

Remote Inspection Guidance for Building Consent Authorities

ADOPTING AND GROWING THE UPTAKE OF REMOTE INSPECTIONS

JULY 2024



Ministry of Business, Innovation and Employment (MBIE)
Hīkina Whakatutuki – Lifting to make successful

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1. Purpose

The purpose of this guidance document is to assist building consent authorities (BCA) in making informed decisions when adopting and growing their use of remote inspections (RI).

It outlines key considerations for BCAs when deciding on the RI approach to adopt and provides information for builders and the construction industry on what to expect from the different RI approaches that may be used by the BCA.

About this guidance

The guidance contains information that relates to the relevant areas of the Building Act 2004, the Building (Accreditation of Building Consent Authorities) Regulations 2006 and the Public Records Act 2005.

It aims to support BCAs in adopting a more consistent approach to using RIs to enhance efficiency within the construction industry.

As technologies evolve and adapt, the processes that support these technologies will also need to be streamlined and adapted. This guidance is a 'living document' and will be periodically updated to reflect legislative and technological changes.

Who this guidance is for

This guidance is for BCA staff who set strategic direction in developing and growing the use of RIs and those staff who manage and perform inspections. It is also particularly relevant to building practitioners and/or other tradespeople who participate in the inspection process.

2. Background

The building and construction industry plays a vital role in Aotearoa/ New Zealand's economy and touches the lives of all New Zealanders. A high-performing building system is critical for delivering safe, healthy and durable homes.

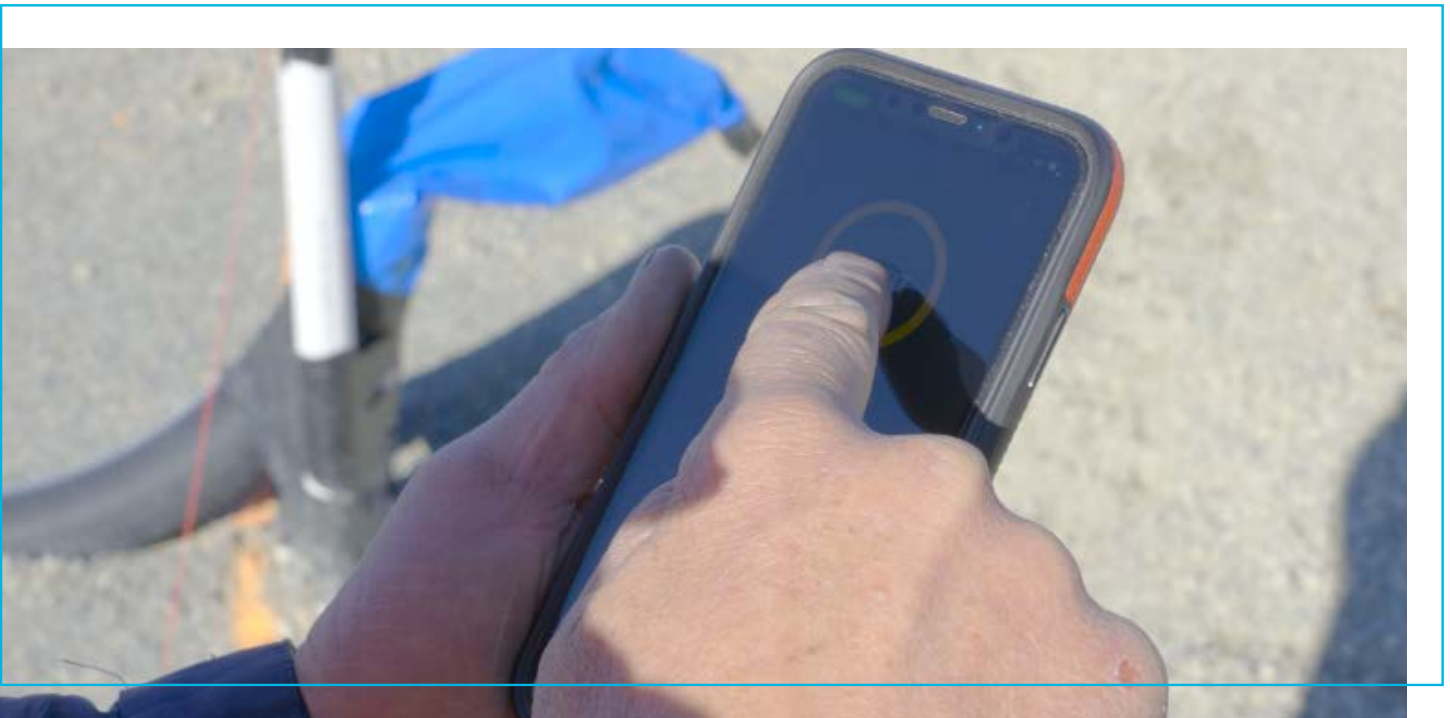
The use of technology solutions and advancements such as remote inspections (RI) can help people across the building system, including BCAs, inspectors, tradespeople and building companies. It allows people to work differently, run their sites more efficiently, and enables more flexibility and productivity.

To streamline the building consent process and make construction more efficient, some BCAs are already using RIs and accept video and photographic evidence of work completed. These inspection types allow BCAs to complete compliance assessments from remote locations, including the council, home offices or different cities.

RIs have generally been used when on-site inspections are not possible, with their use increasing during the COVID-19 pandemic. They are also utilised during extreme weather events when, for example, site accessibility is impacted by road closures. They are now gaining further acceptance with several BCAs using RIs in their processes to save inspectors time, reduce cost, provide business continuity and ensure a timelier service to applicants.

There are currently different approaches to how RIs are used, when they are used, and the technology used, depending on the BCA and the nature of construction within its area.

MBIE has developed this guidance with routine steps for carrying out RIs to support more consistency as BCAs look to increase their uptake of this approach.



3. Roles and responsibilities

There are four principal roles responsible for ensuring compliance with the Building Act during inspections, each with specific responsibilities.

Ministry of Business, Innovation and Employment

As the central regulator, the Ministry of Business, Innovation and Employment (MBIE) provides stewardship of the building regulatory system. MBIE's responsibilities under the Building Act include:

- reviewing and updating building policy, laws and regulations
- monitoring and evaluating the overall performance of the building system
- providing information, education and guidance about the building system to aid understanding, compliance and enforcement.

Building consent authority

Every building consent is issued subject to the condition that authorised agents of the building consent authority (BCA) may inspect:

- the land on which building work is or will be carried out
- the building work being carried out (either on or off the building site)
- any building.

Councils or private organisations who are accredited and registered to undertake building control functions under the Building Act are responsible for granting and issuing building consents and checking building work to ensure it complies with the consented plans and specifications. This assessment of the building work is usually done by carrying out on-site inspections.

In relation to the use of remote inspections (RI), the BCA is responsible for:

- ensuring its policies and procedures relating to RIs meet the requirements of the Building (Accreditation of Building Consent Authorities) Regulations 2006
- ensuring RIs are undertaken by staff who are competent to inspect the relevant building work
- ensuring records relating to decisions and reasons for decisions are maintained and stored securely
- ensuring the RI policies and procedures it adopts allows the BCA to check and confirm that building work complies
- providing consumer information as to how building work is inspected.

Building practitioner/owner-builder

In the context of this guidance, the term builder refers to a building practitioner, of which there may be multiple on a project or an owner-builder.

Where a building consent inspection is carried out using an RI, the builder should ensure nominated site personnel have the rights skills and knowledge for the type of RI being undertaken.

For a live stream RI, the builder should be available at the agreed time to support the BCA in undertaking this type of inspection. They should:

- ensure the site is prepared for the inspection, is clear from any potential hazards and accessible for the section of building work being inspected
- navigate the site as requested by the BCA
- have the correct technology (phone/tablet) available to conduct the inspection
- provide commentary on the inspection as requested by the BCA.

Where photographic evidence is being provided to the BCA, the builder should provide evidence to the standard requested by the BCA to demonstrate compliance.

Building owner

The building owner has overall responsibility to ensure the building work complies with the building consent and must ensure they or their nominated representative enable inspections to be completed as required by the BCA.

What does the law say?

Sections 14B to 14G of the Building Act specifies different parties' responsibilities to ensure building work that is covered by a building consent has been carried out in accordance with that consent.

Responsibilities are specified for:

- section 14B – owners
- section 14C – owner-builders
- section 14E – builders
- section 14F – BCAs, which are responsible for checking that building work has been carried out in accordance with the building consent (and an RI is one way that the BCA can check this).

4. Remote inspections

Remote inspections (RI) are an approach where inspection activities are conducted remotely using digital tools and technologies. Instead of visiting the site in person, inspectors may use live video streaming or review photographic evidence to assess building work.

The inspector still assesses compliance with the consented plans and specifications without the need to be physically present on site. This approach is widely used across industries, including construction, manufacturing, and public safety, to enhance efficiency, reduce costs, and improve safety for inspectors.

While this guidance focuses on the two most commonly used RI approaches in Aotearoa/New Zealand, technologies continue to evolve and other options may become more prevalent, such as drone inspections, fixed site camera monitoring and 360° reality capture systems.

Types of remote inspection

The two main types of RIs used by BCAs are:

- live stream
- evidence based.

Live stream

Inspectors conduct live stream video inspections by directing a builder around the site throughout the inspection. Maintaining continuous communications during the RI, the inspector can capture digital images and recordings as a record of compliance.

This type of inspection is similar to an on-site inspection with the key difference being that the inspector is remote and making compliance decisions based on what they are seeing through the live stream. Records, decisions and reasons for decisions are captured on inspection checklists, as they would be during an on-site inspection.

These inspection types are a common form of RI and due to their nature, require only a small change in practice brought about through live streaming the inspection.

Evidence based

Builders capture photo or video evidence and provide it to the BCA by uploading it to council or third-party systems to enable assessment of compliance at a suitable time by the inspector. This type of RI provides a good option for both lower risk inspection types and inspections with builders that have consistently demonstrated compliant work.

Evidence based RIs are also well suited to reinspections, removing the need to travel back to site. When using an evidence-based approach, a greater focus on the quality of information is needed, with clear requirements on what the BCA will accept as evidence of compliance.

RI approaches

There are a range of approaches for how BCAs could adopt the use of RI depending on their circumstances.

Full RI adoption

This involves conducting all inspections remotely, with builders either participating in live stream inspections or providing digital evidence. With full RI adoption, the builder acts as the BCAs 'eyes on site' to show or provide evidence of elements that would typically be inspected during on-site inspections.

Hybrid approach

The BCA can adopt a hybrid approach that combines on-site inspections with either one or both RI types available. The BCA could take a risk-based approach and choose to use RI for certain types of inspections or with certain builders. An example of this could be adopting evidence-based RI for inspections with builders that have consistently demonstrated compliant work and have proven experience in certain inspection types. BCAs could use live stream RI for those builders that need to demonstrate compliance performance.

Re-inspections

These inspections can be effectively managed through RIs preventing the need for additional site visits and reducing the need to halt work pending scheduling of a further on-site inspection for what could be minor non-compliance matters.

Suitability

While some BCAs may not consider RIs suitable for all inspection and building types, re-inspections are one type that is particularly appropriate. These can be completed at a convenient time for the inspector when receiving digital evidence or via arrangement of a short video stream with the builder at a suitable time. Inspectors may typically undertake this work between other inspections when time permits, or these activities could be undertaken by another member of the building team when inspection resources (particularly for more complex building categories) are scarce.

Allowing both inspectors and builders the option to request on-site inspections if their professional judgment deems it necessary may also be appropriate to ensure that no critical details are missed.

RI scope of work

The BCA could develop a strategy for adopting and utilising RIs to effectively manage risks, while building confidence and skills in their use. When deciding its strategy, the BCA could consider:

- types and complexity of building work that would be the most suitable for an RI, particularly in the early stages of adoption
- inspection types that are lower risk and more straightforward to undertake using RI methods, particularly in the early stages
- builders to work with when piloting, testing and adapting its approach
- a combination of remote and on-site inspections
- the type of technology it will adopt.

5. Benefits

Benefits exist for the building industry overall, as well as for individual BCAs and builders.

BCA

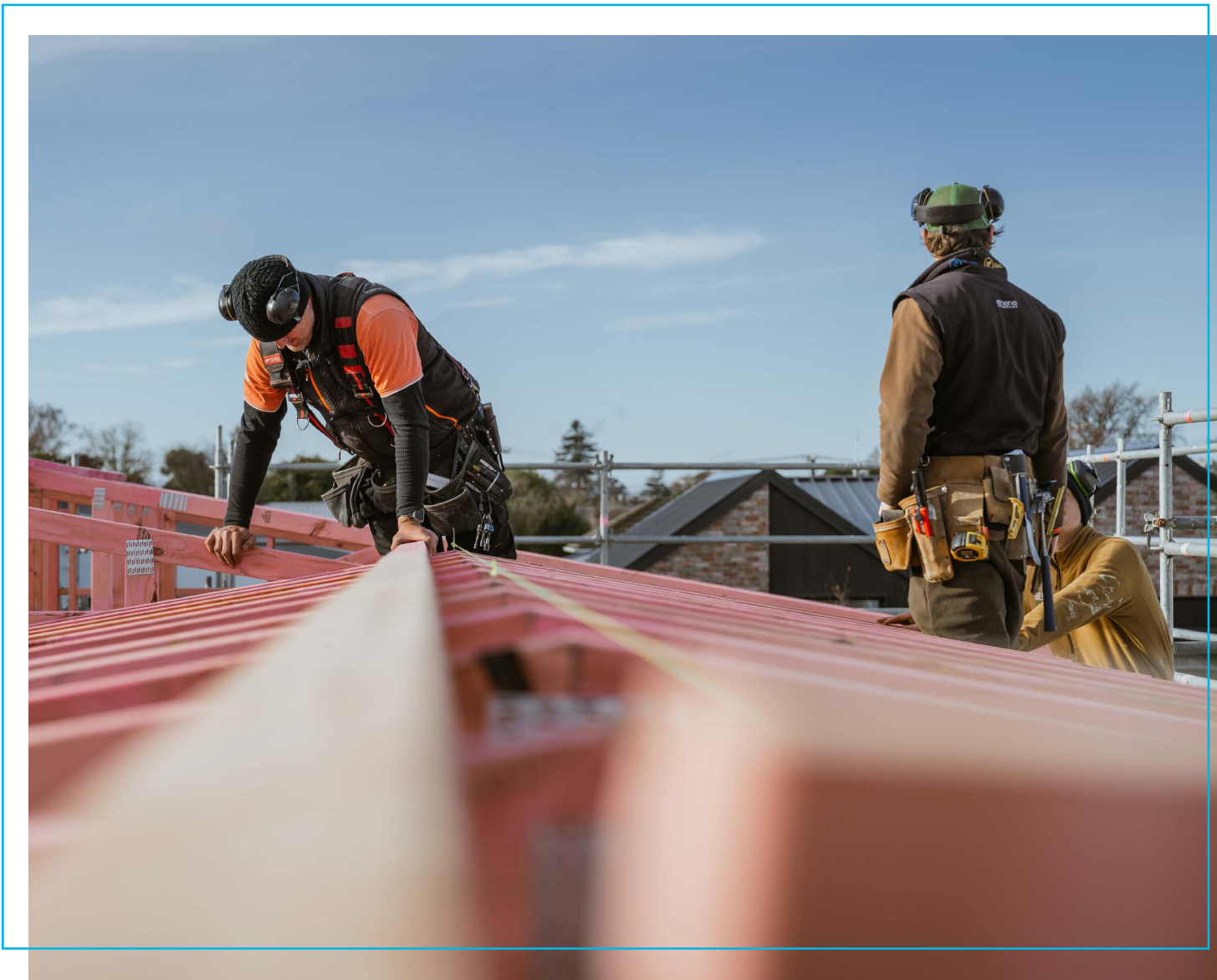
- **Increased productivity:** Eliminates travel time, allowing more inspections to be conducted. This is a significant benefit in both rural areas (with long travel times, often to undertake a single inspection) and in cities and towns where travel between sites can be a logistical issue due to traffic.
- **Cost reduction:** Lowers travel and vehicle expenses. It may also reduce BCA vehicle fleet numbers with a commensurate cost reduction in purchase, maintenance, and vehicle road compliance.
- **Safety:** Minimises the number of on-site personnel, reducing exposure to health and safety risks.
- **More flexibility:** Enables inspections from various locations, improving capacity management and scalability.
- **Expert access:** Remote inspections (RI) allow the BCA to have broader access to experts (particularly those who may not be local to the site) including opportunities to integrate with designers during construction monitoring.
- **Upskilling of inspectors:** Enables support for less experienced staff during the inspection process by offering review and feedback on digital evidence. The BCA can also leverage expertise from other BCAs or third parties to enhance its skill sets with its RI approach.
- **Records management:** RIs produce high-quality digital records that are time and geolocation stamped and able to be linked to consent records, aiding in accurate documentation for future reference.
- **Quality of documentation:** RIs mean that BCA inspectors can undertake inspections using digital consent documentation as opposed to physical site plans which can become damaged and disorganised across the course of the build.
- **Sharing resources:** BCAs may choose to use RI specialist resources from other BCAs or through a contract arrangement where they do not currently have the necessary internal skills or capacity to meet RI demand.

Builder

- **More timely inspections:** RIs facilitate more efficient inspections. Builders receive clearer inspection scheduling, avoiding the need for same-day confirmations based on the inspector's planned movements. This approach also reduces the risk of delays caused by issues with the inspector's earlier inspections and travel constraints.
- **Predictability and flexibility:** Evidence based RIs are builder-led in that they are undertaken at a time that suits the builder and do not rely on the inspector's availability. The builder may capture the required photographic evidence at a time that suits their work schedule as opposed to the inspectors.
- **Cost savings:** Achieved through not having sub-contractors being paid while waiting for an inspection to take place.
- **Faster build process:** Potential for a shorter build process through more timely inspections while reducing down time waiting for an on-site inspection.
- **Increased Building Code knowledge:** Builders who have undertaken RIs have indicated that it has increased their knowledge of Building Code requirements through gaining a better understanding of what is required as part of the inspection process.
- **Safety:** Having less people on site reduces the likelihood of incidents.

Wider industry

- Collaborative industry approach: Adopting technological solutions and advancements through working with the industry assists in building trust, improves public perception, enables greater efficiencies and achieves greater consistency.
- Reduced environmental impact: Carbon emissions are reduced through less travel and reduced BCA vehicles contributing to congestion in urban areas. This supports broader environmental and sustainability goals.
- Continuity and resilience: As observed through the COVID-19 pandemic and natural disaster events, adoption of RI practices provides for business continuity and resilience for the whole building and construction industry.



6. BCA considerations

There are a number of key considerations the BCA may consider with its remote inspection (RI) approach.

Building complexity and inspection types

The BCA could use their data on inspection failures to help determine which inspection and building types it could consider as lower risk options in the early stages of adopting RI. In addition, those builders that are known to have a higher inspection pass rate may also be good candidates as early adopters for the BCA's approach.

The BCA could start with low complexity building types and simpler inspections including:

- single level builds
- garages, retaining walls
- lower risk building elements in complex builds
- minor renovations.

Similarly, the BCA may initially exclude building work that includes:

- multi-storey buildings
- builds with fire separation
- aspects of complex residential builds (residential 3)
- commercial builds.

Inspector and builder skillsets

Ensuring that inspectors develop the necessary skills is crucial for the effective implementation of RI technology. Inspectors need to be proficient in the RI tool the BCA adopts, particularly for live streaming. This will include understanding verification techniques and adapting to unexpected situations that may arise during different inspection types.

Key skills and competencies for BCA staff include:

- **Technical proficiency:** Inspectors demonstrate a high level of technical ability with the RI tool, ensuring they can operate the technology seamlessly.
- **Spatial awareness:** The ability to navigate and orient themselves on the inspection site remotely is essential. Live streaming can be a disorienting experience and inspectors must engage their spatial awareness skills to effectively conduct inspections remotely.
- **Image capture:** Inspectors need to capture appropriate images to collect evidence suitable for verifying compliance with the consented plans and specifications.
- **Site navigation planning:** Planning site navigation in advance based on building plans supports an efficient inspection process.
- **Interpersonal and communications skills:** These are critical for guiding builders through live stream inspections. Inspectors must clearly communicate their expectations, instruct builders on where to direct their devices, and maximise the evidence capture process.
- **Problem solving abilities:** Inspectors may need to adapt their inspection techniques to address any limitations that may arise with site access or visibility.
- **Health and safety awareness:** An integral part of the RI, inspectors (and builders) need to identify and manage any risks observed during live stream inspections.

BCAs may provide guidelines on the quality and level of evidence required when capturing digital information, ensuring inspectors can gather the appropriate level of evidence, as they would during an on-site inspection.

Builders involved in RI will also need to be competent in using the chosen software and technology and have a good understanding of inspector expectations. This can be supported by providing information and education such as explanatory factsheets or video examples. BCAs could use existing relationships to identify suitable builders for early RI adoption, fostering confidence in the use of the technology and enhancing mutual learning.

By developing these comprehensive skills, inspectors can effectively conduct RIs, maintaining the quality and accuracy of inspections while leveraging the advantages of new technology.

Technology

The BCA should ensure it uses reliable and secure applications for any RI approach it adopts, whether for live streaming or digital evidence capture. The chosen technology should handle data capture and storage effectively, noting that file size for extensive video evidence may be restrictive (this is generally mitigated by taking photographic evidence of the key elements of building work during the live stream video, rather than recording the video in full). Any technology should have the functionality to geolocate from photographic and video evidence.

Multiple applications can support RIs, and these can either integrate with existing council systems or function independently. When choosing an application, the BCA may consider:

- how the application will work with its existing building consent software system
- how it will store and access records (images, recordings) through its document management system
- how it will protect sensitive information, considering end-to-end encryption and compliance with data privacy requirements.

Application types

Application types include:

- specialist building inspection applications
- live streaming
- photographic and video evidence.

Specialist building inspection applications

Applications specifically designed for building inspections are likely to be best suited for successful RI implementation. These applications allow the inspector to record video and/or photographic evidence. They provide for geographic locations to be stored and inspections to be timestamped, with all evidence able to be captured within the system and integrated into BCA systems.

Live streaming

Commonly used communication applications such as Zoom, Teams, FaceTime and WhatsApp have been used for inspections. While they have live stream capability, they offer less controls compared to specialist building inspection applications. With a specialised live stream application, the inspector can control the camera during the inspection allowing them to zoom in and out on specific areas.

Photographic and video evidence

When evidence-based RI is used to demonstrate compliance, builders can submit photographic or video evidence. This can be done either directly to the BCA or via a specialist application. The BCA must clearly communicate to builders the type of digital evidence required, including details on the level of detail, time/date stamping, and geo-location information.

It is important that BCA expectations around what needs to be confirmed at each inspection type are made clear to the site participant at the outset. Provision of the inspection checklists may help site practitioners understand what is needed at each stage.

Financial considerations

When choosing its approach for RIs, there are a number of financial considerations the BCA may need to be aware of, these include:

- purchase and/or licensing costs of RI software
- potential investment in additional hardware (eg three monitors may be required) and data storage capacity
- cost to roll out the implementation of the system
- any integration required with existing software and systems
- evaluating the financial impact of change on existing resources
- training time for inspectors to upskill and become proficient in the use of technology
- cost to develop and promote their approach to the industry, including associated materials.

In considering these factors, the BCA can make an informed decision about how it will realise the benefits of an RI approach and assess how any associated costs can be recovered through the productivity and efficiency gains that an RI approach will achieve.



BCA policies, procedures, systems and records

The Building (Accreditation of Building Consent Authorities) Regulations 2006 provide a comprehensive list of requirements to ensure BCAs maintain legislative compliance. Adoption and use of any RI approach must ensure compliance with these regulations.

The objectives of the BCA accreditation scheme are that all BCAs have:

- appropriate, documented and implemented policies, procedures and systems
- appropriate, documented and implemented effective quality assurance systems
- sufficient skills and resources to undertake their statutory functions
- employees and contractors with appropriate building control competencies and qualifications.

In relation to RIs, the approach the BCA adopts may need to be considered across the following regulations and their relevant policies and procedures updated:

Building (Accreditation of BCAs) Regulations	Consideration
Regulation 5: Policies, procedures and systems	Policies, procedures and systems related to RI must include any changes needed because of using this approach over an on-site inspection approach.
Regulation 6: Observance of policies, procedures and systems	BCAs are required to demonstrate they comply with their documented processes. This could include a sample of internal audits relative to the overall inspection audits it undertakes to ensure the requirements of this regulation are met.
Regulation 7: Performing building control functions	Policies, procedures and systems relating to regulation 7(2)(e) for planning, performing and managing inspections should be reviewed and updated to include how these inspection types are booked, allocated, managed and performed. Regulation 7(2)(a) must be considered in relation to any consumer information the BCA provides to the industry and consent applicants relating to the inspection types it undertakes and when and how these may be applied.
Regulation 8: Ensuring enough employees and contractors	The volume of RIs the BCA undertakes may improve its productivity and therefore impact any calculations the BCA makes relating to determining if it has enough employees and contractors.
Regulation 9: Allocating work to competent employees or contractors	Inspectors with the skills to undertake RIs will need to be identified on the BCA's allocation matrix to support the inspection booking process.
Regulation 10: Establishing and assessing competency of employees	As part of the BCA's competency assessment process, inspectors should be assessed in relation to their skills and capabilities while undertaking the RI inspection types the BCA deploys. Aspects of this regulation the BCA should consider include: <ul style="list-style-type: none"> • Regulation 10(3)(d)(ii) – requires employees to be assessed for their competency to inspect building work • Regulation 10(3)(e) – their ability to communicate with internal and external persons • Regulation 10(3)(f) – whether inspectors have complied with the BCA policies and procedures for RI.
Regulation 11: Training employees	Training undertaken by inspectors in the use of RIs may be included in the BCA's training plan and subsequent monitoring of the effectiveness of such training recorded.

Building (Accreditation of BCAs) Regulations	Consideration
Regulation 12: Choosing and using contractors	Decisions relating to the engagement of contractors by the BCA may include their ability to undertake RIs and this may form part of ongoing performance reviews.
Regulation 14: Ensuring necessary technical resources	<p>The BCA identifies equipment it deems critical to the inspection process and how it ensures this equipment is fit for purpose. Typical examples are moisture meters and thermometers its inspectors carry, which are calibrated under laboratory conditions. While a RI approach can include inspections that use such equipment, the BCA must record how it deems this equipment to be suitable. Examples exist of BCAs outsourcing such equipment; letting builders test their own equipment against the BCA's calibrated master or the builder providing its own calibration records.</p> <p>Additional consideration should also be given to any electronic equipment the BCA uses for RIs such as laptops, tablets, phones etc. that are used to capture inspection images to ensure these are and remain fit for purpose.</p>
Regulation 16: Filing applications for building consents	While BCAs typically currently capture photographic evidence as part of their building consent records, any additional requirements relating to video (noting file size may be a barrier for full inspection records) captured during a RI may also need to be referenced. Any such records would need to be stored securely, accessible and retrievable, particularly if they were not easily integrated into the BCA's document management system.
Regulation 17: Assuring quality	<p>In addition to the annual audits the BCA undertakes across all its policies and procedures that contain RI requirements, regulation 17(2)(h) requires that the sample size and range of examples it uses are representative of the work the BCA undertakes. Therefore, dependent on the volume of RIs undertaken, this should be reflected in the BCA's sample size for inspection related audits.</p> <p>Any employees and contractors working in the BCA's system to undertake RIs must be appropriately inducted into the system under regulation 17(4).</p> <p>Another consideration should be the BCA's annual strategic review meeting where review and strategic direction for its inspection approach incorporating RIs is discussed.</p>

Challenges and limitations

The use of RI technology presents some challenges and limitations that BCAs adopting it may need to manage. While these are not insurmountable, they need to be addressed to ensure the effectiveness and acceptance of RIs in the construction industry.

Site challenges

Live stream inspections are a relatively new technology in Aotearoa/New Zealand where the builder will be required to navigate a partially complete construction site that will present several identified (and unidentified) hazards. Having a device in hand for recording an inspection, along with potentially noise-cancelling headphones to hear instructions from a remote inspector, presents additional hazards that must be actively managed by the builder on site at each stage of the inspection. Alternatives to handheld devices that could be considered include body cams or 360° cameras positioned on a builder's hard hat.

With the builder having responsibility for site health and safety, undertaking a live stream inspection may pose a risk if sections of the site can't be easily accessed. The inspector may confirm with the builder that there are no impediments to ensuring an RI can be safely undertaken.

To ensure the effectiveness of live stream inspections, it is crucial to have reliable internet connectivity at the inspection site, as poor connectivity can necessitate rescheduling. Additionally, environmental conditions such as inadequate lighting or adverse weather can impair the quality of live streams and the collection of photographic evidence. Addressing these issues is essential to maintain the quality of the inspection and some application providers can offer solutions when connectivity is an issue.

Calibrated equipment

Inspections that involve the BCA having to demonstrate compliance using calibrated equipment (under its BCA policies), such as checks relating to moisture and temperature, add another level of complexity. Some BCAs have been known to loan this equipment to the builder to undertake these checks, but this may present logistical difficulties. Other BCAs may permit builders to use their own equipment provided that the builder can demonstrate that it is suitably calibrated.

Live stream fatigue

Technology and screen fatigue is a well-documented phenomena and various strategies are in place to assist workers who spend much of their time behind a computer screen. This fatigue could be exacerbated by RI and the need to intensely view the images as they appear on the screen. The longer an inspector spends at their screen, the higher the risk of issues being missed during a RI.

Process steps for BCAs adopting RI

There are a number of steps that the BCA adopting the use of RI may need to take in order to manage the change from on-site inspections to remote. To fully realise the benefits of an RI, the BCA could implement effective change management practices internally and externally.

The checklist below contains some of the key steps and considerations.

Steps for BCAs adopting remote inspection technology for building consent inspections:

Step 1. Feasibility assessment and planning

- follow organisational continuous improvement/ change process for making changes to the BCA quality management systems
- identify where remote inspections could be used in the context of the local area
- develop an outline feasibility plan outlining objectives, scope, and timelines
- identify potential high-level benefits and costs
- understand current volumes of suitable inspections (types / building category)
- assess risks – technology, inspection type, building complexity, builder, inspector skillset

Step 2. Stakeholder consultation

- engage with key stakeholders (builders, contractors, property owners) to gather input and identify concerns
- conduct workshops and feedback sessions to ensure stakeholder support

Step 3. Technology selection

- research and select appropriate remote inspection technologies:
 - consider technology types (evidence based vs live stream) including potential for a mix of both
 - ensure the chosen technology is user-friendly and capable of capturing detailed and accurate inspection data

Step 4. Pilot testing

- scope and implement a pilot program to test the remote inspection process – select appropriate BCA staff and trusted builders to test with
- run pilot
- gather feedback from pilot participants to identify issues and areas for improvement

Step 5. Pilot evaluation and refinement

- analyse data and feedback from the pilot program to assess the effectiveness and efficiency of the remote inspection process
- refine procedures and address any technical or operational challenges identified during the pilot
- plan full scale implementation - consider staged approach to implementation

Step 6. Policy and procedure development

- update BCA policies and procedures to incorporate remote inspections, ensuring they align with existing regulatory frameworks
- establish clear guidance on how inspections will be conducted, documented, and reviewed
- create BCA standard operating procedures for carrying out inspections using remote inspection technology

Step 7. Training and capacity building

- provide training for inspectors, builders, and other relevant stakeholders on using the new technology
- develop user manuals, online resources, and support systems to facilitate the transition

Step 8. Implementation

- confirm approach to implementation – staged vs complete
- roll out the remote inspection technology across all relevant inspections/building categories, ensuring all stakeholders are informed and prepared
- monitor the implementation closely to ensure compliance and address any emerging issues promptly

Step 9. Evaluation monitoring and improvement

- implement a process for ongoing evaluation and improvement to adapt to new challenges, further grow use of remote inspections and explore future technological advancements
- continuously monitor the performance of the remote inspection system, collecting data and reporting on its impact and effectiveness.

7. On-site perspective

The use of remote inspection (RI) technology requires site personnel to take an active part in the inspection process.

Undertaking live stream inspections

The key difference for a builder supporting a live stream inspection is that they will be on-site while the inspector is remote, instead of being together in person. The main challenge will be getting comfortable with using the technology and communicating with the inspector remotely.

On site, the builder needs to ensure a strong internet connection for a smooth and continuous live stream. Good lighting is also essential for a clear visual feed. If the connection or lighting is only temporarily problematic due to conditions on the day, the RI can be rescheduled or done in person. Similarly, when providing photographic evidence to the BCA, the builder must ensure there is sufficient lighting to allow a quality image to be taken.

The builder should make sure their device (phone or tablet) is fully charged, and they have downloaded and have access to the relevant application. They should have any necessary tools like a flashlight, tape measure, level, step ladder and measuring equipment readily available. Any technical equipment required for the inspection, like a moisture meter or thermometer, must be calibrated according to BCA requirements. For some length measurements, a third party may be needed to assist.

The builder must ensure any on-site hazards are managed, and the inspection paths are clear. Others on site should be informed about the inspection and the builder's needs, especially since the builder might be using a phone/tablet and headphones, making clear communication essential in a noisy environment.

The inspector would typically start a RI by asking the builder to take a broad view of the site from an elevated location (if available), from the street front, to confirm the correct site is under inspection and to get a general site overview. This helps the inspector understand the site layout as they guide the builder.

The inspector will guide the builder to each inspection point, requiring the builder to provide a steady video feed. The inspector will follow the same process and checklist as for an on-site inspection, zooming in or requesting closer views as needed. They will record images and take notes throughout the inspection, which will be included in the final inspection report, just as in current on-site inspections. If the inspector deems the remote inspection insufficient, an on-site inspection may be necessary.

If any issues or non-compliances are identified inspectors could use their experience to decide if a live stream reinspection is needed or if the builder can address issues and provide photos as evidence, which will be agreed with the builder.

Section 89 of the Building Act states a 'licensed building practitioner must notify building consent authority of breaches of building consent'. If through the RI process the LBP is of the view that building work carried out under a building consent does not comply with that consent, they must notify the territorial authority in the district the consent is situated and the building owner.

The inspector will capture all the digital records required in terms of video and photographic evidence and this will be sent to the builder and other relevant parties as part of the final inspection report. They may request the builder submit supporting documentation following the inspection through channels such as email or BCA building consent portals.

Builders must clearly follow the inspector’s instructions as well as have the technology proficiency to understand how a live stream application works to maximise what the inspector is able to see. The BCA may require builders to undertake specialised guidance and training to help build this skillset.

Providing evidence-based inspection records

The records that are generated from the RI process are critical as a form of evidence to demonstrate building consent compliance and are essential to ensure that RIs are thorough and effective. These records help verify compliance with the consented plans and specifications, document the outcomes from the inspection process, and address any issues identified. Records generated from an RI inspection are supplementary to those captured by an inspector on their inspection checklist and the existing methods the BCA uses to record inspection outcomes.

Requirements for photographic evidence would typically be defined by the BCA for the inspection and building type the RI relates to. When providing photographic evidence, the builder must ensure this meets council requirements, for example, ensuring photographs are taken at the correct angle to show the required dimensional aspects of the image, ie. depth, levels.

The builder would submit any evidence gathered through existing channels such as email, BCA consent portals or third-party applications that capture RI images.



8. Glossary of terms

Term	Definition and explanation
Builder	In the context of this guidance derives from the meaning given in section 14E(1) of the Building Act and means any person carrying out building work; includes licensed building practitioners and owner builders.
Building	Has the meaning given to it by sections 8 and 9 of the Building Act.
Building consent	Derived from section 7 of the Building Act. Means a consent to carry out building work granted by a building consent authority under section 49 of the Building Act.
Building consent authority (BCA)	Councils or private organisations who are accredited and registered to undertake building control functions under the Building Act.
Building work	Has the meaning given to it by sections 8 and 9 of the Building Act.
Calibrated equipment	In the context of this guidance means measuring equipment used in the performance of a building control function that has been calibrated in accordance with the BCA policy to comply with the requirements of Regulation 14 of the Building (Accreditation of Building Consent Authorities) Regulations 2006.
Code compliance certificate	A certificate issued by a building consent authority under section 95 of the Building Act.
Inspection	In the context of this guidance means the checking carried out by a building consent authority of building work for which it has granted a building consent. This is done to ensure the authority has taken all reasonable steps to ensure that building work is being carried out in accordance with a building consent.
On-site inspection	In the context of this guidance means a compliance assessment of consented building work carried out in person on the building site.
Owner	Has the meaning given to it by section 7 of the Building Act.
Owner-builder	Has the meaning given to it by section 90B of the Building Act.
Remote inspection (RI)	In the context of this guidance means a compliance assessment of consented building work carried out using digital tools and technologies from locations that are remote from the building site.



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