considered vehicle access to the roadway should have been a consideration in the authority’s decision regarding the building consent

¹⁵ Vehicle tracking diagram based on a 3.1 m garage doorway, 5 February 2019, by the builder’s engineers

¹⁶ One page of this was supplied, being the ground floor plan showing construction details to create a 3.1 m wide garage door opening, Sheet A2.01, 31 January 2019, by the builder.

- described difficulties and safety concerns resulting from having to reverse out of a long driveway to the road, which the applicant did not find acceptable, and
- considered the non-compliance had not been remedied.

6.2.5 The authority:

- accepted the second draft, and also said it had reviewed the 3.1 m proposal and considered this would comply with Clause D1.3.5
- regarding the second report by the applicant’s consultant: noted that the report’s criticisms of compliance related to the driveway area beyond the property boundary, and said this was not part of the building consent in question.

7. Discussion

7.1 The legislation and means of compliance

7.1.1 Clause D1 Access routes contains the Building Code’s requirements for vehicle parking and movement in relation to buildings. The most relevant objective in this case is Clause D1.1(b), which is to:

safeguard people from injury resulting from the movement of vehicles into, within and out of *buildings*...

7.1.2 The functional requirements in Clause D1 include Clause D1.2.2, which states:

Where a *building* is provided with loading or parking spaces, they shall be constructed to permit safe and easy unloading and movement of vehicles, and to avoid conflict between vehicles and pedestrians.

7.1.3 The objective of Clause D1.1(b) and the functional requirement Clause D1.2.2 are reflected in the performance Clause D1.3.5 (and also Clause D1.3.6 with respect to vehicle spaces for people with disabilities). Clause D1.3.5 requires that vehicle spaces and circulation routes must have:

- (a) dimensions appropriate to the *intended use*,
- (b) appropriate crossfall, and slope in the direction of travel,
- (c) *adequate* queuing and circulation space, and
- (d) *adequate* sight distances.

where “adequate” means¹⁷ adequate to achieve the objectives of the Building Code.

7.1.4 The term “circulation route” is not defined in the Building Code or Acceptable Solution D1/AS1. “Circulation” means “movement to and fro or around something”¹⁸. Therefore, in my opinion, circulation routes are those paths for a vehicle to get to and from vehicle spaces which could be anywhere between the property boundary and a building, and which would include a driveway.

7.1.5 I note that some of the requirements in Clause D1.3.5, which concerns vehicle spaces and circulation routes, potentially overlap with the requirements in Clauses D1.3.1(d) and D1.3.1(e) and Clause D1.3.3 which concern access routes. For example, Clause D1.3.1(d) requires that “access routes shall enable people to manoeuvre and park cars”. However, Clause D1.3.1(d) is not considered in any further detail here because, in respect of the facts of this determination, it does not impose any

¹⁷ Under Clause A2 Interpretation of the Building Code

¹⁸ Oxford Dictionary of English, 3rd ed, Oxford University Press, 2010

additional performance requirements over and above the requirements in Clause D1.3.5. An “access route” only applies to that “route that permits people and goods to move between the apron or construction edge of the building to spaces within a building” (Clause A2), and hence in this case only applies to the apron or construction edge of the building, which would be the portion of the driveway immediately outside the opening to the garage and which would exclude the driveway.

- 7.1.6 In contrast, Clause D1.3.5 establishes obligations for vehicles in respect of vehicle spaces and circulation routes that extend from the property boundary to the building and requires dimensions appropriate to the intended use, adequate queuing and circulation space, and adequate sight distances. The functional requirement associated with the performance criterion Clause D1.3.5 is to ensure “the safe and easy unloading and movement of vehicles” (Clause D1.2.2). It also establishes obligations that apply to vehicle spaces and circulation routes that are intended to safeguard people from injury due to the potential conflict between people and vehicles when they share the same space.
- 7.1.7 Regarding compliance with Clause D1, in general terms a building consent authority must accept compliance with an Acceptable Solution or Verification Method as establishing compliance with the Building Code¹⁹. A higher level of compliance cannot be required²⁰. There is one Acceptable Solution for Clause D1 published by the Ministry, namely D1/AS1, and no Verification Methods.
- 7.1.8 The only mention of vehicle parking and movement in D1/AS1 that applies to domestic homes and driveways is:
- 10.0 Movement of Vehicles**
- 10.1 Car parking areas**
- 10.1.1 AS/NZS 2890 Part 1 is an Acceptable Solution for car parking areas and circulation routes.
- 7.1.9 In other words, D1/AS1 references AS/NZS 2890.1 (the Standard) with no modifications and there are no additional requirements for compliance with Clause D1.3.5.
- 7.1.10 What this means is that compliance with Clause D1.3.5 can be demonstrated either by:
- following all the relevant criteria of AS/NZS 2890.1 as this Standard, which is an Acceptable Solution via D1/AS1, is deemed to comply with Clause D1.3.5, or
 - meeting all the relevant performance requirements of this clause directly (i.e. as an alternative solution²¹).
- 7.1.11 The Standard covers the design of off-street parking including domestic driveways and enclosed garages. Relevant provisions in this case include the following (also see Appendix A.3 of this determination):
- Vehicles must be able to get in and out of an enclosed single garage in a single manoeuvre. The only exception is for a 90 degree (right angle) turn into

¹⁹ Under section 19 of the Act

²⁰ Under section 18 of the Act

²¹ An alternative solution is all or part of a building design that demonstrates compliance with the Building Code, but differs completely or partially from the relevant Acceptable Solutions or Verification Methods.

the garage, in which case a three point turn for entry and exit is allowed (refer Table 1.1 of the Standard).

- For right angle access into an enclosed single garage there are minimum apron widths for manoeuvring purposes (I note that these are not provided or required for any other angle of access). The apron width is illustrated as the distance from the garage doorway to any wall or other barrier higher than 150 mm across from it. The apron widths for right angle access vary depending on the garage doorway: for example, a right angle turn into a 2.4 m doorway requires a 7.0 m apron, and a right angle turn into a 3.0 m doorway requires a 5.6 m wide apron (refer paragraph 5.4 and Figure 5.4 of the Standard).
- There are minimum dimensions for enclosed single garages. These dimensions include a minimum internal width of at least 3 m and a garage doorway width of at least 2.4 m (refer paragraph 5.4 of the Standard).
- Appendix B of the Standard specifies the dimensions of an 85th percentile vehicle and single turn swept path templates based on this vehicle to be used for design purposes. This Appendix also specifies a “manoeuvring clearance” of 300 mm to be added to the base swept path templates on both sides of the vehicle turning path to provide the required design (refer Appendix B3.1 and Appendix B3.2 of the Standard).

7.1.12 With regard to this Standard, I consider the “doorway width” in paragraph 5.4 to refer to the space available for vehicles to drive through; i.e. the clear opening between reveals or other parts of the garage structure.

7.1.13 I also consider that, as Appendix B is a normative Appendix to the Standard, providing a manoeuvring clearance (clearance envelope) of at least 300 mm on either side of the vehicle body is required for a design to be in accordance with this Standard.

7.2 Matter One – whether the property as-built with the current garage doorway complies with Clause D1.3.5

7.2.1 I first consider whether the property as-built with the current garage doorway complies with the Building Code. As stated earlier, this determination concerns compliance with Clause D1, and with Clause D1.3.5 in particular. The requirements of this Clause apply to the property as it has a “vehicle space” (the garage) and a “circulation route” (the driveway from the garage to the property boundary).

7.2.2 If building work is in accordance with an Acceptable Solution it is deemed to comply with the Building Code. Accordingly, if the property as-built with the current garage doorway is in accordance with the Standard, which is an Acceptable Solution for Clause D1.3.5, it is deemed to comply with this clause.

7.2.3 In the experts’ view (refer paragraph 5.3.1):

- the current garage doorway is narrower than the minimum dimensions specified in the Standard (at 2.31 m clear width versus 2.4 m)
- the 85th percentile vehicle cannot enter the garage in one manoeuvre (as specified by the Standard for anything other than a right angle approach). This is evidenced by the vehicle tracking diagrams, which show that the space

traversed by the body of the vehicle is clearly larger than the as-built doorway opening.

- 7.2.4 Therefore, the experts concluded that the property as-built with the current garage doorway does not meet the Standard, and I accept their findings.
- 7.2.5 As the property with the current garage doorway cannot be regarded as deemed to comply by following an Acceptable Solution (the Standard), I now consider compliance directly with Clause D1.3.5. The requirements of this Clause include that it must have “dimensions appropriate to the intended use” (Clause D1.3.5(a)) as well as “adequate queuing and circulation space” (Clause D1.3.5(c))²². These performance requirements are linked to the functional requirement that parking spaces for buildings are constructed “to permit safe and easy unloading and movement of vehicles” (Clause D1.2.2).
- 7.2.6 In considering whether the property as-built with the current garage doorway satisfies the requirements of Clause D1.3.5, I note that the experts concluded the 85th percentile vehicle could not enter the garage in one manoeuvre. The experts also conducted a field test with the occupant’s car, which is much smaller than this 85th percentile vehicle. They reported that it took a three point turn to drive this car into the garage and a five point turn to drive out again.
- 7.2.7 There is no requirement in the Building Code for vehicle access to and from the garage to be via a single manoeuvre. In my view, “dimensions appropriate to the intended use” which result in “safe and easy... movement of vehicles” could encompass a three point turn. This is commonly done when parking and I note that it is permitted under the Standard for a right angle approach. However, I consider that vehicle access is unlikely to be easy if any additional manoeuvring (i.e. more than a three point turn) is required.
- 7.2.8 In my view the level of difficulty (i.e. the large number of turns required) experienced when accessing the as-built garage, even with a small car, means that it does not demonstrate that it has “dimensions appropriate to the intended use” which result in “safe and easy...movement of vehicles”. Therefore, I consider that the property as-built with the current garage doorway does not comply with Clause D1.3.5.

7.3 Matter Two – whether the authority correctly granted the building consent and code compliance certificate

- 7.3.1 The building consent application for the property identified Acceptable Solution D1/AS1 as the means of compliance with Clause D1. This Acceptable Solution in turn references the Standard, which has requirements for garage dimensions and for manoeuvrability in and out of the garage.
- 7.3.2 With respect to the garage dimensions, I consider that the consented plans met the minimum design dimensions in the Standard. While the experts identified the as-built garage doorway was inadequate (i.e. too narrow), the consented plans did, however, specify a doorway width of 2.4 m (refer paragraph 3.2) which is the minimum specified in the Standard.
- 7.3.3 However, with regard to manoeuvrability, I do not consider the authority could have been satisfied the Standard’s criteria were met. The Standard specifies that vehicle entry and exit from the garage must be possible in a single manoeuvre as the

²² Clause D1.3.5(b) and Clause D1.3.5(d) are less relevant in this case.

driveway in this case is not at a right angle. I have not seen any evidence in the consent application, such as a “design page” or vehicle tracking curves, to show that the building work would meet these requirements.

7.3.4 Further, the authority has acknowledged that it did not ask the builder to present this information and did not put a stop on processing the application until it was received (refer paragraph 3.13).

7.3.5 Therefore, I consider that the authority incorrectly granted the building consent for this work.

7.3.6 Irrespective of this conclusion, I also consider that the authority incorrectly granted the code compliance certificate. In my view, the authority could not have correctly concluded that the building work was completed in accordance with the consent. That is because the as-built garage doorway was narrower (2.31 m) than shown on the consented plans (2.4 m). This is not a trivial departure as, aside from no longer meeting the Standard, it has a significant impact on the ease of vehicle movement to and from the garage.

7.4 Matter Three – whether the 2.8 m proposal complies with Clause D1.3.5

7.4.1 I now consider whether the property with the wider, 2.8 m garage doorway opening (which I refer to as the 2.8 m proposal) would comply with Clause D1, and in particular with Clause D1.3.5. I note that I have not considered the building’s compliance with other Building Code clauses, such as Clause B1 Structure.

Whether the 2.8 m proposal complies via the Standard

7.4.2 As I have done for Matter One, I will start by considering whether the 2.8 m proposal meets the requirements of the Standard. As already stated in this determination, this Standard is deemed to comply with Clause D1.3.5 by virtue of being an Acceptable Solution for this clause and the authority cannot require a higher level of compliance.

7.4.3 In considering what the Standard specifies with respect to the garage dimensions, it is clear that the garage in this case must have a minimum doorway width of 2.4 m. The 2.8 m proposal would provide this.

7.4.4 In terms of manoeuvrability, the Standard provides the following means of compliance with regard to enclosed single garages:

- for right angle access, via Figure 5.4, which prescribes minimum apron widths depending on the doorway width (and with three point turns permitted for right angle access, as stated in Table 1.1)
- for other angles of access, via the vehicle tracking curves supplied for the 85th percentile vehicle and with two key requirements: single manoeuvre entry/exit (Table 1.1); and 300 mm clearance on either side of the vehicle body (Appendix B).

7.4.5 While the driveway in this case is not designed as right angle access I have considered whether the apron space shown in Figure 5.4 of the Standard would be available. Extrapolating the measurements from the table in Figure 5.4, a 6.07 m wide apron would be required in front of a 2.8 m wide doorway.

7.4.6 The applicant’s consultant measured the apron in front of the current garage door at 5.8 m on the right side facing the garage and 4.6 m on the left side. It is clear from these measurements and the plans supplied to me that the apron width in front of the widened 2.8 m garage doorway, particularly on the left side, would not meet the

6.07 m minimum required by Figure 5.4. Therefore, the 2.8 m proposal is not in accordance with the Standard's specifications via the use of this figure.

- 7.4.7 I now consider compliance via the vehicle tracking curves. The experts concluded that the 85th percentile vehicle could be driven in and out of the 2.8 m doorway in a single manoeuvre. However, the experts also acknowledged this would be "tight" to the extent that the wing mirrors would be clipped on the way in and there was "unlikely to be sufficient space" for these mirrors on the way out. The applicant's consultant, using a different software program, concluded that it would not be possible to drive in and out in a single manoeuvre.
- 7.4.8 It is apparent that the 85th percentile vehicle could not enter and exit the widened garage doorway in a single manoeuvre without, at best, sacrificing its wing mirrors. As this is an incursion into the 300 mm manoeuvring clearances, which is required by the Standard on each side of the vehicle body, I consider that the 2.8 m proposal is not in accordance with the Standard's specifications via the vehicle tracking curves.
- 7.4.9 Accordingly, I conclude that the 2.8 m proposal does not demonstrate compliance with Clause D1.3.5 via the Standard.

Whether the 2.8 m proposal complies via an alternative solution

- 7.4.10 As I do not consider that the property as-built but with the 2.8 m garage doorway can be regarded as deemed to comply by following the Standard and as there are no other relevant Acceptable Solutions²³ or Verification Methods, I now consider compliance with Clause D1.3.5 directly; i.e. via an alternative solution.
- 7.4.11 The experts concluded that an 85th percentile vehicle as specified in the Standard could enter and exit the garage with a 2.8 m wide doorway in just one manoeuvre; although in doing so its wing mirrors were likely to be sacrificed (refer paragraph 5.3.2). The applicant's consultant, using a different computer program, concluded that the 85th percentile vehicle could not enter the garage with the 2.8 m wide doorway in one manoeuvre but could do with a three point turn. However, the vehicle would have as little as 20 mm clearance on one side and 80 mm on the other after allowing for wing mirrors (refer paragraph 6.1.8).
- 7.4.12 As already stated (paragraph 7.2.7), I consider that Clause D1's requirements for "dimensions appropriate to the intended use" could encompass a three point turn, but vehicle access is unlikely to be "easy" if additional manoeuvring than this is required. I also consider that Clause D1.3.5's requirement for "dimensions appropriate to the intended use" includes there being sufficient room to use the vehicle space in a safe and easy manner.
- 7.4.13 In my view, although vehicle access under the 2.8 m proposal may be possible via a three point turn (or less), there is still insufficient room to use the vehicle space in a safe and easy manner given the very tight clearances described by the experts and the applicant's consultant. Further, I do not consider that the Building Code requirement anticipates any vehicle damage such as the loss of wing mirrors; not to mention that these mirrors would be essential for the precision driving required to negotiate such tight clearances.
- 7.4.14 Therefore, I consider the property as-built but with the wider, 2.8 m wide garage doorway would not comply with Clause D1.3.5.

²³ Aside from Acceptable Solution D1/AS1 which, as noted earlier, references the Standard with no additions or modifications.

7.5 Conclusion

- 7.5.1 I have concluded that the property as-built with the current garage doorway does not comply with Clause D1.3.5 and that the authority incorrectly granted the building consent and code compliance certificate for this work. I have also concluded that the 2.8 m proposal (i.e. widening the garage doorway to 2.8 m) does not comply with Clause D1.3.5.
- 7.5.2 I acknowledge the applicant's desire for the building consent to be reversed. Although the granting of the building consent contributed to the non-compliance at issue, I do not consider the extent of the non-compliance sufficient to reverse the authority's decision to grant the building consent. If I did so this building consent could not be reinstated, which could have serious consequences for the parties. While I have not assessed compliance of the builder's recent proposal to widen the opening to 3.1 m, I am satisfied the current non-compliance is able to be remedied.
- 7.5.3 Reversing the code compliance certificate will allow for the authority to make a new decision, taking into account the findings of this determination. It will also allow the original consent to be amended to include any building work necessary to bring the property with the garage doorway into compliance with Clause D.1.3.5.

8. The decision

- 8.1 In accordance with section 188 of the Building Act 2004, I hereby determine that:
- the property as-built with the current garage doorway does not comply with Clause D1.3.5
 - the authority was incorrect to grant building consent BCN/2016/9166. However, for the reasons outlined in this determination it would not be appropriate to modify or reverse the building consent, therefore I confirm that decision
 - the authority was incorrect to grant the code compliance certificate for BCN/2016/9166 and I reverse this decision, requiring the authority to make another decision taking into account the findings of this determination
 - the property as-built but with the garage doorway widened to a clear opening between reveals of 2.8 m would not comply with Clause D1.3.5.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 9 September 2019.

Katie Gordon
Manager Determinations

Appendix A: Legislation and means of compliance

Relevant extracts from Building Code Clause D1, Acceptable Solution D1/AS1 and Australia/New Zealand Standard AS/NZS 2890.1: 2004 include the following:

A.1 The Building Code

Clause D1 – Access routes

Provisions

Objective

D1.1 The objective of this provision is:

...

(b) safeguard people from injury resulting from the movement of vehicles into, within and out of *buildings*,

...

Functional requirement

...

D1.2.2 Where a *building* is provided with loading or parking spaces, they shall be constructed to permit safe and easy unloading and movement of vehicles, and to avoid conflict between vehicles and pedestrians.

Performance

...

D1.3.5 Vehicle spaces and circulation routes shall have:

- (a) dimensions appropriate to the intended use,
- (b) appropriate crossfall, and slope in the direction of travel,
- (c) adequate queuing and circulation space, and
- (d) adequate sight distances.

A.2 Acceptable Solution D1/AS1

An Acceptable Solution provides one way, but not the only way, of complying with the Building Code. The relevant paragraphs of the Acceptable Solution D1/AS1 for the purposes of this determination are:

10.0 Movement of Vehicles

10.1 Car parking areas

10.1.1 AS/NZS 2890 Part 1 is an Acceptable Solution for car parking areas and circulation routes.

A.3 Australia/New Zealand Standard AS/NZS 2890.1: 2004

D1/AS1 paragraph 10.1.1 cites AS/NZS 2890.1 as an Acceptable Solution for car parking areas and circulation routes, which includes domestic garages and driveways. Relevant provisions for the purposes of this determination include the following (note that the B85 vehicle referred to is the 85th percentile vehicle).

1.1 SCOPE

This Standard sets out the minimum requirements for the design and layout of off-street parking facilities, including multi-storey car parks for motor cars, light vans and motorcycles. It includes access and egress requirements for both public and private car parks, and car parking on domestic properties.

1.4 CLASSIFICATION OF OFF-STREET CAR PARKING FACILITIES

Off-street parking facilities shall be classified according to the user classes listed in the first column of Table 1.1. Dimensional requirements for parking spaces in each user class are specified in Clause 2.4.1.

User Class 1A parking shall be restricted to residential, domestic and employee parking.

...

TABLE 1.1
CLASSIFICATION OF OFF-STREET CAR PARKING FACILITIES

User class	...	Required aisle width	Examples of uses (note 1)
1		Minimum for single manoeuvre entry and exit	Employee and commuter parking (generally, all-day parking)
1A		Three-point turn entry and exit into 90° parking spaces only, otherwise as for User Class 1	Residential, domestic and employee parking
...

NOTES:

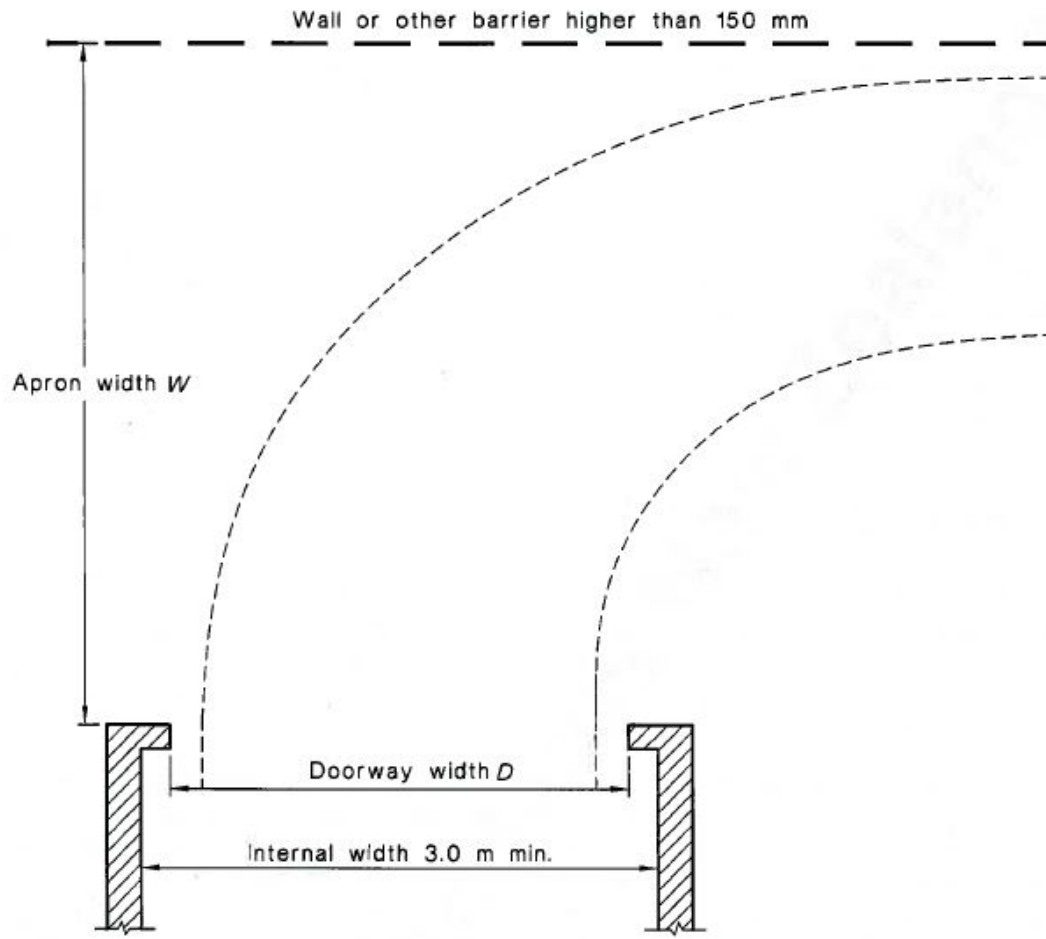
1. Except for the requirements specified in Clause 1.4 relating to User Classes 1A and 4, the examples of uses are intended to be flexible and allow for progressive improvement both in the case of manoeuvring into and out of parking spaces, and in leaving and re-entering the vehicle as one progresses up the user class scale from 1 to 3A. The modelling of vehicle manoeuvring into Class 1A spaces shows however, that many drivers may have difficulty driving into and out of such spaces, especially those with vehicles larger than the B85 vehicle.

...

5.4 DESIGN OF ENCLOSED GARAGES

...

- (a) *Single vehicle garage* The overall internal width shall be 3.0 m minimum and the internal space shall conform to the design envelope shown in Figure 5.2 except that the entry splays shown on Figure 5.3 may be omitted. A doorway of 2.4 m minimum width shall be provided. For right angle access to a garage, the required width of apron for manoeuvring purposes is shown in Figure 5.4. Single manoeuvre front-in entry may not be possible for some vehicles larger than the B85 vehicle at the apron widths shown in Figure 5.4.



metres

Doorway width (D)	Apron width (W) (See Note)
2.4	7.0
2.7	6.3
3.0	5.6

NOTE: Vehicles larger than the B85 vehicle (see Appendix B) may need to make a 3-point turn at the apron widths shown. The apron width may be reduced by 0.3 m where the edge opposite the doorway is a kerb 150 mm or less in height with a clearance of at least 0.3 m behind the kerb.

FIGURE 5.4 APRON WIDTHS FOR RIGHT ANGLE ACCESS TO SINGLE VEHICLE GARAGES

AS/NZS 2890.1 APPENDIX B
BASE DIMENSIONS AND DESIGN STANDARDS

(Normative)

B3 SWEEP PATHS

B3.1 Standard single turn swept path templates

The following specifies the Standard single turn swept path templates to be used for design purposes:

..

(b) *The B85 design templates* The B85 template comprises an inner pair of unbroken lines representing the B85 base dimension swept path, and an outer pair of broken lines which includes the manoeuvring clearance (see Paragraph B3.2(a)). These templates shall be used only in the special circumstance described in Paragraph B2.3. Examples are shown in Figure B5 for a 5.8 m radius turn and in Figure B6 for an 8 m radius turn.

...

Templates for other turn radii may be generated using a recognized program provided that—

- i) the base vehicle dimensions shown in Figures B1 and B2 for the B99 and B85 car are used;
- ii) the swept path clearances in Paragraph B3.2 are added; and
- iii) the turn radii are not less than 6.3 m for the B99 vehicle and 5.8 m for the B85 vehicle.

B3.2 Swept path clearances

Clearances to be added to the base swept path templates in Paragraph B3.1 to provide the required design standard are as follows:

- (a) *Manoeuvring clearance* To cater for slow moving vehicles travelling within parking aisles or manoeuvring into parking spaces, i.e. at 10 km/h or less, a clearance of 300 mm shall be added to *both* sides of the turning path.

Appendix B: Further submissions

B.1 Responses to the experts' report

The following is a summary of responses to the experts' report of 23 August 2018.

Authority (23 August 2018)
<p>Accepted the report's conclusion that existing vehicle access did not comply (with the Standard) but the 2.8 m proposal did.</p> <p>Also said:</p> <ul style="list-style-type: none"> its expectation was that the proposed 2.8 m wide doorway would be a clear open width between reveals – it would be useful for the determination to make this clear the experts' comments on compliance with the District Plan and onsite manoeuvring were unnecessary for purposes of the determination. The authority's planning staff stated that, as compliant car parking available onsite without entering the garage, it was not necessary for the access to the garage to comply if the garage had been at a right angle to the driveway the Standard would have allowed three point turns for entry and exit; it considered this further justification for accepting that the 2.8 m proposal was Code compliant.
Applicant (24-29 August 2018)
<p>(Also refer to paragraph 5.5 for the applicant's queries and experts' response.)</p> <p>Said it was barely possible to enter and exit the current garage with the occupant's car (which was 1.26 m shorter and 0.3 m narrower than the 85th percentile vehicle).</p> <p>Described difficulties faced by the local Member of Parliament, who had tried to enter and exit the garage with a car measuring 4.59 m by 1.85 m; i.e. still shorter and narrower than the 85th percentile vehicle.</p> <p>The experts' conclusion was predicated on an 85th percentile vehicle being able to enter the current garage with multi-point turns but there were no design drawings to prove that, and the applicant proposed a meeting onsite for a practical demonstration.</p> <p>The only way to enter the garage safely was by being square-on before entering; this was not possible because of the lack of driveway space at that point. The boundary fence was not parallel to the garage, and the narrowest point on the driveway from the garage door to the fence was only 4.5 m.</p> <p style="padding-left: 40px;">“Also, entry into the garage is only one aspect of the problem. Reversing out is another aspect and due to the turning wheels now being at the back of the vehicle the tracking curve takes a different line and requires more apron room than going forward. Hence, as the report mentioned, it was a '5 point turn' to reverse [the occupant's car] out and a '3 point turn' to enter.”</p>
<p>Questioned the experts' conclusion that the 2.8 m proposal was acceptable given the turning arc designs showed it was not possible to enter and exit the garage easily and safely without damaging or removing the wing mirrors.</p> <p>Asked whether the design drawing provided by the builder as an Acceptable Solution provided for an 85th percentile vehicle driven by a typical driver to enter and exit the widened garage safely and easily.</p>
Builder (through lawyer) (30 August 2018)
<p>Identified the Standard as the Acceptable Solution for car parking areas and circulation areas; said while this provided guidance on the capabilities of an 85th percentile vehicle in terms of garage specifications, it prescribed only a 2.4 m wide garage doorway which was consistent with the consented plans.</p>
<p>Said the builder was seeking a determination that:</p> <ul style="list-style-type: none"> the consented plans (which identified a 2.4 m wide garage doorway) complied with the Building Code and the Standard; or, alternatively:

<ul style="list-style-type: none"> if the builder widened this opening to 2.8 m, this would comply with the Building Code by complying with the Standard.
<p>The builder had not confirmed onsite but was prepared to accept the experts' measurement of 2.31 m between reveals for the purposes of the determination. The builder accepted this did not meet the Standard but had offered to extend the doorway to 2.8 m, which would be an Acceptable Solution and would ultimately exceed the Standard "by a significant margin".</p> <p>The Standard paragraph 5.4 also required minimum apron widths for right angle access but this was not applicable, as access to the owner's garage was at (about) 142 degrees.</p> <p style="padding-left: 40px;">"It is therefore submitted that the Building Code has rather limited information as to the size of the garage door opening requiring only compliance with AS/NZS 2890.1:2004 and that this incorporated Standard requires only that the garage door be 2.4 metres. There are further requirements to right angle access, however this is not applicable in the current circumstances as the driveway is not a right angle."</p>
<p>The builder considered much of the applicant's submissions and experts' report focused on physical access rather than compliance with the Building Code and the Standard ("matters which are due to driving fault rather than a lack of compliance"), and also canvassed planning issues outside the scope of the determination. Reversing out of the driveway was a planning issue, but there were multiple examples of Christchurch properties where reversing was needed to exit.</p> <p>The applicant's comment that the boundary fence did not run parallel to the garage was consistent with the builder's submission that the garage boundary (access) was not right angled but at 142 degrees.</p> <p>The applicant had relied on the fact that the local Member of Parliament had attempted to park the applicant's own car in the garage, but there was "ample width room" to enter the garage even at the dimensions quoted by the applicant and if the doorway was 2.31 m. The builder had already offered to widen the doorway to 2.8 m.</p>
<p>Re the garage parameters:</p> <ul style="list-style-type: none"> the 4.5 m distance from the edge of the garage to the boundary fence noted by the applicant (i.e. a shorter length than the 85th percentile vehicle) was irrelevant as a vehicle would be turning away from this shortest point down the 142 degree angle to leave the driveway the Standard (in Appendix B3.1) noted the turning radii were not less than 6.3 m for the 99th percentile vehicle and 5.8 m for the 85th percentile vehicle – the builder submitted that the turning radius from the garage onto the driveway was consistent with that capable of being achieved by an 85th percentile vehicle in a straight line from the most inward corner of the garage doorway to the fence the plans showed 5.5 m; the vehicle was not required to turn within the 5.5 m gap but could turn immediately to the left into the opening that widened to 6.4 m before narrowing into the main part of the driveway.
<p>Applicant (10 September 2018)</p>
<p>In response to the builder's submission, said:</p> <ul style="list-style-type: none"> it was incumbent on the designer or architect to ensure that the design created a house that was safe and fit for purpose, not to "cherry pick rules and regulations to fit your own agenda"; the bottom line was always that the end result of the project must be safe and fit for purpose the applicant was a licensed builder with 35 years' experience in residential house construction; every architect had a "vehicle turning arc" design page which covered many set angles and was the first consideration for all house design where vehicles were involved; if designers were still in any doubt regarding the feasibility of their proposed design they were required to seek further professional opinion and a Producer Statement to verify its validity the applicant did not have any evidence the builder followed those requirements; the applicant had emailed the builder on 16 February 2018 for a copy of the vehicle manoeuvring methodology used to demonstrate compliance for the building consent application but had not received this and it was not included in the builder's submission the 2.8 m proposal would only work if the driveway apron was the correct size and shape "which it is not"; the diagrams in the experts' report showed that a 2.4 m or 2.8 m doorway gave the same result: i.e. that the vehicle hit both side walls entering and exiting the garage the builder had inadvertently created other safety issues re the right of way, as two vehicles

<p>could end up reversing at each other; the applicant asked the builder for local examples where this type of driveway had been deemed acceptable</p> <ul style="list-style-type: none"> the applicant disagreed there would be ample room to enter the current garage given the experts' findings; asked for proof of this; invited the builder to a demonstration with an 85th percentile vehicle; said the experts' report showed safe vehicular access into the garage was not possible with the widened doorway and that the "fit for purpose" benchmark had not been met questioned the builder's submission re the garage parameters, saying the 85th percentile vehicle plus wing mirrors was 2.2 m wide so the current driveway opening of 2.31 m gave 50 mm clearance on each side. <ul style="list-style-type: none"> "Upon trying to reverse out onto the driveway you cannot at any stage start to turn your steering wheel until the vehicle has FULLY exited the garage. If you turned your wheels before fully exiting the garage, the front left guard would immediately swing hard to the left at a considerable angle and the left garage pillar wall would be taken out by the front left wheel. <p>Ref. figure 10, page 7 of the [experts' report] clearly shows the 'swing arc' of the vehicle when reversing, is different to the 'swing arc' when driving forward. That is why it is essential to apply vehicle turning arc design drawings to a plan before applying for a permit."</p>

B.2 Responses to the first draft

The following is a summary of responses to the first draft of the determination. It includes a report by the applicant's consultant and the experts' responses to this report.

<p>Authority (25 September 2018)</p> <p>Accepted the first draft.</p> <p>Asked for some guidance regarding the statement in the first draft that, after the code compliance certificate was reversed, it could issue a notice to fix to bring the building work into compliance.</p>
<p>Builder (25 September 2018)</p> <p>Was supportive of the draft in its current form.</p>
<p>Applicant (16 October 2018)</p> <p>Did not accept the first draft; provided a submission and a report from the applicant's consultant (refer separate entry below).</p> <p>Said the decision in the first draft relied heavily on the experts' report and its conclusions. However, the applicant disagreed with a number of these conclusions and the associated text in the first draft, and referred to the applicant's consultant's report and the Standard in support of these views.</p> <p>Regarding the existing garage (2.31 m door width):</p> <ul style="list-style-type: none"> the experts' conclusion that the 85th percentile vehicle could not currently "easily" enter the garage was incorrect – this vehicle could not enter the garage at all disagreed with the experts' view that it was possible to enter the current garage in more than one manoeuvre; said the experts implied this could be done in a three point turn but this was impossible disagreed with the experts' comment that it was not easy to show the tracking paths for a three point turn, saying the applicant's consultant could do this said the builder's claim that there was ample room to enter the current garage was incorrect.

<p>Regarding the 2.8 m proposal:</p> <ul style="list-style-type: none"> • said the garage door opening had to be relevant to the (driveway) apron size to meet the Standard • disagreed with the experts' conclusions that the 85th percentile vehicle could be driven in and out of the widened garage in a single manoeuvre and that the 2.8 m proposal provided more clearance than the Standard; said this manoeuvre could not be done without destroying the vehicle's wing mirrors, thereby breaching the 300 mm minimum clearance envelope required on both sides • regarding the statement in the determination that as the Standard is deemed to comply with the Building Code a higher level of compliance could not be required, the applicant's view was that neither the current garage nor the 2.8 m proposal were code compliant • regarding the comment that a car entering the garage could make a three point turn and this would provide greater clearance, had asked the applicant's consultant to provide vehicle tracking analysis for this and: "In short, even with the necessity to execute metronomic precision hard lock driving on every turn, the vehicle breaches the 300 mm minimum swept path clearances on both sides".
<p>Regarding the first draft's conclusion and next steps:</p> <ul style="list-style-type: none"> • In the applicant's view, deciding not to reverse the building consent would require me to find that keeping the consent was needed to bring about a workable solution. However the applicant's preference and in their view "by far the cleanest and fairest solution" was for the builder to refund the money paid for the house plus expenses, as the applicant had suggested before applying for the determination • criticised the suggestion made in the first draft to install flexible reflective bollards to help with reversing out of the driveway • said that the applicant's consultant considered what was safe and "fit for purpose" for vehicles when accessing a garage was, for the most part, a single movement to enter and exit. Vehicles would enter or exit a site in a forward direction unless they could reverse directly onto a street. Occasionally a three point turn might be required to enter or exit a parking space, but not both.
<p>Applicant - report by the applicant's consultant (16 October 2018)</p>
<p>Regarding the existing garage:</p> <ul style="list-style-type: none"> • the applicant's consultant's own vehicle tracking analysis indicated that the 85th percentile vehicle could not enter or exit the garage in a single manoeuvre; an additional reverse movement was required to reposition the vehicle so it could enter/exit the garage; and it could not enter at all when allowing for side (wing) mirrors.
<p>Regarding the 2.8 m proposal:</p> <ul style="list-style-type: none"> • the applicant's consultant's own vehicle tracking analysis indicated that the 85th percentile vehicle could not enter or exit the garage in a single manoeuvre; described manoeuvres for entering the garage using a three point turn, and said that under this arrangement there were clearances of 230 mm to the left side and 290 mm to the right side of the vehicle body on entry • as side mirrors typically extended 150-210 mm beyond the vehicle body this meant a driver could have as little as 20 mm clearance on the left side (i.e. 230 mm minus 210 mm) and 80 mm clearance on the right (i.e. 290 mm minus 210 mm).
<p>Said the experts' report discussed the apron requirements for a garage door with a width of 2.8 m based on the Standard and interpolated a manoeuvring area dimension of 6.07 m; the report then showed the 85th percentile vehicle could not enter the garage in one manoeuvre and certainly could not exit in one manoeuvre; the experts had misunderstood the apron dimension in the Standard, which was taken across the full width of the garage.</p> <p>Provided vehicle tracking analysis assuming the full 6.07 m was available for this manoeuvre; said if the available manoeuvring area complied with that indicated in the Standard "the manoeuvring to enter and exit the garage would be relatively straightforward and easy"; but it did not comply and entering and exiting the garage was likely to be difficult even after the garage door was widened.</p> <p>Considered the 2.8 m proposal did not comply with the requirements of Clause D1, could not be</p>

considered fit for purpose, and could be labelled unsafe given the risk of a driver hitting parts of the building while manoeuvring.

Experts' responses to the applicant's consultant's report (7 November 2018)

In the experts' view the applicant's consultant was correct to say the apron width shown in the Standard (Figure 5.4) was across the full width of the doorway. However, the applicant then appeared to have interpreted this apron width as allowing a vehicle to reverse out of the garage and exit the driveway in a forward manoeuvre.

"Figure 5.4 of the Standard shows dotted lines indicating a right angle turn, which appears to be a vehicle entering the garage. We cannot find anything in the Standard to indicate how a vehicle will then exit the garage."

The experts had used their software programme to try and replicate the exit manoeuvre shown in Figure 10 of the report (which was followed by the comment "If the manoeuvring area available complied with that indicated in [the Standard], the manoeuvring to enter and exit the garage would be relatively straightforward and easy"). The experts described the manoeuvring they found was required, said the reversing manoeuvre could not be done in one sweep, and said this required negotiating a number of restrictions (doorway and fences).

"We would debate whether this could be considered an "easy" manoeuvre.

The other issue with this scenario is that it relies on the vehicle being parked in the optimum location in the garage. We note that the car locations shown in Figure 10 vary: at the end of the entry manoeuvre the vehicle is parked on the left hand side of the garage; at the beginning of the exit manoeuvre the vehicle has moved right."

The experts said they had run the tracking curves for a more likely starting point for the vehicle; i.e. its final location after it was manoeuvred into the garage in a three point turn. They said this showed the 85th percentile vehicle was unable to complete the forward right turn without colliding with the house.

"Based on the tracking curves and the lack of detail in the Standard, we do not believe that the intent of Figure 5.4 of the Standard is to allow space for a vehicle to reverse out and then drive forward."

Applicant and applicant's consultant (15 November 2018)

The applicant forwarded comments made by the applicant's consultant on the experts' response. The applicant's consultant's comments included:

- it appeared the experts agreed the 2.8 m proposal did not comply with the Standard. "What they appear to be trying to say is that even if what was built complied with the Standard, there still may be a three point-type turn involved to enter or exit the garage (based on their software). Our software suggests something different." The applicant said the experts then suggested the need to do a three point-type turn may not be called an "easy" manoeuvre, but the applicant disagreed with this view and pointed to part of the applicant's consultant's report that listed steps for "movements to enter and exit a garage with complying dimensions".
- the vehicle tracking software the applicant's consultant used allowed a finer range of movement than that used by the experts
- if vehicle movements to and from a garage designed to the appropriate Standard were not considered "easy" for the vast majority of garage users (including the occasional three point-type turn), there would be many complaints to local authorities and the Standard would likely have changed to provide a more generous manoeuvring dimension.

B.3 Responses to the second draft, including the 3.1 m proposal

The following is a summary of submissions and reports sent in response to the second draft of the determination.

Applicant (29 January 2019)
<p>Accepted the second draft.</p> <p>Said it was clear the house would need major alterations but the occupant had not agreed to this design and did not want to be party to it.</p> <p>Said the applicant's submission remained the same: the house should be bought back, and the expenses directly related to the authority's and builder's actions (which the applicant listed) should be repaid.</p>
Builder (22 February 2019)
<p>Provided preliminary plans and a vehicle tracking diagram for the 3.1 m proposal (i.e. widening the garage doorway further, to 3.1 m), and said the builder's engineers had been engaged to review whether this would be compliant.</p> <p>Re the 2.8 m proposal, did not accept the second draft's conclusion that this was not compliant:</p> <ul style="list-style-type: none"> • Figure 5.4 of the Standard (for a right-angled turn) was not applicable to this driveway, which had a 52 degree turn. The experts' report had accepted that this angle would provide greater clearance than a compliant 90 degree garage with a 2.8 m wide opening (plus an apron of 6.07 m) and therefore greater access to a 2.8 m wide garage door, so there was no basis for relying on this figure • the builder's engineers considered this proposal would be granted consent as there would be no non-compliance. <p>Re the 3.1 m proposal:</p> <ul style="list-style-type: none"> • this was provided as an alternative in the event the determination concluded the 2.8 m proposal did not comply • widening the garage doorway to 3.1 m would be permissible without significant alterations, would enable compliance with the Standard, and would allow single manoeuvre entry for the 85th percentile vehicle with 300 mm clearance either side • considered this was the most practical resolution to any determination that building consent should not have been granted • as this did not require significantly more work than the 2.8 m proposal, submitted that there was no need to withdraw the code compliance certificate or to determine this had been issued inappropriately.
Authority (26 February 2019)
<p>Re the second draft:</p> <ul style="list-style-type: none"> • accepted the second draft • agreed that access to the garage as designed and built did not comply with Clause D1.3.5, so the building consent and code compliance certificate should not have been issued • considered the 2.8 m proposal did not provide adequate clearance to permit easy movement of vehicles so did not comply with Clause D1.3.5 • noted that it had been prepared to accept the first draft's opinion that the 2.8 m proposal would comply but said, as there was such a fine line between compliance and non-compliance, it also accepted the second draft's opinion that this would not comply. <p>Re the 3.1 m proposal:</p> <ul style="list-style-type: none"> • said one of its planners with expertise in swept path analysis had reviewed this proposal and agreed compliance was "clearly achieved"

<ul style="list-style-type: none"> considered the 3.1 m proposal would comply with Clause D1.3.5.
<p>Applicant – report by the applicant’s consultant (21 March 2019)</p>
<p>The applicant sent a second report by the applicant’s consultant. The consultant said in this report:</p> <ul style="list-style-type: none"> the applicant’s consultant had reviewed the 3.1 m proposal and carried out vehicle tracking analysis, which showed the 85th percentile vehicle would be able to drive forward into the garage and reverse out “with appropriate clearances provided” this only partly fulfilled the Building Code’s functional requirements. Clause D1.2.2’s requirement for “safe and easy unloading and movement of vehicles” applied to the full vehicle access, not just entering and exiting the garage there were difficulties faced by someone reversing out of the garage, who then had to reverse some 45 m to the street as there was not enough manoeuvring space to turn around and who would have limited visibility of potential obstacles. Did not consider this scenario, which also applied to the 3.1 m proposal, met the definition of either a “safe” or “easy” movement the required manoeuvring from the garage and associated use of the driveway area failed Clause D1’s functional and performance requirements, the garage and access was not fit for purpose and could be labelled unsafe, and the authority should not have granted the building consent.
<p>Authority (22 March 2019)</p>
<p>Re the second report:</p> <ul style="list-style-type: none"> noted that the report’s criticisms of compliance related to the driveway area beyond the property boundary, which was not part of the building consent in question.
<p>Applicant (24 March 2019)</p>
<p>Re the authority’s response:</p> <ul style="list-style-type: none"> suggested that vehicle access formed part of the property, even if as a right of way, so this was within the legal definition of the property boundary and should have been a consideration in respect of the authority’s decision said the second report detailed what happened to the vehicle and driver as a result of reversing out of the garage and onto an undersized driveway apron, when it was difficult to exit the property without the risk of hitting something or someone.
<p>Builder – reports by the builder’s engineers and peer reviewers (15 May 2019)</p>
<p>Re the second report by the applicant’s consultant: the builder’s lawyer sent copies of:</p> <ul style="list-style-type: none"> a report on this by the builder’s engineers an associated peer review by another engineering consultancy (“the peer reviewers”).
<p>Report by the builder’s engineers (dated 6 May 2019):</p> <ul style="list-style-type: none"> said issues re the garage opening width had been resolved, so the outstanding matters were understood to concern the access arrangement and whether reversing to the street was appropriate re compliance with Clause D1.3.5, the second draft considered the 2.8 m proposal was not sufficient to comply with the Standard because it did not provide the required clearance. The 3.1 m proposal resolved this issue and the applicant’s consultant had accepted this the only potential non-compliance with the Standard was re paragraph 3.2.2 (“reversing movements to public roads should be prohibited where possible”), but concluded this was a common occurrence and was not considered to be sufficiently unsafe that approval should not be granted for the 3.1 m proposal re the second report’s concerns about Building Code requirements for safe and easy vehicle movement, commented that interactions with other users might occur on the driveway but this was expected to be infrequent and not lead to adverse safety effects; neither the Standard nor the Christchurch District plan limited the length of reverse manoeuvres for this driveway; gave examples of similar reversing lengths at other Christchurch properties accepted that drivers would lose sight of the kerb line when reversing out of the property;

<p>proposed extra landscaping (a hedge <1.0 m at the driveway's northeastern end) to improve visibility; on that basis (and with the 3.1 m proposal) considered the parking and access arrangements would be safe and easy to use.</p>
<p>The peer reviewers' assessment (dated 13 May 2019):</p> <ul style="list-style-type: none"> • reviewed the vehicle tracking analysis and report by the builder's engineers plus other plans and submissions; visited the site on 8 May 2019 • concluded either the 2.8 m proposal or the 3.1 m proposal were suitable solutions • in particular, agreed that 3.1 m was sufficient width for the 85th percentile vehicle to manoeuvre in/out of the garage in a single manoeuvre and with 300 mm clearance either side of the vehicle, so the 3.1 m proposal met the requirements of the Standard. <p>The peer reviewers also agreed with the builder's engineers that the driveway and access arrangements could be accepted from a transportation perspective and were considered "safe" and "easy", saying:</p> <ul style="list-style-type: none"> • providing a 2.8 m or 3.1 m garage door width would make it easier for vehicles to manoeuvre out of the garage on an angle more suitable to reverse manoeuvres • they considered the reverse manoeuvring required could be completed safely due to the alignment of the right of way and resulting speed environment • there was good visibility in both directions from the access point so those entering the site or using the driveway will be able to see any reversing vehicles • conflicts between a reversing vehicle and any other user were expected to be very low (as there were very few properties on the right of way); there was ample space for pedestrians to find refuge; and small children of a height which would not be visible from a reversing vehicle were considered unlikely to be playing in a driveway unattended • reverse manoeuvring was a common practice in New Zealand residential areas.
<p>Applicant – re the above reports (6 June 2019)</p>
<p>The applicant said the applicant's consultant had considered the reports supplied by the builder on 15 May 2019 and decided no further comment was required, while noting the (driveway) arrangement could still not be called "fit for purpose".</p> <p>The applicant said the need to execute a full length reverse manoeuvre of about 60 m starting inside the garage and finishing with the vehicle positioned on the opposite side of the road before driving forward, combined with a lack of safety design factored into the driveway at planning stage, had created an "accident waiting to happen". The applicant said that being able to drive forward out of the property would go a long way to solving many safety issues, but this was not possible at present nor would be with a 3.1 m wide garage doorway.</p> <p style="padding-left: 40px;">"The proposed widening of the garage door to 3.1 metres would still require the driver to reverse approx. 60 metres down a driveway/ right- of- way along a fence line past two family homes, negotiating 3 bends along the way and exiting onto a road with frequent poor visibility in both directions due to parking arrangements is not only unsafe during daylight hours but near impossible to perform at night and/ or when raining or foggy cannot be classed as "EASY", "SAFE" and "FIT FOR PURPOSE.""</p>
<p>The applicant's observations on the builder's engineers' report included:</p> <ul style="list-style-type: none"> • The non-compliance had not been remedied as the "safe and easy" requirement (in the Building Code) applied to the full vehicle access, and once the vehicle had reversed out of the garage, it "would need to be facing the correct way to allow for front forward exiting of the property to remedy the non-compliance with AS/NZS 2890". • This was a new subdivision by one developer and there was no reason for non-compliance and for not factoring in all safety measures at planning stage. The extra space required to make the vehicle manoeuvring apron comply was approximately an extra 4 m² which was not an inefficient use of land and should not have been traded off against people's safety. It would have been possible to design a driveway apron "to reverse into and allow for forward drive exiting onto the street", but the builder chose not to. What dictated whether a reverse manoeuvre could be used or not was whether this was safe (which the driveway was not). • The findings of the August 2011 Low Speed Run Over Mortality report by New Zealand's Child

and Youth Mortality Review Committee (“the 2011 Report”), which included consideration of driveway features that increased the risk of injury, had a strong correlation with the arrangements at the property.

- The conclusion that the 3.1 m proposal was satisfactory given the only potential non-compliance with the Standard was with paragraph 3.2.2 (re reversing) was not accepted. The applicant described the required reversing manoeuvre, as well as limits on visibility.
- Regarding the likelihood of accidents on the driveway, there had already been two “close calls”. The applicant provided extracts from the 2011 Report, saying its findings made it obvious the driveway and the associated reversing manoeuvre required was not safe for occupants or others using the right of way and their children. The applicant noted the 2011 Report’s reference to the risk of injury being increased by a driveway longer than 12 m; exiting onto a local road; driveways exiting onto cul-de-sacs; more parking areas on the property accessed from the driveway; and driveways running along property boundaries.
- Reversing out of the driveway required well above average skill level for clear weather daytime driving, and was near impossible and highly dangerous to carry out at night and/or when raining or foggy. The applicant had offered to meet the parties onsite for a demonstration but they had not acknowledged the invitation.
- The hedge proposed to better delineate the kerb alignment would be hard to see at night, and could attract small children.
- The driveway examples provided were not reverse-only as they had room for a three point turn at the top, and no measurements were provided for comparison.

The applicant’s observations on the peer reviewers’ report included:

- Disagreement that there were no apparent issues for reverse manoeuvring – exiting was perilous and the road area to be reversed into was tight. Visibility constraints included the boundary fence and parked cars on both sides of the road when exiting. The proposed hedge would not be visible.
- The proposed amendment still did not allow for a vehicle to be positioned correctly to drive forward out of the property (as the driveway apron was too small).
- The other houses on the right of way were family homes and children were very likely to play on the driveway.