

Ko te takai o waho

External Envelope

Building Consent Guidance:
Applying for a new external
envelope for a building over
10 metres tall



28 June 2022, Version 2

(AC1827)





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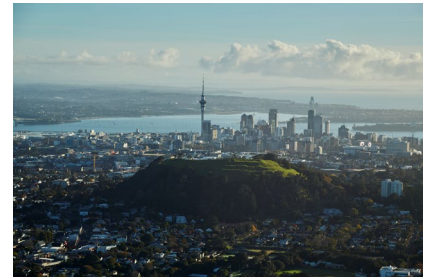


Introduction

Auckland is a rapidly growing city with a drive to high-density developments. The Auckland Unitary Plan allows the construction of mid-rise and high-rise buildings in more densely populated areas increasing demand, hence the need for this guidance document.

This guide outlines compliance requirements for external envelopes and provides compliance path options from a predominantly weathertight perspective. Additional guidance is provided that supports good practice fire design of external envelopes. By establishing these compliance paths, we hope to help building consent applicants know their options and understand how a compliant application (for an external envelope system) may be presented.

These are not the only options available to designers to demonstrate compliance with the New Zealand Building Code. Each application is assessed on a 'case-by-case' basis, however the potential paths within this guidance can help provide clarity about the building consent process for external envelopes.



Why use this guide?

It provides guidance and compliance path options for designers, architects, engineers, building owners, developers and any other party involved in the design of the external envelope; also referred to as 'the façade' or 'external cladding'.

While there is a trend for some of these buildings to incorporate traditionally residential materials and methods of construction, if the building is taller than 10m then it is no longer within the scope of the acceptable solution of E2/AS1 (external moisture). By default anything that is not an acceptable solution is deemed an 'alternative solution' and demonstrating compliance can be more complex. Demonstrating compliance will require more robust documentation than if the building was under 10m and within the scope of the acceptable solution E2/AS1.

For buildings over 10m in height, the vertical fire spread requirements of buildings also requires specific consideration and the extent of documentation provided to demonstrate the fire compliance of these external envelopes also increases.

The Ministry of Business, Innovation and Employment (MBIE) has information relating to alternative solutions on its website ([mbie.govt.nz](https://www.mbie.govt.nz)).



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Regardless of how you elect to demonstrate compliance, it's necessary to provide a compliance path report which will form the backbone of any application.

The compliance path report needs to be in writing, titled 'compliance path report', and the project address clearly marked on the front. The compliance path report along with all supporting documentation referred to in that report must be included with the building consent application.

Whichever compliance path is chosen, certain basic information is always required. For example, wind pressure (both positive and negative) on the vertical and horizontal faces of the building, building deflections and movements, test data, and structural design documentation.

Early engagement with the various professionals and suppliers needed to construct the building is highly recommended. This will assist in the early understanding and implementation of a suitable regulatory compliance path.

The Building Act 2004

The Building Act 2004 sets out the rules for the construction, alteration, demolition, and maintenance of new and existing buildings in Aotearoa New Zealand. The Building Act 2004 (the Act) is the primary legislation this booklet is based on.



Section 49 of the Act states:

'A building consent authority must grant a building consent if it is satisfied on reasonable grounds that the provisions of the Building Code would be met if the building work were properly completed in accordance with the plans and specifications that accompanied the application'

So what does this mean?

Put very simply, job-specific material/systems construction details are required before the building consent can be assessed. **Performance-based specifications do not demonstrate compliance.** For a consent to be issued, each building consent application must contain evidence demonstrating compliance with the New Zealand Building Code.

Designers need to specify (in the building consent application) the actual products/systems they intend to install and provide documentation explaining how the products/systems demonstrate compliance with the New Zealand Building Code and perform together. Without this information, applications cannot be accepted so the need for early engagement with suppliers is important.

Continued inspections and observations during construction ensure the building work is undertaken in accordance with the approved plans, specifications, and documentation.

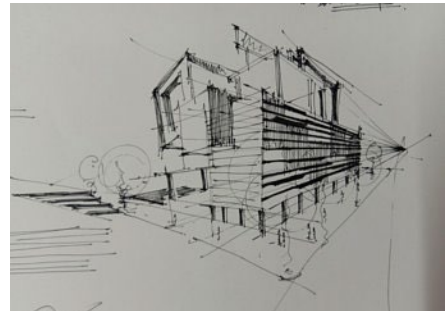
New Zealand Building Code

This guidance document concentrates primarily on what keeps moisture out of the building. The key Building Code clauses to be considered are E2 (external moisture), B1 (structure) and B2 (durability). Additional guidance is also provided with regards to the vertical fire spread clauses of C3.5 and C3.7. However, other code clauses may need to be considered.

Design phase

Getting the design right from the start is extremely important. Designers of mid-to-high rise buildings generally use their own knowledge and experience to achieve compliance with assistance from consultants, manufacturers, suppliers, and producer statement authors.

This guidance document also provides a designer with an option to demonstrate compliance without necessarily having to engage a third party to design or review the proposal before lodging the application.



Pre-application meeting

A pre-application meeting with the council provides the applicant (and any other relevant party) an opportunity to discuss the proposal before the design is finalised and before a building consent application is lodged.

Early consultation reduces misunderstandings and will help improve the quality of the application before it is lodged. For example, council's requirement for specific documentation (i.e. producer statements) can be considered at the design stage. Compliance with other requirements (i.e. council bylaws or district planning rules) may be critical to the design even if they are not considered part of the building consent process. Such potential requirements need to be considered early in the project (i.e. the design stage). Furthermore, the need for a producer statement author to provide input can be raised and discussed at this point.

If the project involves building work to an existing building, section 112 of the Building Act (alterations to an existing building) should be discussed. The ramifications of section 112 could potentially influence decision making at the design stage or onsite, so early consideration is important.

Plans and specifications

The plans and specifications (and other supporting documentation) detail what is proposed to be constructed. They must also demonstrate that if the building work is carried out in accordance with those plans and specifications, the provisions of the Building Code will be met. It is accepted that things may change once onsite. However, council still requires a full set of application-specific details for the application to be successfully processed.

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If the application is only for the external envelope, then only documentation relating to the external envelope should be provided. Providing unnecessary information and documentation with the application only creates confusion, wastes valuable time and leads to increased processing costs.

The plans and specifications need sufficient information and detail to demonstrate how the external envelope is to be constructed. In the case of proprietary systems this may well mean shop drawings or sufficient detailing (often from the systems supplier) to demonstrate compliance. ‘Cutting and pasting’ a supplier’s standard detail without any other supporting information may not be sufficient. Not only do the plans and specifications need to be understood by council but also by the builders onsite to ensure the building is constructed correctly.

The information in the plans and specifications must be specific to the building consent application. General phrases like ‘*refer to manufacturer’s specification and/or requirements*’ or ‘*installed in accordance with best trade practice*’ are insufficient. Manufacturers’ specifications can change and the views on ‘best trade practice’ vary between practitioners. Furthermore, references to standards and compliance documents need to be specific. Some standards are cited (in whole or in part) while others are not.

References to other industry guides such as BRANZ, must be specific. Any documents referenced must:

- uniquely identify the document (i.e. title and date published); and
- be specific about the paragraphs, clauses and sections to be followed.

Simply stating that a project complies with the Building Code or a particular Standard is insufficient. You need to show how the building work complies.

Because Standards provide several different options you should always reference the Standard being applied (i.e. state the relevant section, clause, figure and table). It is important to make it clear which particular Standard is being referenced. Only referencing Building Code clauses and Standards is insufficient.

The drawings and construction details must be specific to the building consent application. You must clearly identify the specification and the materials and/or systems you intend to use. Do not include information on building products, methods or construction details not relevant to the design. Furthermore providing a range of options to be selected at a later date will not be accepted.

Compliance path report

The compliance path is the evidence demonstrating how the proposal complies with the New Zealand Building Code.

This must be in writing and include supporting documentation that demonstrates that the proposed building work will comply with the Building Code. Basic information required includes (but is not limited to): wind pressures, building movement and deflections, and test data. Each relevant Building Code clause needs to be identified and an explanation provided on how the proposal meets the performance requirement of that clause. Any supporting evidence referenced in the proposal should be supplied and cross-referenced so it can be located. Example, refer to appendix ‘A’, titled ‘123’, dated ‘1 January 2021’, page ‘123’, paragraph ‘456’.

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The complexity of the external envelope will dictate what information is needed and must be included in the report with all referenced supporting documentation attached. Remember, it is only the information applicable to the proposed building works that needs to be provided to council. More is not always best and providing irrelevant information or generic data only slows down processing by creating unnecessary delays and cost. The intention of the compliance path report is to demonstrate compliance, so keeping it succinct and relevant is important.

Co-ordination of design disciplines

Various disciplines will be involved in the overall design of the external envelope, but their responsibilities may overlap. It is important that each discipline (i.e. fire engineer or structural engineer) is co-ordinated and that this is made clear in the building consent application. To assist, it is recommended that the designer provides a 'coordination statement' for the external envelope design. This will explain everyone's role and responsibility and how they co-ordinated with the principal designer.

Designer

As outlined in this guidance, certain criteria allow for an individual to be responsible for the design of the external envelope, without the need for it to be reviewed by an independent third party, before the building consent application is lodged. Nonetheless, a compliance path report is still required which must include all the supporting documentation required to demonstrate compliance with the Building Code. (Refer to 'Compliance path report')

Producer statements (design and design review)

An author of a producer statement is responsible and accountable for its content. Authors accept that Auckland Council places reliance on their statement. To avoid any doubt, this includes where an author signs a producer statement covering another person's design (PS2) or observation of construction (PS4). It is an author's responsibility to ensure that they are satisfied that the work is compliant.

However, it remains up to council's discretion whether or not to accept a producer statement to support compliance.

Producer statement – PS1 (design)

PS1 producer statements are for the design (i.e. the external envelope). Auckland Council will only consider PS1 statements from authors who are 'active' on our producer statement register and are working within their scope of acceptance.

The author must be the designer of the external envelope and explain how the individual components come together and comply with the Building Code.

Documentation supporting the authors findings must be site specific. The signed PS1 cannot be older than 90 days.

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Producer statements cannot be issued subject to contingencies (i.e. something happening in the future). Example, making it subject to a successful AS/NZS 4284 test or further construction detailing to be provided after the producer statement has been issued. Both these examples are unacceptable. The PS1 is a statement that the author is satisfied (on reasonable grounds) that at the time of signing the producer statement, compliance with the Building Code will be achieved if built in accordance with their design.

If a PS1 author needs to undertake site observations (minimum CM2 – Engineering New Zealand) they will need to provide a signed PS4 (construction review). The PS4 and supporting documentation needs to be supplied to council when applying for the Code Compliance Certificate (CCC).

Producer statement – PS2 (design review)

PS2s are issued by design professionals who have independently reviewed another designer's work. A signed PS2 confirms that the author of the PS2 is satisfied (on reasonable grounds) that the proposed building work will comply with the Building Code if built in accordance with the plans and specifications reviewed.

PS2 authors must be 'active' on Auckland Council's producer statement register and working within their scope of acceptance. The signed PS2 cannot be older than 90 days.

Remember, PS2 authors cannot perform the role of the designer or be involved in the design.

The PS2 author's role is to independently review the designer's proposal including plans, compliance path report, and any supporting documentation. If a reviewer identifies an issue, it is the designer's responsibility to provide the solution not the reviewer. The proposed solution must be independently reviewed by the PS2 author.

PS2s cannot be issued subject to something happening in the future.

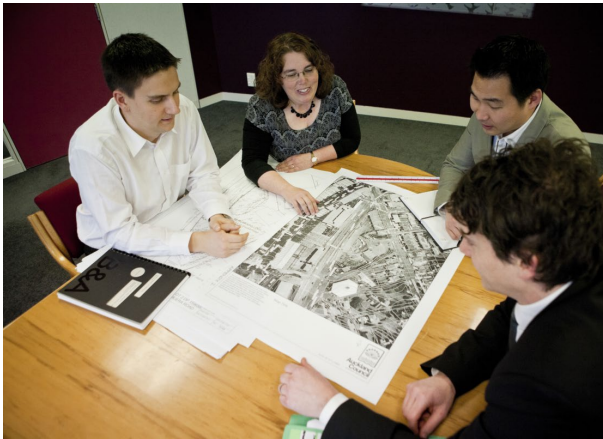
A register of questions/changes made by the reviewer must be included with the PS2. Confirmation that all questions/changes have been closed off must be supplied to council.

If a PS2 author is required to undertake site observations during construction, they will need to provide a signed PS4 (construction review) on completion. The PS4 and supporting documentation needs to be supplied to Auckland Council when applying for the CCC.

Further information about producer statements visit aucklandcouncil.govt.nz

Requests for further information (RFI)

A key objective of this guidance is to reduce the number of RFIs. Pre-application meetings and early discussions with the council will streamline the requirements for RFIs.



There are numerous reasons for RFIs, but common themes include missing or incomplete information and inconsistent documentation and detailing. Lodging an incomplete building consent application creates double-handling, time wasting and delays. This impacts critical path timings and project costs, which nobody wants.

Quality management systems



There are several options on how to manage the compliance of the construction and assembly of the external envelope. The chosen path will depend on the complexity of the building, the type of materials, products and systems being used. The programme for site visits (other than by council) must be submitted in the compliance path documentation as part of the building consent application. However, council inspections will still be required. A schedule of council inspections will be included with the approved building consent.

The level of council involvement will be dependent on the complexity of the external envelope. Buildings using traditional residential construction methods (and claddings) are likely to involve more council inspections than designs that are more bespoke and complex.

In most circumstances the designer (or design reviewer) will need to undertake on-site inspections and testing. Details of the testing, including type and frequency, must be nominated in the compliance path report.

In most circumstances a producer statement (PS3) is required from the installer, confirming that the installed system complies with the consented design.

Specific design external envelopes will be inspected (during construction) by the specialist external envelope designer or reviewer. On completion of the works, the designer or reviewer will provide a PS4 supporting their observations.

In addition to council, it is critical that the designer or reviewer checks the contractor's documentation to ensure accurate records are kept on site. Records of site visits must be left onsite and made available to council to review. **Any corrective actions identified on site (by either the designer or design reviewer) must be 'signed off' when rectified by the person who identified the issue.**

Fire

Sadly, many parts of the world have experienced catastrophic external envelope (often referred to as façade or cladding) fires. New Zealand is very fortunate and has not yet experienced fires of this nature that have caused a loss of life. Nevertheless, our rules are tightening, and we expect to see continued change to the vertical fire spread requirements as our knowledge of these types of fires and performance of New Zealand-specific envelope systems improve.

Vertical fire spread risk depends on many different factors, including:

- how easily materials ignite
- how much heat the materials generate when burned
- the configuration of combustible elements in the system or assembly – how the combustible materials are incorporated into the external envelope.
- the presence of cavities, and
- mechanical performance of the system.

Key factors that could affect the external cladding system performance include the:

- combustibility of insulation
- combustibility of framing (e.g. timber frame)
- composition of any air barrier (e.g. rigid air barriers)
- building underlay and wraps
- vertical cavities
- mechanical performance and reaction to fire of the system components, i.e. melting, cracking and spalling.

Careful consideration must be given to the design of any system to mitigate the risk of fire spread involving the external envelope and fire spread on the outside of the building. Building envelopes are very complex and will likely require a collaborative approach involving the architect, external envelope engineer, structural engineer, fire engineer and material and product suppliers. Engaging the relevant design professionals early in the design process is highly recommended as this may have a major impact on the types of external envelope systems that can be used.

The Ministry of Business Innovation and Employment (MBIE) document “Fire Performance of External Wall Cladding Systems” provides some guidance on external wall cladding systems and how they can be tested to determine their fire performance. For further information visit [building.govt.nz](https://www.building.govt.nz)

Combustible construction

The use of combustible construction on the outside of a tall building needs careful consideration. Ideally the use of combustible construction for tall buildings should be avoided. Where combustible construction, such as timber, is to be used then it should be appropriately protected.

Auckland Council strongly recommends that only non-combustible or appropriately fire tested cladding systems be used on any tall building. Where the performance of cladding systems is not to be verified via an appropriate fire test, evidence of the systems fire performance will need to be demonstrated.

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In line with MBIE guidance, any technical assessment in lieu of a test must be provided by accredited testing laboratory or from a subject matter expert with knowledge and experience in fire science and fire testing of cladding systems. If technical assessment is the proposed pathway to demonstrate compliance with New Zealand Building Code Clauses C3.5 and C3.7, it is recommended that the design team has an early discussion with council to get agreement on the nominated assessor who will prepare such a technical assessment.

Mechanical performance

The mechanical performance of cladding systems when exposed to fire can significantly impact how the system responds to fire exposure. Testing has shown that even non-combustible cladding systems can present increased risk of vertical fire spread where the mechanical performance of such systems creates flues and cavities that can exacerbate fire spread and promote fire spread vertically inside the system.

Cavity barriers with demonstrated fire performance for use in cladding systems will typically be required horizontally at each floor level and vertically at the end of any fire cell junction such as an apartment or intertenancy wall. Alternatively, cladding systems that have been tested using a recognised fire testing methodology will specify the type and placement of cavity barriers within that system as necessary to achieve the necessary performance criteria. Often in such testing the cavity barriers may be spaced and located regularly throughout the cladding system and not just at floor junctions.

New Zealand currently does not have any explicit requirements against the prevention of debris or the failure of cladding systems and consequential risk of falling cladding panels, for example, should a fire occur. It is noted that the intermediate scale fire test, NFPA 285¹ as a test methodology does not consider the risk of falling panels from the system during the test. Whereas AS5113² provides acceptance criteria for debris and BS 8414³ considers mechanical performance via reference to and classification via BRE 135⁴ which provides a means of assessment of the systems characteristics.

The impact of a cladding system or component falling from the building should be considered in any assessment if it could present a hazard to evacuating occupants, responding fire fighters, or presents secondary fire hazards to other property.

Curtain walls

Glazed curtain walls present a specific challenge when considering their performance in fire and specifically how the fire stopping, and perimeter joint sealing responds to ensure that the fire compartmentation is retained during a fire. Curtain walls are often designed as building specific system that must meet a range of performance criteria such as:

- structural movement
- settlement

¹ National Fire Protection Association (NFPA) 285, Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components.

² AS 5113: 2016 Classification of external walls of buildings based on reaction-to-fire performance Amendment 1.

³ BS 8414-1 and 2:2015 Fire performance of external cladding systems. Test method for non-loadbearing external cladding systems applied to the masonry face of a building. Amended by BS 8414-1:2015+A1:2017 (June 2017).

⁴ BR 135 Fire performance of external thermal insulation for walls of multi-storey buildings – 3rd edition 2013.

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- drying shrinkage
- creep
- thermal and moisture movements

Council requires that information to demonstrate the fire performance of any curtain wall and floor perimeter joint system be provided to support a consent application. Recognised and accepted testing standards for curtain walling include:

1. ANSI/ASTM E2307 Standard Test Method for Determining Fire Resistance of Perimeter Fire Barriers Using Intermediate-Scale, Multi-story Test Apparatus, or
2. BS EN 1364-4:2014 Fire resistance tests for non-loadbearing elements.

As it is recognised that many curtain wall systems will be building-specific designs, it is anticipated that Engineering Judgements and Technical Opinions to support the proposed perimeter fire barrier and transom panel/mullion designs may be required. Such technical assessments are expected to be provided from the system manufacturer based on fire testing experience of similar designs with robust technical justification.

Consent documentation

Council expects that all consent submissions provide clear proposals for the construction monitoring of cladding systems, and specifically the details of any cladding systems cavity barriers and other components specific to fire compliance. The requirements to include (or not) a specific PS4 relating to fire for a cladding system needs to be proposed within the consent documentation. A PS4 covering fire compliance specifically should always be anticipated for tall buildings and those involving cladding systems that do comply in full with a fire tested system.

It is expected that the project's fire engineer provide commentary on how the external wall cladding system meets the Building Code requirements of C3.5 and C3.7 within the building consent documentation. The relevant fire test reports should be submitted to support the building consent applications and to demonstrate that the proposed cladding system follows the assembly per the fire tested system.

Where cladding systems are not specified and deviate from full compliance with a recognised fire test, it is expected that a specific assessment and supporting documentation, for example a producer statement, qualifying compliance of the system be provided. This should address all relevant deviations including other relevant matters such as penetrations and cladding configurations that may exacerbate fire spread. Reference to BS 9414 should be considered for any deviations⁵. A cladding-specific review of the proposal for fire, such as a PS2, may also be required for high-risk designs to support non fire tested cladding assemblies.

Construction monitoring

The workmanship involved in the installation of cladding and specific details such as cavity barriers is well known to have the greatest impact on performance in the event of a fire. Construction monitoring,

⁵ BS 9414:2019 Fire performance of external cladding systems - The application of results from BS 8414-1 and BS 8414-2 tests. British Standards Institution.

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including that of the specific fire components of any cladding system, is expected to be undertaken. The appropriate parties such as the building designers, engineer and external envelope installer should be present to inspect the cladding components against the consented design details. This will include the Fire Engineering Report, and the Manufacturers Installation guidance as appropriate and at critical stages of the installation process.

Envelope maintenance

Maintenance of cladding systems can be essential in maintaining the effective fire performance of any system and individual component. Cladding systems are not included within the Building Warrant of Fitness regime as they are not considered a Specified System. However, to maintain the building's expected level of safety and to ensure any external envelope does not degrade over time, condition surveys should be undertaken periodically.

Existing buildings and cladding compliance

Combustible cladding is prevalent in many forms on existing buildings. Auckland Council recommends the use of either the Society of Fire Safety Practice Guide – Façade/External Wall Fire Safety Design⁶ and/or the NFPA's Exterior Façade Fire Evaluation and Comparison Tool-EFFECT⁷ to assess the fire risk of cladding systems for new and existing buildings.

Other things to consider

The external envelope is not just about keeping moisture out of a building. There are many other ways in which the building envelope contributes to making the building fit for purpose and keeping the occupiers of the building healthy and safe. While this guidance predominantly focuses on the E2 aspects of compliance, there are other code clauses that require design input when considering if the building envelope demonstrates compliance with the Building Code.

⁶ Society of Fire Safety Practice Guide Façade/External Wall Fire Safety Design. Rev 2 Dated 7/03/2019.
https://www.engineersaustralia.org.au/sites/default/files/Learned%20Society/SFS_Facade%20Fire%20Safety%20Design_002_0.pdf

⁷ High Rise Buildings with Combustible Exterior Wall Assemblies: Fire Risk Assessment Tool. February 2018 National Fire Protection Association. <https://www.nfpa.org/~media/8EB55D9E592E4BD4A999AFF3D01BC7CF.pdf>

Acoustic

The Building Code is limited to noise transmission between abutting occupancies so other noise sources from outside the building can often be ignored.

Reducing noise from sources outside the building is often critical for the quality of life of the occupants. Being close to main arterial transport corridors or below flight paths can be an issue. Maximum noise levels in a building will often be a condition of the Resource Consent but can easily be overlooked.

Co-ordinating the conditions of a resource consent and building consent cannot be stressed strongly enough. The consequences of not having the documents aligned early can be expensive both in time and money.



Energy efficiency

The buildings energy efficiency needs to be considered at the design stage. It is too late to make any meaningful changes once the building is finished.

The occupants' comfort needs to be considered alongside the ongoing costs of energy usage (e.g. heating and cooling cycles and the use of artificial lighting).

From an energy efficiency perspective, it is important that commentary is provided on how the external envelope contributes to meeting the overall requirements of the Building Code. Simply eliminating 'thermal bridging' within the fabric of the building (especially in relation to the external envelope) can have a significant impact over the lifetime of the building.

Internal moisture

New Zealand has a sad history of cold, damp housing resulting in a high proportion of the population suffering from respiratory infections, asthma, or rheumatic fever.

The question on how a building will manage internal moisture is becoming more prevalent as buildings become increasingly airtight (i.e. external envelope). The accumulation of condensation, moisture movement in the air, and interstitial condensation in the building fabric is affecting occupants' health. This must be considered at the design stage of the project.

It is important to provide commentary on how internal moisture will be addressed and compliance with the Building Code achieved. This must be included in the building consent application.

Although not part of the Building Act's regulatory framework, you may have to consider the requirements of the Healthy Homes Guarantee Act 2017 if a residential building is to be tenanted.

[Learn more about the healthy homes standards.](#)

Hazardous building materials

Hazardous building materials come in various forms. In relation to the external envelope, glass is an obvious example but there may be others to consider. Regardless of what materials are proposed, it is important to demonstrate how hazardous materials will meet the requirements of the Building Code when submitting the building consent application.

Often joinery units are imported from overseas that are pre-glazed. This is fine, provided the glass complies with the New Zealand Building Code. Regretfully this is not always the case and replacing glass panels after installation is not ideal – particularly on mid- to-high rise buildings. To mitigate the risk of this happening, how the glass complies with the Building Code needs to be demonstrated in the compliance path report.

Safety from falling

Often balcony and deck barriers are formed using the external envelope of the building or its materials. Although a barrier may not need to keep moisture out, it's often an integral part of the external envelope. Barriers need to form part of the external envelope design so compliance with the Building Code (i.e. safety from falling) needs to be demonstrated.

Barriers need to be included in the external envelope design report. The building consent application plans need to include detailing showing how the barriers are connected to the building and interface with the external envelope. It is important to understand this element when considering the overall envelope design.

Please be aware of climb points or toeholds near a barrier. The location of heat pump condenser units must be considered to ensure they don't provide a climb point.

Maintenance

No building is maintenance free, and no building product lasts forever. Once construction is completed and the CCC has been issued, maintenance should start. As part of the design phase, thought and care should be given to how the external envelope is to be maintained and provision made for that. Given we are talking about buildings over 10m tall, this is likely to involve an access system such as fall arrest anchors and abseil anchors, building maintenance units (BMU), building maintenance rails or potentially the hire of temporary safety systems if the site allows. Whatever the system, it needs to be detailed on the building consent application.

The council recommends that the designer provide information and documentation to the owner(s) at the completion of the project outlining the maintenance requirements of the materials and systems that have been installed in their building.

Procurement of goods



Ensuring goods and products selected for the project are fit for purpose is essential. Whether goods are locally sourced or imported it is important that the supply chain, manufacturing processes, and installation can be appropriately verified.

When selecting products and systems, designers need to ensure the products and supply chains are supported by a strong Quality Management System (QMS). Documentation demonstrating this must be included in the compliance path report.

A QMS (such as AS/NZS ISO 9001:2016) will demonstrate that the manufacturer is able to consistently produce the product. Whether the product meets the statutory and regulatory requirements also needs to be demonstrated. Does the supplier's QMS give the designer confidence that it will consistently provide products that will comply with the appropriate regulations?

At any time, an audit of the supply and manufacturing process may be undertaken by the designer, PS1/PS2 author or another appointed agent acting on council's behalf. The results of such an audit must be provided to council including corrective action and confirmation it was done.

Prior to the issue of the CCC, a copy of the completed supplier/manufacturer's QMS and Product Quality Performance (PQP) will be required by council.

Construction phase

Demonstrating compliance with the Building Code continues beyond the building consent being issued. Ensuring the building is constructed in accordance with the approved building consent is vital, so site observations during installation is critical. The observations must be carried out by someone who has been involved in the design or review phase of the external envelope (please refer to '*Other inspections*').

Site observations are not done in lieu of council inspections. Likewise, the council inspections are not undertaken in lieu of scheduled site observations by the designer or design reviewer. All scheduled inspections and site observations must be completed.

Quality assurance, inspections, and observations

The more complex the external envelope, the greater the level of inspections and site observations. Likewise, the level of record keeping and quality assurance measures will be higher.

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Checking the contractor's documentation to ensure appropriate records are being kept onsite is a critical element of the designer/reviewer's role along with the council. Records of site visits undertaken by the designer/reviewer need to be left on-site and must be made available to council. Any corrective actions identified on-site by the designer/reviewer must be signed off as being completed by the same person who raised the issue for remediation.

As stated earlier in this guidance, the degree of council involvement will depend on the complexity and novelty of the external envelope. Buildings using residential construction methods and traditional residential claddings are likely to involve more council inspections than those that are a more bespoke design or involve a complex system.

In most circumstances a producer statement (PS3) will be needed from the installer. Additionally, the designer/reviewer will need to do on-site inspections and testing of the installation. Details of the testing, including type and frequency needs to align with what was nominated in the compliance path report.

Most specific designs will be inspected by the external envelope designer/reviewer who will provide a PS4 supporting their observations. The PS4 is provided on completion of the works to confirm that the constructed envelope complies with the consented design.

Council inspections

Having granted the building consent, the council will remain involved (i.e. council inspections). The number and type will vary from project to project, and will be dependent on factors such as the extent of inspections and quality assurance being offered by the design team and any external reviewers. The number and type will be identified prior to the building consent being granted. Council inspections may include checking that the QA programmes are being followed or the appropriate people outside of council (i.e. producer statement authors) have been fulfilling their obligations. Please refer to '*Quality assurance, inspections and observations*'.



A pre-construction meeting will be held with the builder, designer, and the applicant (or their representative) prior to building work commencing. The meeting will ensure expectations are established and will allow an opportunity for stakeholders to understand one another's roles and responsibilities prior to work commencing.

Other inspections



As part of the onsite quality assurance, the designer/reviewer will need to complete site observations of the external envelope installation to ensure it is being constructed in accordance with the approved building consent. A Quality Management System (QMS) is mandatory. The designer or design reviewer must ensure the contractors' documentation and site records are accurate and up to date.

Copies of all site visits, including instructions and closure of corrective actions, must be made available for council review. On completion of the project, but prior to the issue of the CCC, the QMS must be collated and coordinated into one document. This must be provided to council with the application for CCC.

Producer statements (construction and construction review)

A producer statement confirms that, in the author's professional opinion, the building's construction (i.e. the external envelope) complies with the approved building consent. However, it remains the council's decision whether a producer statement is accepted.

For further information visit aucklandcouncil.govt.nz

Producer statements PS3 (construction)

PS3 producer statements (construction) are used to confirm to council that the installation complies with the approved building consent. It is accepted that one person will not install every component of the external envelope thus an overarching PS3 for the entire envelope is unlikely. A series of PS3s for the installation of 'specific systems' is acceptable.

Producer statements PS4 (construction review)

The position of the PS4 author is to review the building works that have been undertaken on site and in accordance with the approved building consent. The PS4 will confirm to council that this has happened. **Review of the construction cannot commence until the approved building consent has been issued.**

Site water testing is generally required during construction. It is expected that the programme for site testing would have been nominated in the compliance report as part of the building consent application. Consequently, the approved building consent is granted on this understanding.

The tests must be witnessed by the author of the compliance path report or the author of the PS2 (or their appointed representatives). Documentation relating to the tests and the results must be provided to council with the application for CCC.

Amendments and minor variations

It is acknowledged that things don't always go to plan when on site and changes are needed. This is managed via an amendment to the approved building consent or a minor variation. Many changes (including substitutions) require an amendment.

All building work must be undertaken in accordance with the approved building consent. Any changes to the consent need to be recorded and approved by council **prior** to the 'new' building work being undertaken.

"Wash-up as built drawings" of changes done without council approval that are provided at the conclusion of the project do not comply with the legislative requirements of the Building Act 2004 (section 40). This approach will create issues and lead to delays in issuing the CCC or even the possibility of it being refused.

Amendments

Building consent amendments are processed by council in the same way as a new building consent application. An amendment requires the same level of information to support the application as if it were a new building consent application being submitted. The amendment must include details of what was originally approved and how it will change.

Making the changes clear so they can be easily understood will help council to process the amendment more efficiently. For example: 'clouding' the relevant changes on the plans so to ensure they are easily identified; providing a new or updated compliance path report including the changes; and providing updated producer statements (if applicable).

If a new or amended producer statement is required, the author must be the same person who issued and signed the producer statement for the original building consent being amended.

Consideration to the description of the works detailed on the amendment application form will help (abridged version if necessary) rather than just being very generic. For example, '*amendment*' or '*refer to attached*' or '*stage three*'.

An amendment changes something that has already be consented. It is not to increase the scope of the approved building consent. If the scope of the proposed building work is to be increased a new building consent is required.

Minor variations

Generally, changes to the external envelope require an amendment to the building consent rather than a minor variation. There will always be exceptions to the rule, but these are solely at the discretion of the council building inspector. Substitution of an external envelope product, system, or supplier (i.e. changing joinery manufacturer) requires an amendment. It cannot be changed via a minor variation.

If in doubt, contact the council inspector for advice.

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Nonetheless, minor variations must demonstrate compliance with the Building Code, and will often require the same amount of documentation/evidence as if applying for a building consent or an amendment.

Example, if you intend to change a detail that originally required a PS1 and PS2 signature, then the variation will require the 'sign off' of the original PS1 and PS2 authors. Both signatures are required for council to approve the minor variation. Just because it is a minor variation does not mean the requirement to demonstrate compliance is any less.

Remember, a change is only considered a minor variation if the council inspector can process the application on site. If the change isn't minor and needs to be processed off site, then an amendment is required.

Learn more about [amendments and minor variations](#)

Code Compliance Certificate (CCC)

Once the approved building work is completed, the owner should apply to council (as soon as practicable) for the CCC. Remember, supporting documentation will need to be supplied with the CCC application.

Applications for the external envelope CCC will require (but not limited to): all producer statements (PS3s and/or PS4s) and a copy of the completed site QA record.

The approved building consent will include 'advice notes' which are attached to the consent. It is important that the content/requirements of the advice notes are reviewed and discussed with the external envelope designer before applying for the CCC. Any documentation required in the advice notes must be supplied with the CCC application for it to be approved.

Risk assessment

The risk assessment matrix is similar to the risk matrix in E2/AS1. It identifies several design risk factors to be assessed so an overall risk score can be calculated. The overall score determines which compliance path is available to you (i.e. Pathway 1, 2, 3 or 4).

Whichever pathway is chosen it must be followed in conjunction with this guidance.

	Risk factor	Score	Comments
A	Cladding	1	$\leq \pm 1.5\text{kPa}$
	wind	2	$\leq \pm 2.5\text{kPa}$
	pressure	3	$> \pm 2.5\text{kPa}$
B	Geometric complexity	1	<ul style="list-style-type: none"> * Simple rectangular shape * No more than two internal corners at 90° * Uniform in plan
		2	<ul style="list-style-type: none"> * More than two internal corners * Internal and/or external corners not at 90° * 75% of floors same plan shape * Recesses in plan or balconies over habitable spaces * Complex * Multiple recesses
		3	<ul style="list-style-type: none"> * External envelope isn't vertical (i.e. not at 90° to ground) * Balconies with habitable space underneath * Roof gardens
C	Number of systems	1	Junctions between systems: <ul style="list-style-type: none"> * 1 wall system * Joinery system * ≤ 2 roof or 2 deck systems * No podium
		2	Junctions between systems: <ul style="list-style-type: none"> * ≤ 3 wall systems * > 2 roof or deck systems * Podiums with non-habitable space below
		3	Junctions between systems: <ul style="list-style-type: none"> * > 3 wall systems * > 2 roof or deck systems * Podium with habitable space below

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D	Types of systems	1	<ul style="list-style-type: none"> * Prefabricated systems * One party responsible for design, fabrication, and installation (i.e. curtain wall)
		2	<ul style="list-style-type: none"> * Limited on-site fabrication * Each system has no more than 2 parties responsible for the design, fabrication, and installation
		3	<ul style="list-style-type: none"> * Predominately or fully fabricated on site * Each system has more than 2 parties responsible for the design, fabrication, and installation

E	Horizontal building movement	1	≤ 6mm
		2	> 6mm ≤ 15mm
		3	> 15mm

F	Vertical building movement	1	≤ 10mm
		2	> 10mm ≤ 15mm
		3	> 15mm

G	Performance evidence	1	<ul style="list-style-type: none"> * Within the scope of a CodeMark * Within the scope of a verification method
		2	<ul style="list-style-type: none"> * Systems tested to a cited New Zealand Standard * System deviates from tested system with supporting expert opinion
		3	<ul style="list-style-type: none"> * Systems tested to an overseas standard * Engineering judgements

Total score	Overall risk score
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The total score for section A + B + C + D + E + F + G = overall risk score.

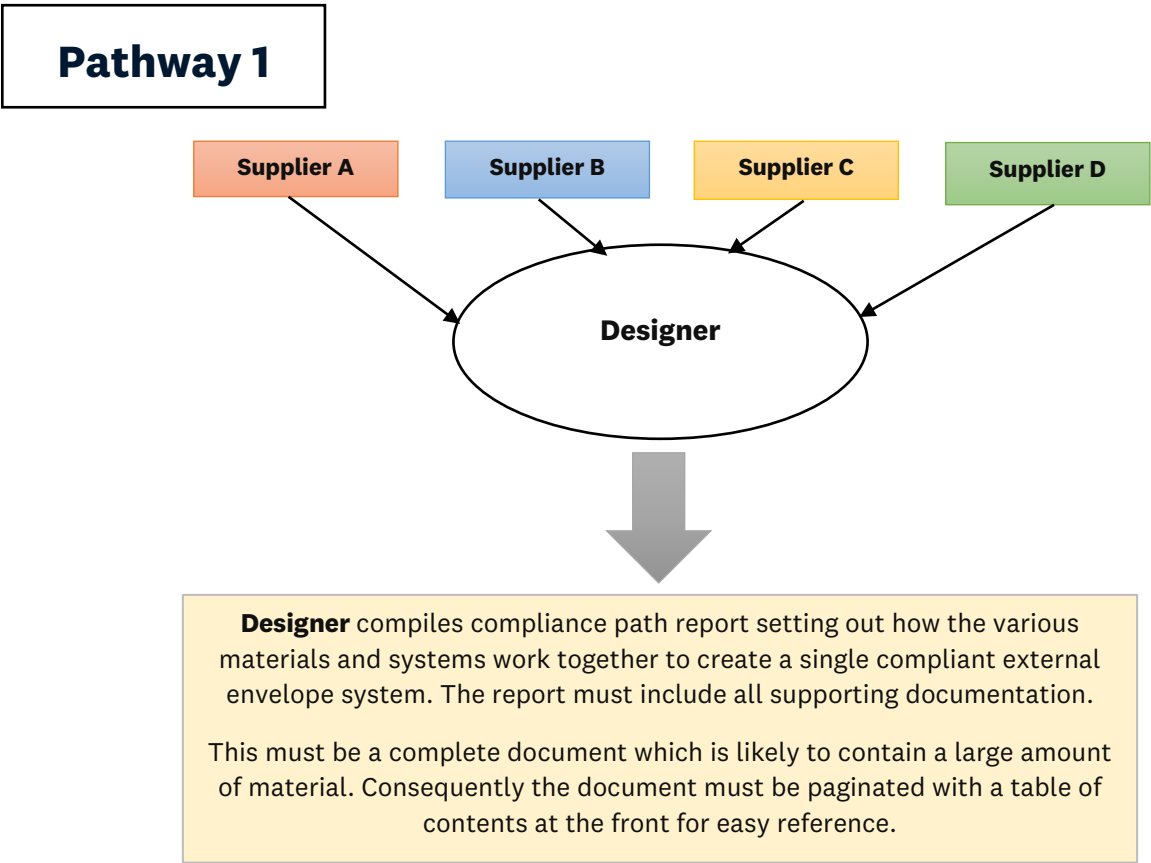
The overall risk score will determine which pathway is available to you – please refer to the risk score table overleaf (Fig.1).

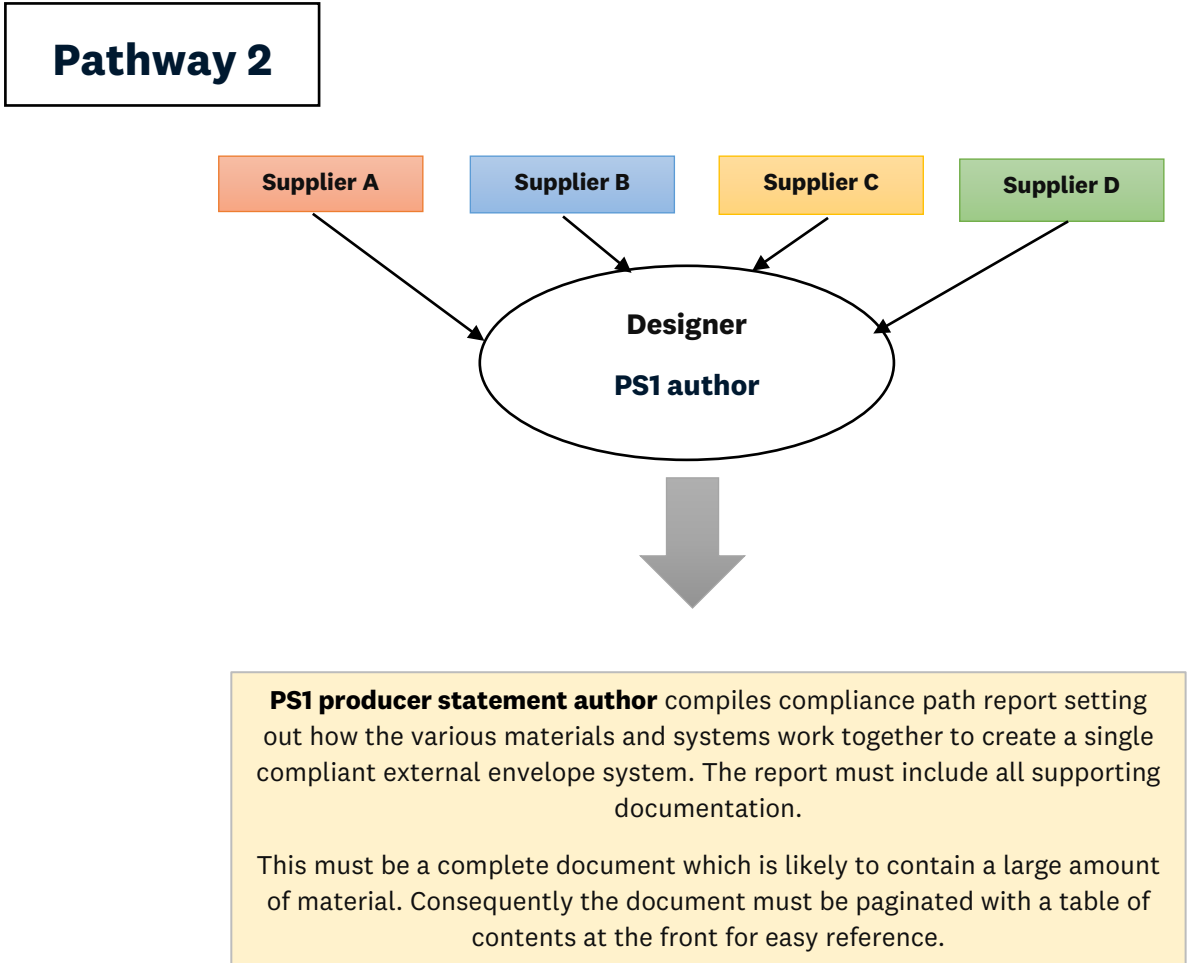
Please note, several pathways may be available to you (i.e. a score of 12 allows pathway 2, 3 or 4). You can always use a higher pathway but never a lower one (i.e. a score of 12 does not allow pathway 1).

Risk Score			
<10	10 to 15		>15
Pathway 1	Pathway 2	Pathway 3	Pathway 4
Designer provides compliance path report	Designer provides compliance path report with supporting PS1	Designer provides compliance path report and independent review with supporting PS2	Designer provides compliance path report with supporting PS1 and independent review with supporting PS2

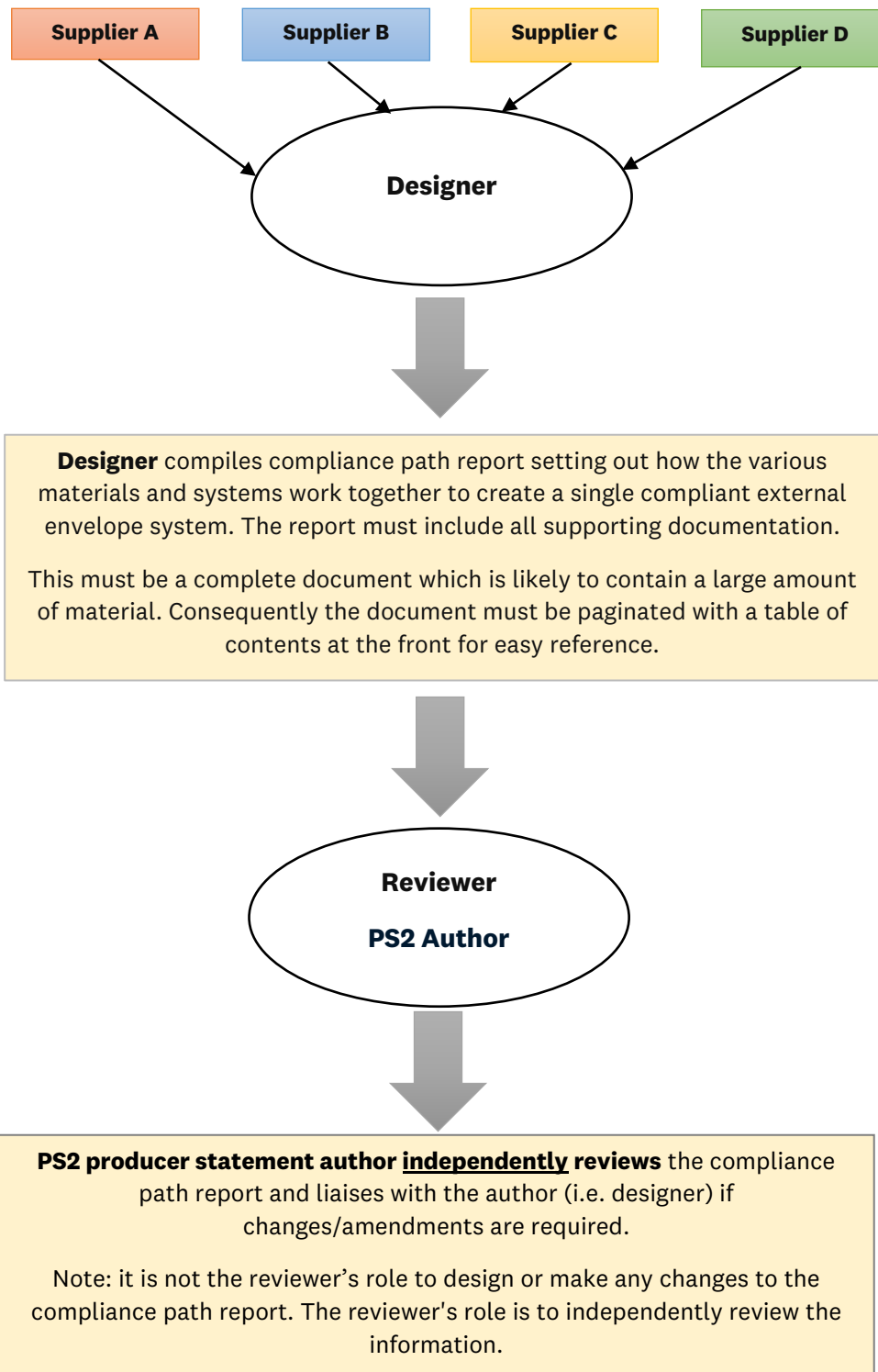
Fig. 1

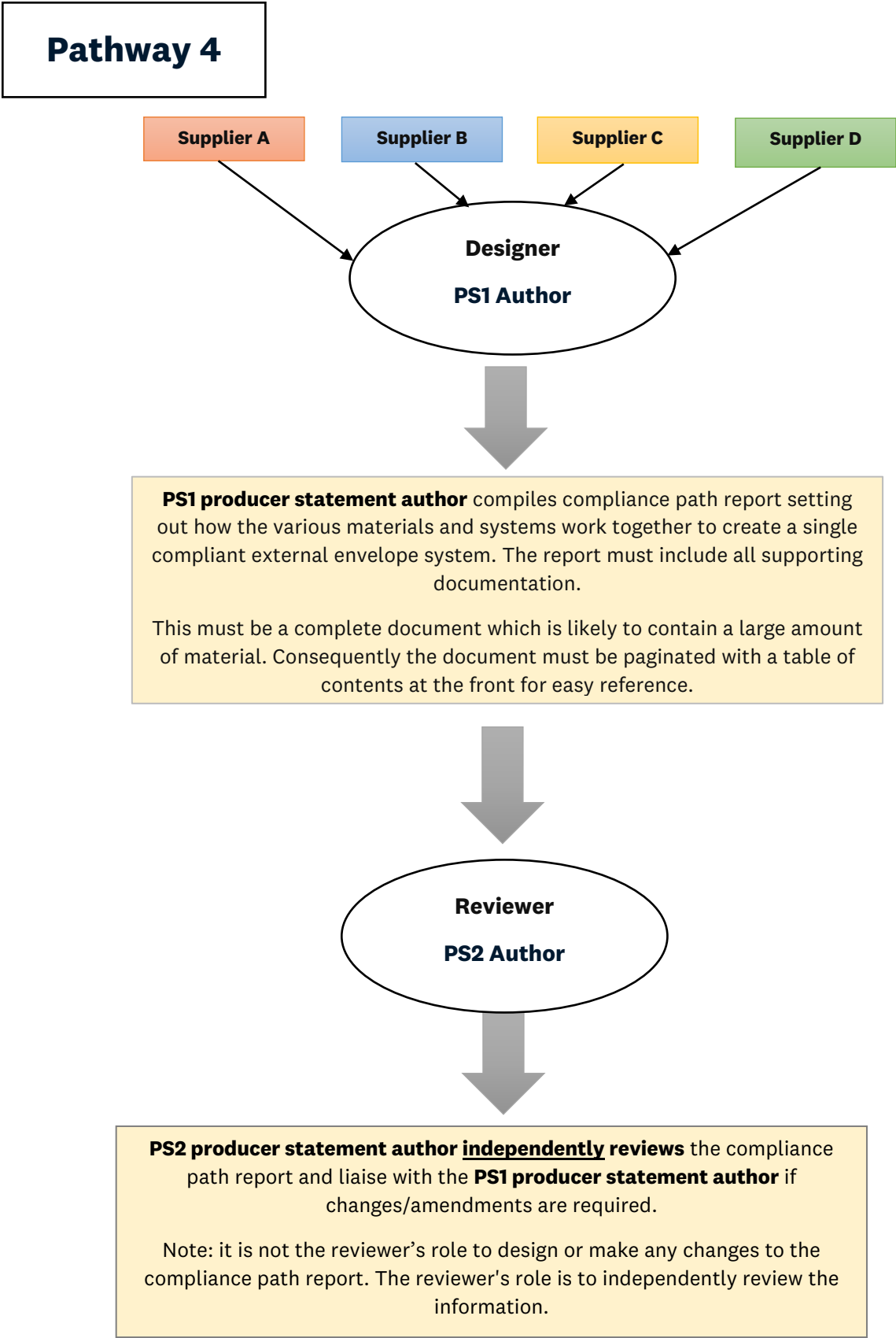
Pathways (flow charts)





Pathway 3





Definitions

Acceptable solution

A method of achieving Building Code compliance. See section 7 of the Building Act.

Alternative solution

A method, other than an acceptable solution that meets the performance measures in the Building Code.

Amendment

Amendments occur when the changes are fairly major and compliance decisions require further input from other disciplines or will take significant research and investigation to assess.

Building Act 2004 (Building Act)

The main legislation regulating building work in New Zealand. To read the Building Act online, visit legislation.govt.nz

Building Code

Schedule 1 of the Building Regulations 1992 (as amended) prescribes the objective, functional requirements, and the performance criteria that all building work must comply to.

Building consent

Formal approval granted by a building consent authority to an owner to carry out specified building work. See section 49 of the Building Act.

Building consent application

An application for a building consent made in the format of Form 2, which is prescribed in the Building (Forms) Regulations 2004

Building movements

The building structural design and resulting deflections that influence the external envelope and affect the detailing required.

Building regulations

Regulations made under the Building Act.

Cladding wind pressure

Cladding wind pressures are the loads from wind acting on the external envelope systems. This includes shape multipliers and local pressure factors. They are usually determined by an engineer experienced in the use of AS/NZS1170.2 or through wind tunnel studies. Cladding pressures are different to structural pressures and include both positive and negative pressures.

Code Compliance Certificate (CCC)

A certificate issued by a building consent authority once it is satisfied that building work complies with the granted building consent. See section 94 of the Building Act.

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Compliance Path Report

This is the primary document the council relies on to demonstrate the compliance path for the external envelope. It must be signed by the author (individual) and, in the case of pathway 1, must include a description of the author's experience and qualifications in relation to external envelopes.

The compliance path report will also outline how the construction will be monitored and will include a quality assurance programme nominating if any onsite testing requirements and the onsite observations are required.

External envelope (weathertightness)

The exterior surface* of a building, both horizontal and vertical surfaces, above and below ground to prevent moisture entering the building. This includes, but is not limited to, roofing, walls, tanking, balconies and podiums. If a cavity system is to be installed as part of an external envelope, it includes the building's supporting structure to the weather face of the exterior envelope.

* When a cavity is constructed, the exterior surface includes all the elements from the outside face of the building's structure to the outer most element exposed to the weather.

Minor variation

A minor variation is a minor modification, addition, or variation to a building consent that does not deviate significantly from the plans and specifications to which the building consent relates (Regulation 3 of the Building (Minor Variations) Regulations 2009).

Onsite QA programme

The designers' nominated process for inspections and site observations by other parties. This must be kept onsite, maintained, and always made available to the designer, the design reviewer and council.

Peer review

The council will require the external envelope review to be outsourced to an independent reviewer where the design complexity fits within either option 3 or 4 in the Compliance Path table.

All peer reviews should include review of the project plans and specifications including compliance report, site observation methodology, and a peer review log documenting the review process with the supporting PS2.

Point of contact

This is the person the applicant has nominated on the building consent application form as their representative and single point of contact. Communication will only be via the identified point of contact.

Producer statement author's responsibilities

An author of a producer statement is responsible and accountable for its content. Authors accept that Council places reliance on their statement. For the avoidance of doubt, this includes where an author signs a producer statement covering another person's design (PS2) or observation of construction (PS4). It is an author's responsibility to ensure that they are satisfied that the work is compliant.

If an author wishes to withdraw their services or they no longer have any involvement in a project (e.g. the owner has opted to use someone else), the author is responsible for notifying the council that they are no

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longer involved in the project within 10 working days of their withdrawal. The author must contact the Inspections Booking Team (stopwork@aucklandcouncil.govt.nz) so records can be updated.

Project description (within the context of the envelope compliance report)

Forms part of the external envelope compliance report. This will outline exactly what is covered in the compliance report (i.e. roof, walls etc.) and what the elements are. It is important that this description appears early in the compliance report.

Site inspections

The programme for site inspections will be submitted in the compliance report with the external envelope documentation lodged for building consent. When an external envelope engineer has been engaged, the weight of the inspections process will be directed by that external envelope engineer.

It is the council's expectation that the external envelope engineer will complete site visits and check the installation is in accordance with the approved building consent. The external envelope engineer will ensure any changes have been addressed by way of Minor Variation or Amendment. The engineer will check the contractor's documentation and ensure appropriate records are maintained and kept onsite.

Copies of site records and instructions and close offs are to be made available to the council inspectors and shall be provided to council at the conclusion of the project prior to the issue of the Code Compliance Certificate.

The external envelope engineer will need to ensure all deficiencies are closed out prior to the issue of PS4.

Water testing (horizontal surfaces)

On-site testing is often required by the designer but may also be requested by suppliers or manufacturers of materials (i.e. membranes). Flooding an entire roof surface (example 100mm of water left in situation for 48 hours) may not be practical for various reasons. Consequently further test methodology must be nominated in the compliance report, which will be overseen by the designer or their nominated representative.

Water testing (vertical faces)

On-site water testing will be nominated by the designer, within the external envelope compliance report. It will be undertaken to a recognised standard (previously nominated in the external envelope compliance report and approved by council) and witnessed by the designer or their nominated representative.

Where no definition has been provided, please refer to section 7 (Interpretations) of the New Zealand Building Act 2004.

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