

Guidebook for Whole-of-Government Virtual TOP/CSC Inspections



Version 1.0 (Sep 2026)

A multi-agency effort by:



Table of Contents

1	Acknowledgements	3
2	Executive Summary	4
3	Introduction	5
	Introduction to a Typical Inspection	5
	Visual Checks	5
	Dimensional Checks	5
	Functional Checks	5
	What can Virtual Inspections Check?	6
	What is the Whole-of-Government Virtual Inspections (WOG VI) Concept?	7
	The Virtual Inspections Tool Kit	9
	Benefits of Adopting the WOG VI Process	10
4	WOG VI Process	11
	Procedure	11
	Guidelines to Implement 360° Capture	13
	Technical Requirements for 360° Capture	13
	Good Industry Practices	14
5	Agency Specific Requirements	17
	Agencies Involved In TOP Inspections	17
	Building And Construction Authority (BCA)	17
	Singapore Civil Defence Force (SCDF)	21
	PUB, Singapore's National Water Agency	25
	National Environment Agency (NEA)	34
	Urban Redevelopment Authority (URA)	36
	Agencies Involved In CSC Inspections	37
	Land Transport Authority (LTA)	37
	National Parks Board (NParks)	39
	Agencies Involved In Other Inspections	40
6	Case Studies	43
	Macpherson Weave	43
	Grand Dunman	46
7	Frequently Asked Questions (FAQs)	49
8	Annexes	50

1. Acknowledgements

BCA would like to acknowledge the contributions of the following organisations which had provided their valuable inputs in the development of the guidebook.

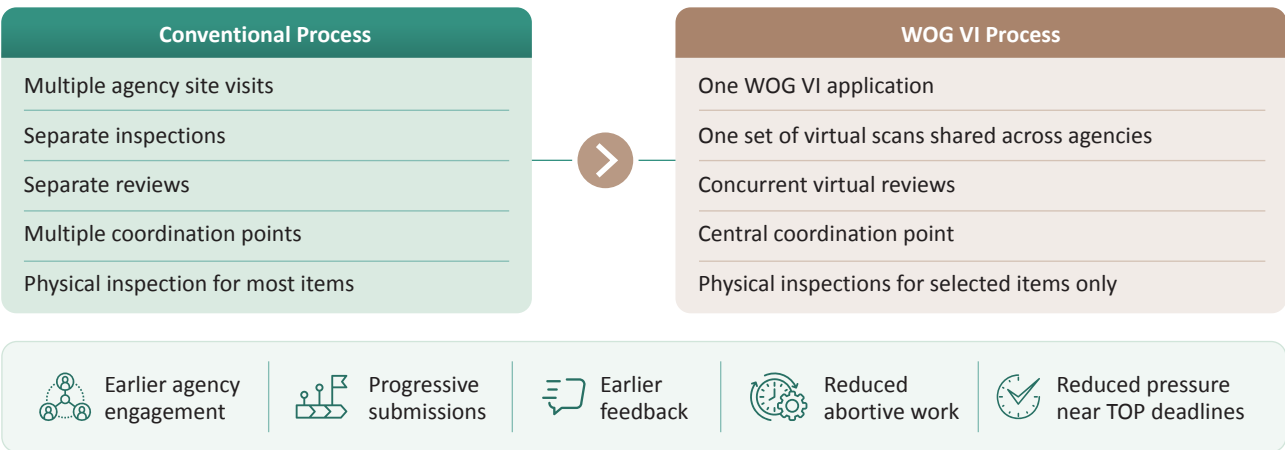
- Singapore Civil Defence Force (SCDF)
- PUB, Singapore's National Water Agency
- National Environment Agency (NEA)
- Urban Redevelopment Authority (URA)
- Land Transport Authority (LTA)
- National Parks Board (NParks)
- Energy Market Authority (EMA)
- Infocomm Media Development Authority (IMDA)
- JTC Corporation (JTC)
- Housing & Development Board (HDB)
- 3PA Pte Ltd
- Hi-Tek Construction Pte Ltd
- SingHaiYi Group Pte Ltd
- P&T Consultants Pte Ltd
- China Construction Pte Ltd
- Airsquire Pte Ltd
- OpenSpace

2.Executive Summary

Whole-of-Government Virtual Inspection (WOG VI) initiative is a collaborative effort by Singapore’s built environment regulatory agencies to streamline inspections conducted for Temporary Occupation Permit (TOP) and Certificate of Statutory Completion (CSC).

Conventionally, regulatory inspections require officers from multiple agencies to visit project sites separately to verify compliance with their respective requirements. While this process has served the industry well, it can involve significant coordination, repeated site visits and tight scheduling as projects approach completion.

The WOG VI process introduces an alternative approach by allowing suitable visual and dimensional checks to be conducted remotely using virtual inspection technologies such as 360° capture, while functional checks continue to be conducted on site. Through a coordinated Whole-of-Government approach, project teams can submit virtual inspection scans to participating agencies, enabling earlier engagement, progressive submissions and timely resolution of issues.



This guidebook provides practical guidance for project teams adopting the WOG VI process. It covers the overall workflow, recommended practices for preparing virtual inspection submissions, and the agency-specific requirements for participating regulatory agencies, supported by examples and case studies.

As the built environment sector continues its digital transformation, the WOG VI initiative is a step towards more efficient, coordinated and technology-enabled regulatory services, while upholding Singapore’s high standards of safety and regulatory compliance.

3. Introduction

Physical inspections are a typical part of the building completion certification process in Singapore, which comprises the Temporary Occupation Permit (TOP) and Certificate of Statutory Completion (CSC) stages. Under the current process, officers from multiple regulatory agencies conduct on-site inspections of completed developments to verify compliance with the relevant codes and requirements. These inspections typically require the physical presence of authorised inspectors, developers, consultants and their builders at the site, often involving multiple rounds of visits across different agencies and at different times. This can result in significant time and resource demands on both the industry and the regulatory agencies involved, with coordination challenges that can extend the overall inspection timeline.

To streamline this process and reduce the burden on all parties, the built environment regulatory agencies have introduced a Whole-of-Government Virtual Inspection (WOG VI) initiative for TOP/CSC inspections. Virtual inspection (VI) leverages digital tools and technologies to allow regulatory officers to conduct their assessments without the need to be physically present on-site. This shift is part of a broader push to digitalise and modernise regulatory processes in the built environment sector, improving efficiency, reducing the number of site visits for industry professionals, and enabling greater coordination between agencies and project parties.

Introduction to a Typical Inspection

Checks conducted during inspections can be broadly categorised into three categories — Visual, Dimensional, and Functional.



➤ Visual Checks

Visual checks are checks that involve the inspector observing and assessing the physical condition and appearance of building elements. At a glance, the inspector should be able to identify whether the component in question is compliant. For example, an inspector verifies that the contrasting colour on staircase nosing strips are visible or that a warning colour band was provided to warn users of a sudden drop in level on the floor.



➤ Dimensional Checks

Dimensional checks are checks that require additional measurement to allow inspectors to ascertain whether the component is compliant to the regulations. At a physical inspection, a measuring tape is commonly used to show that the components built or installed are to the acceptable dimensions.



➤ Functional Checks

Functional checks are checks where the public officers would require certain tests or procedures to ascertain the functional performance of the building component, such as the water pressure in toilets or audio cues of the building's fire alarm system.

What can Virtual Inspections Check?

	Visual	Dimensional	Functional
Physical Inspections	✓	✓	✓
Virtual Inspections	✓	✓	✗

For the purposes of this guidebook, virtual inspections will cover mainly the various TOP/CSC agency requirements that are visual and dimensional checks.

- 

➤ Visual checks can be easily conducted through virtual inspections. Through a virtual scan, inspectors can easily identify that the building components have been provided and built in accordance with the approved plans.

However, there are certain visual checks that cannot be performed through the scan, as the scan may not cover the area, or the area is hidden behind other building components (such as services above false ceilings, behind services doors, or under the finished floor). For such cases, additional photos or videos should be provided to show compliance.
- 

➤ For dimensional checks, depending on the technology used for the virtual scanning, the dimensions may not be captured in the virtual capture platform. For 360° Capture virtual inspections, QPs are required to submit photos of measurement to show that the dimensions meet the regulatory requirements.
- 

➤ Functional checks, on the other hand, are usually unique to the various agency's requirements — these checks vary widely in terms of the nature on how these checks are conducted, from the need for various specialised equipment to the presence of specialised vendors to conduct these checks. Thus, most functional checks will be excluded from Virtual Inspections for the purposes of this guidebook. However, agencies may accept certain functional checks in the form of video recording or the equivalent.

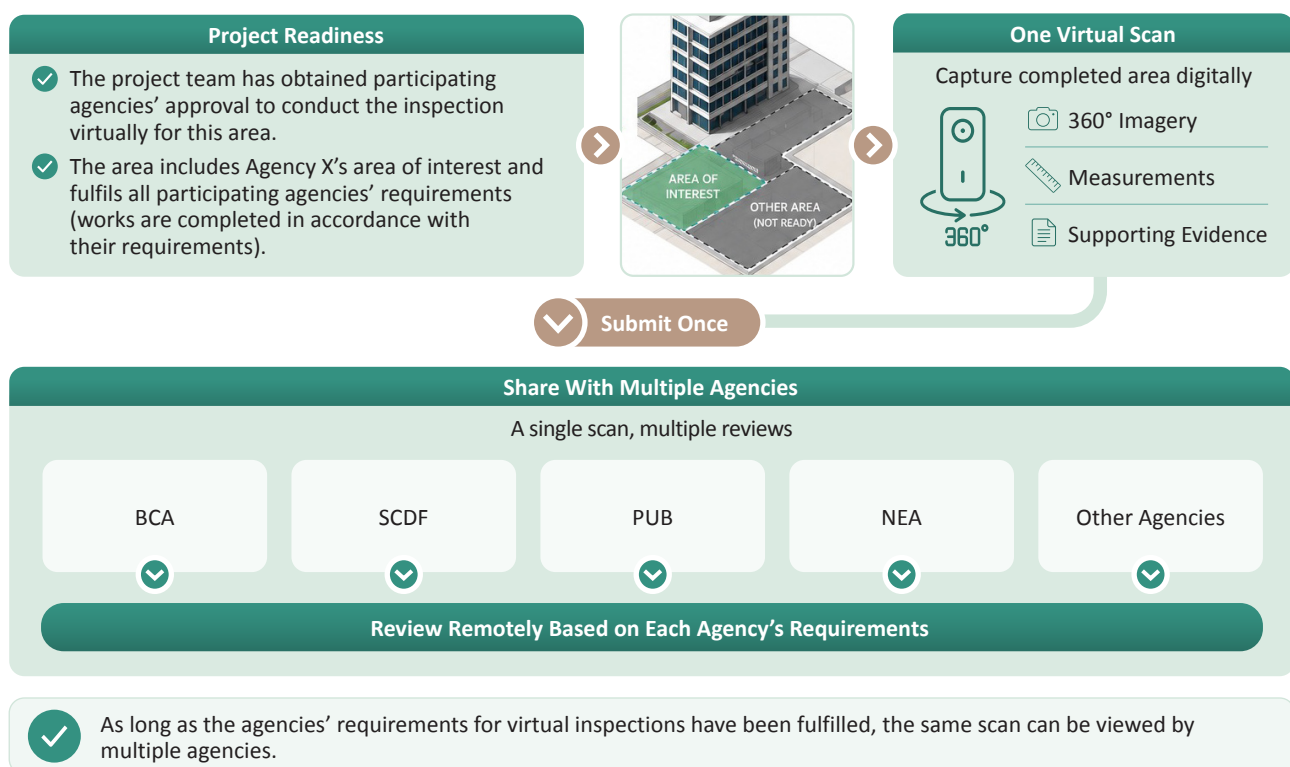
Chapter 5 will provide more details about each agency's visual, dimensional, and functional checks through a series of examples.

What is the Whole-of-Government Virtual Inspections (WOG VI) Concept?

The built environment regulatory agencies have come together to introduce a Whole-of-Government Virtual Inspection (WOG VI) process, to streamline inspections at the TOP/CSC stage¹ — as an alternative to conventional physical TOP/ CSC inspections.

*A single virtual scan can support the requirements of multiple agencies.
Scans can also be submitted progressively as areas become ready.*

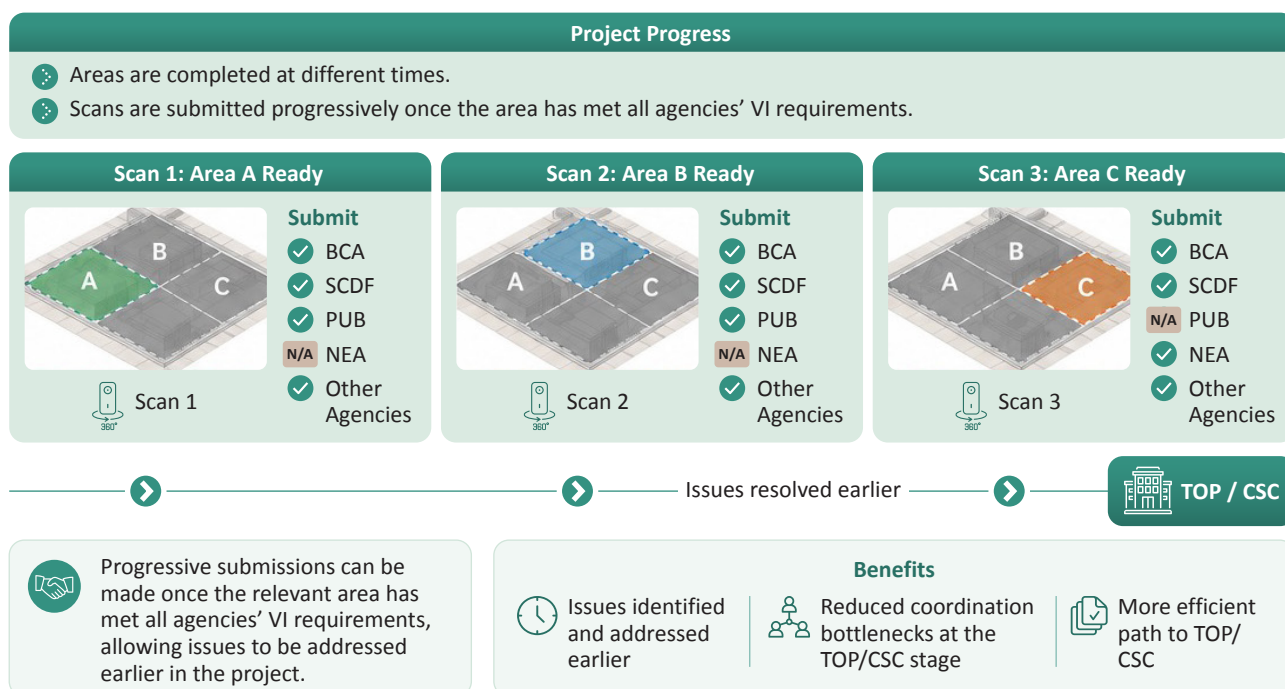
1. Submit a Single Set of Virtual Scans to as Many Agencies as Needed



¹ While the project team's TOP application process may involve certain other processes such as the preparation and submission of necessary documents to agencies, for the purposes of this guidebook, we will only focus on the inspections and audits that are conducted by agencies near the TOP stage.

2. Submit VI Scans Progressively Instead of All at Once

Subject to participating agencies' agreement at the point of application.



This WOG VI process is collaborative in nature and requires agreement from both your project team and participating agencies. Your project must also meet the participating agencies' VI requirements. The WOG VI application process is explained further in Chapter 4.

Through the WOG VI process, project teams are allowed to submit a single set of virtual scans to as many agencies as needed, based on the project's readiness, **as long as the agencies' requirements for the virtual inspections have been fulfilled**. This applies to both TOP and CSC inspections.

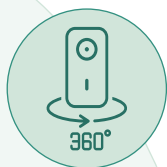
Project teams **may also choose to submit VI scans progressively** instead of all at once. This option is available subject to the participating agencies' agreement at the point of application. Progressive submissions can be made once the relevant area has met all the agencies' VI requirements, allowing issues to be addressed earlier in the project timeline. This helps ease the pressure of meeting TOP deadlines and reduces the risk of late-stage issues affecting the project's critical path.

When planning the area and scanning schedule of your virtual inspection scans, project teams need to consider whether:

- The area includes Agency X's area of interest; and
- The area already fulfils Agency X's requirements (works are completed and in accordance with Agency X's requirements).

More details to assess your project suitability can be found in Chapter 4.

The Virtual Inspections Tool Kit



➤ 360° Capture Technology

For the purposes of this guidebook, the streamlined WOG VI process will be using 360° Capture technology as the virtual inspection technology.

360° Capture is a simple system to understand, with many off-the-shelf platforms available in the market. It has a relatively lower barrier to entry (lower cost) compared to other more advanced technology like LiDAR — whilst still able to successfully create virtual representations of project sites, enabling inspectors to conduct virtual inspections without the need to physically go to the project site but still achieving the same level of robustness in the inspection.

For more details on the technical requirements of adopting 360° Capture technology for your project, please refer to BCA's Guidebook for TOP/CSC (360° Capture).



➤ Other Virtual Inspection Technologies (e.g. LiDAR, Photos and Videos)

Notwithstanding, there are other virtual inspections technologies in the market, such as LiDAR and CCTV. These technologies can also help to recreate the physical world for virtual inspections. There are also emerging solutions to complement and simplify current virtual inspection processes like automation, such as using robots for autonomous scanning.

As technology continues to advance, the regulatory agencies will continue to study and set the requirements on how these emerging technologies could be accepted and adopted into the regulatory inspections processes once the tech is ready and sufficiently robust to satisfy our regulatory requirements. The envisioned future is an agile and effective regulator that is ready to accommodate the technologically ready built-environment firms for more progressive inspections.

For more details on the technical requirements of adopting LiDAR for BCA's inspections, please refer to BCA's Guidebook for TOP/CSC (LiDAR).

Benefits of Adopting the WOG VI Process



Flexibility

Project teams can conduct scans at their own convenience, as and when works are ready, without the need to halt site activities or coordinate areas within the entire site for a single inspection day. This allows teams to plan inspections around their construction programme, minimising disruption to ongoing works.



Productivity Savings

Virtual scans can be accessed and reviewed remotely at any time, reducing the need for physical site presence. This reduces travel time and manpower needed to stand by for physical inspections, freeing up manpower for more value-added work.



Reduced Bottlenecks and Abortive Works

QPs and project teams can submit scans progressively as works are completed, rather than waiting for the entire development to be ready for inspection. Earlier submission enables agencies to provide timely feedback, allowing project teams to identify and resolve issues well in advance and reducing the risk of delays at the TOP/CSC stage.



Enhanced Project Coordination

The utility of virtual inspection extends beyond regulatory compliance. Project managers can leverage virtual scans to monitor construction progress, coordinate works across trades, and maintain a visual record of the development at key milestones — making it a valuable tool for project management throughout the construction lifecycle.



Better Documentation

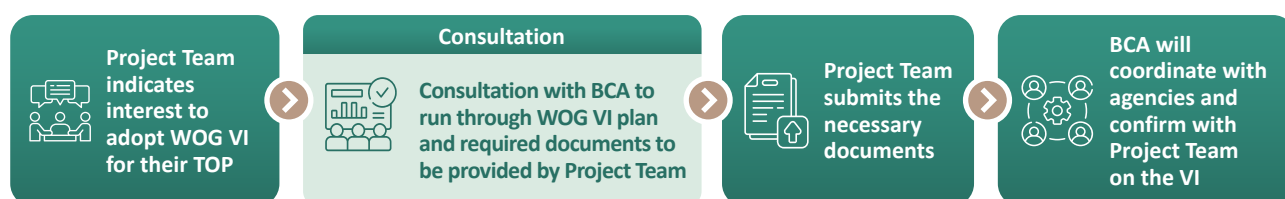
Virtual scans provide project teams with a comprehensive and timestamped digital record of the development at various stages of completion. This serves as a reliable reference for resolving disputes, supporting future maintenance works, and demonstrating compliance — reducing reliance on manual records and photographs taken during site visits.

4. WOG VI Process

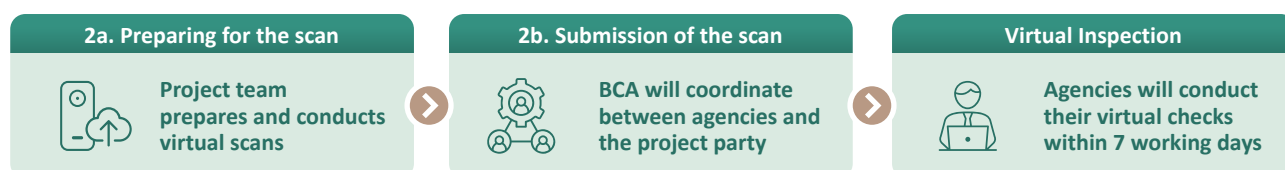
Beyond the potential benefits this streamlined process can bring to project teams, the steps below detail the information with which project teams are required to assess, apply, and submit applications for the WOG VI.

Procedure

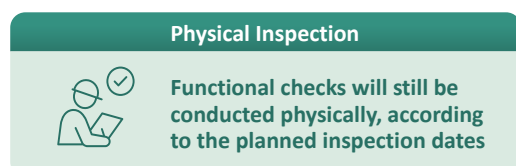
Step 1: Project Team Consultation and Application



Step 2: Virtual Inspection



Step 3: Physical Inspection



1. Project Team Consultation and Application

When the project team decides that this process is suitable for the project, the VI plan template (Annex A) provided can be used to lay out the proposed virtual inspection scope.

The VI plan will include the following:

- Proposed scan areas
- Respective agencies involved in each scan
- Expected date of submission
- Proposed physical inspection dates
- Marked up areas for each scan
- Waiver items for all agencies

Please note that each individual agency may have certain pre-requisites and lead times required before the physical inspections. For example, NEA and PUB require QP to submit documents 1 month before the scheduled physical inspection. (Refer to Annex A for more details.) Thus, project teams should take these requirements into consideration when planning their physical inspection schedules in the plan.

After preparing the VI plan and other necessary documents, project teams can visit BCA's website (<https://www1.bca.gov.sg/growth-and-transformation/productivity/ops-tech-enabled-inspections/wog-vi>) to request for a pre-consultation.

2. Virtual Inspection

2a. Preparing for the Scan

After clearing the VI plan with the agencies, project teams may carry out the scanning and attach photos to the scan. For general steps on how to prepare for using 360° Capture for a project site, please refer to BCA's Guidebook for TOP/CSC (360° Capture).

Specific to this process, the agencies have prepared a checklist on BCA's website for guidance on the VI items to be included in the scan. (See Annex B.)

The checklist includes all agency VI requirements for all typologies, which may be filtered through according to the respective agencies' requirements relevant to the inspection/virtual scan area.

2b. Submission of the Scan

Project teams should submit their virtual scans via a shared link to their scans, based on the submitted VI plan in Step 1. After submission, BCA will continue to serve as the coordination point for communications between agencies and project teams.



Agencies will conduct their virtual checks **within 7 working days** of a project team's submission of the virtual scans.

3. Physical Inspection

Functional checks will still need to be conducted via physical inspections. Agency officers will visit the relevant sites in person to conduct these inspections, based on the agreed physical inspection date in the proposed VI plan (as required by the agencies) in Step 1.

Guidelines to Implement 360° Capture

To achieve good quality 360° Capture scans and reduce the number of clarifications and comments from regulatory agencies, we have detailed the recommended technical requirements for using the 360° Capture technology with good industry practices.

Technical Requirements for 360° Capture

The project team must obtain all necessary hardware and software to enable the 360° Capture.

Camera Equipment

The quality of the 360° Capture is dependent on the equipment used. Project teams should ensure that the camera used is of sufficient quality to capture clear and detailed imagery, including in low-light conditions typical of indoor construction sites. The camera should also have adequate battery life to support continuous capture across large developments without interruption, and should be equipped with an image stabilisation feature to ensure smooth and usable footage.

Capture Platform

Beyond the camera itself, the choice of capture platform is also important. The platform should be cloud-based and support flexible capture modes — including continuous capture for large open areas and spot capture for smaller spaces such as toilet units — and must be able to tie all captures to an uploaded building plan, so that inspectors can orientate themselves within the development. Critically, the platform must support multi-party access and collaboration, allowing regulatory officers to tag comments directly on the scan and project teams to respond with evidence of rectification. The ability to generate a consolidated report of all comments is also essential for proper documentation and audit purposes.

For full technical specifications on recommended camera and platform requirements, please refer to BCA's Guidebook for TOP/CSC (360° Capture). For data standards that should be included in the platform for virtual inspections by agencies, see Annex C.

Good Industry Practices

Meeting the technical requirements for equipment and platform is a necessary foundation, but good capture technique is equally important in ensuring that scans are clear, complete, and useful for regulatory review. The following practices are recommended to help project teams achieve the best possible results.

1. Camera Positioning

Helmet-mounted 360° cameras are not recommended for confined spaces, as the helmet may obstruct the camera's field of view, particularly towards downward directions. Instead, operators should use an extension stick to position the camera away from the body and extend it into confined or smaller spaces. This minimises obstruction and ensures a more complete and more unobstructed scan of the area.

● Helmet-mounted view

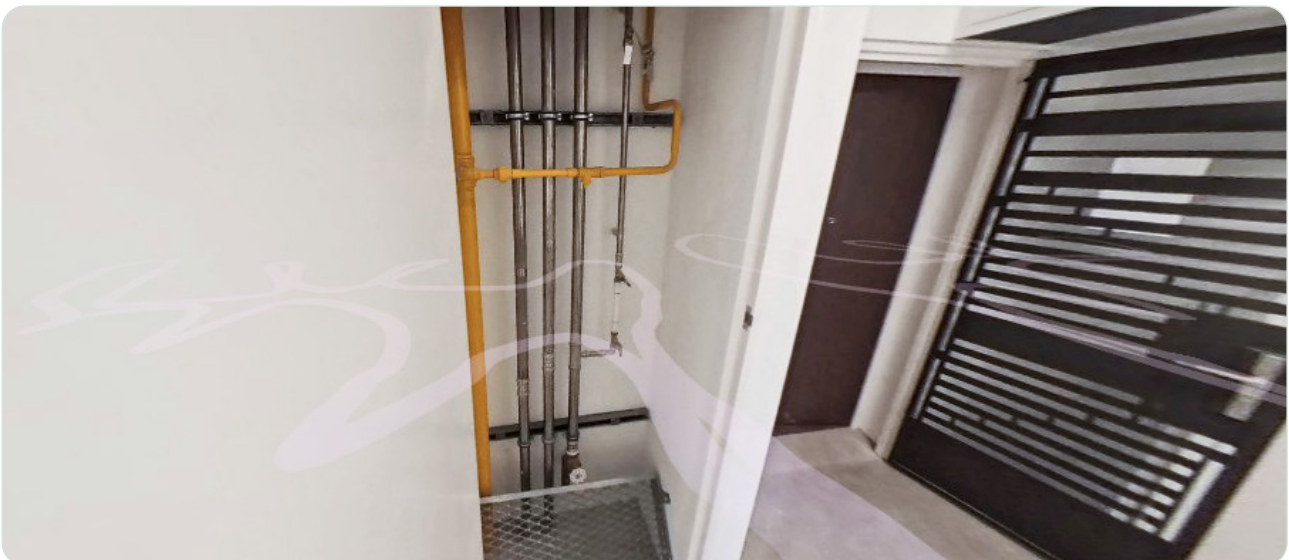


● Stick-mounted view



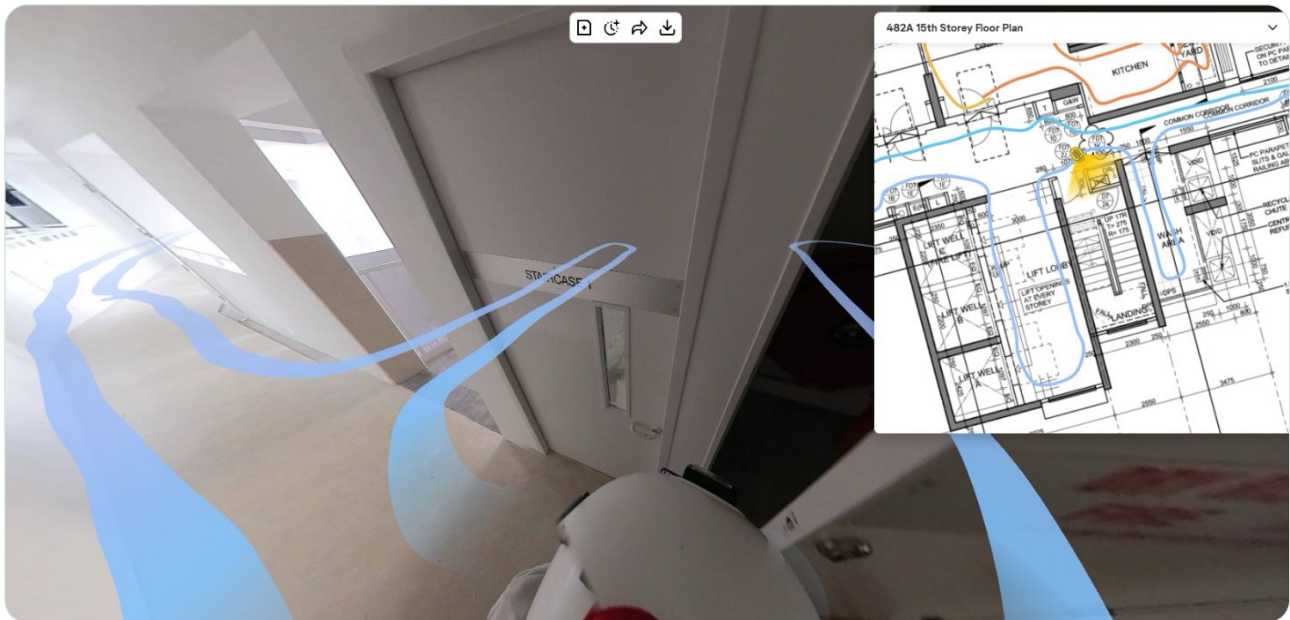
2. Capturing Risers and Concealed Spaces

For risers and other concealed spaces, operators should open the access panels, prior to scanning, to allow the interior to be clearly captured. When capturing these spaces, operators should step back sufficiently to ensure that the full interior is visible and that no body parts or equipment obstruct the view.



3. Scan Coverage of All Areas

Operators should ensure that all areas of the sample floor indicated within the building plan are captured without omission. Incomplete coverage may result in clarifications or additional submissions being required by regulatory agencies, causing unnecessary delays.



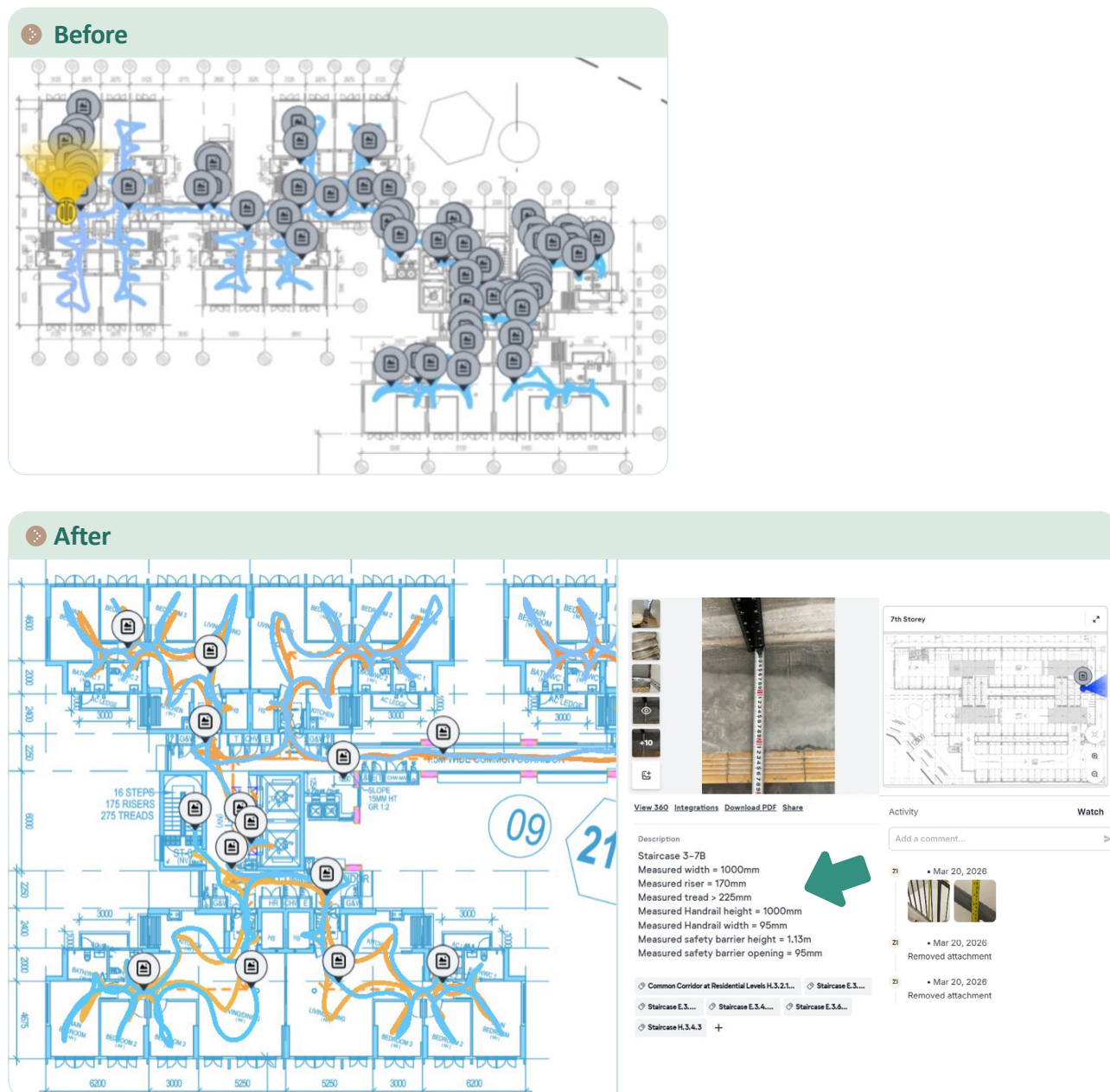
4. Lighting Conditions

Adequate lighting is essential for good image quality, particularly in indoor and low-light areas. Where natural or ambient lighting is insufficient, operators should employ a supplementary light source to illuminate dark areas before capturing the space.



5. Consolidation of Related Measurements

Where multiple related measurements are taken in the same area, project teams should group them under a single pin, rather than creating individual pins for each measurement. This keeps the scans organised and reduces visual clutter, making it easier for regulatory officers to review the submission efficiently.



5. Agency Specific Requirements

Each regulatory agency conducts checks for different requirements in a building. To give project teams a better understanding of each agency's requirements and what they look for through virtual inspections, the codes, requirements, and common inspection items of each agency's scope are detailed below. We encourage project teams to take the time to go through these examples, to better appreciate what is needed to be taken and how it should be taken to show compliance.

These include a breakdown of what each agency checks at the TOP stage, the types of checks conducted by the agency, and tips for ensuring a smooth virtual inspection with respect to these agencies' requirements.

Agency inspections can be broadly categorised based on the purpose of inspection. For the purpose of this guidebook, the following content focuses on agency checks at the TOP and CSC stages.

Do note that the examples in this section are non-exhaustive and the full list can be found in Annex B.

Agencies Involved in TOP Inspections

These are the agencies which require an inspection of the building before TOP can be obtained.

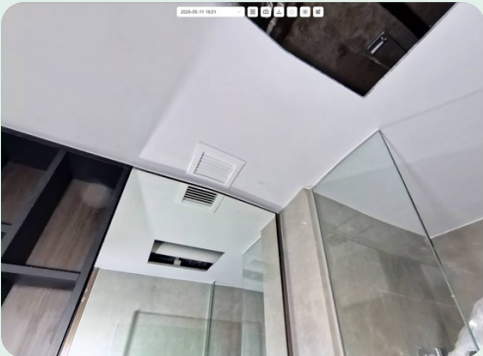
Building and Construction Authority (BCA)

1. BCA's TOP Requirements

During TOP inspections, BCA conducts checks to ensure that the building is safe (based on requirements set out in the Approved Document — headroom, lightning protection, ventilation, etc.), livable, and accessible (Code on Accessibility) for users.

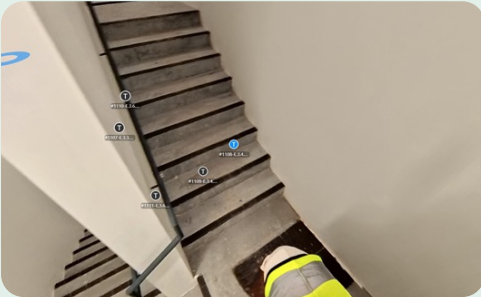
2. Examples of BCA's Visual Checks

Visual checks conducted during TOP inspections can fully be reviewed through the 360° scan, without any additional photo of measurement or additional evidence.

Clause	Sample Check via Virtual Scan	Remarks
Approved Document ⦿ Lightning Protection System warning sign must be provided at entrances to habitable and non-habitable maintenance roofs.		From the virtual scan: the LPS warning sticker is displayed at the entrance to the rooftop.
Approved Document ⦿ Ventilation shall be adequately provided in a building for its intended occupancy.		From the virtual scan: mechanical ventilation is provided for occupancy in this room.
Approved Document ⦿ All steps must be fitted with nosing strips and they must be of a colour that contrasts with the steps.		From the virtual scan: contrasting colour nosing strips are installed on all steps.

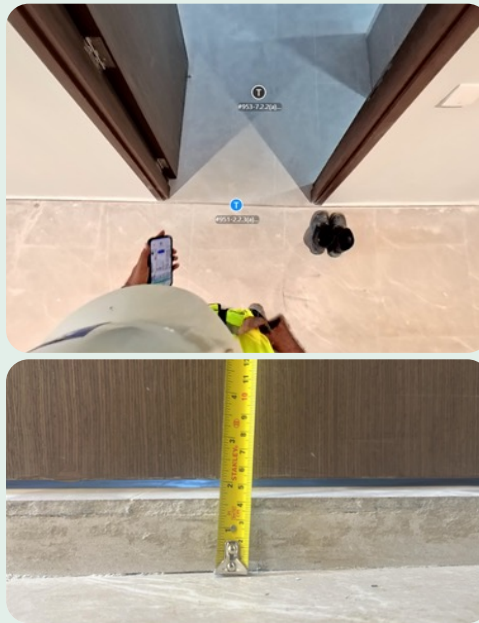
3. Examples of BCA's Dimensional Checks

BCA's dimensional checks consist of ensuring building components are built within a range of acceptable dimensions, from minimum to maximum measurements. The sample photos below provide context to support a better understanding of BCA's dimensional checks.

Clause	Sample Check via Virtual Scan	Remarks
Approved Document ● Height of barrier shall not be less than 1.0 m.	 	From the virtual scan: there is insufficient evidence to assess whether the barrier satisfies the 1.0 m height requirement. Thus, a photo of measurement is required to ascertain that the barrier height is compliant.
Approved Document ● The height of a riser shall not be more than 175 mm.	 	From the virtual scan: there is insufficient evidence to assess whether the height of the riser satisfies the maximum height requirement of 175 mm. Thus, a photo of measurement is required to ascertain that the riser height is compliant.

Code on Accessibility

- The difference in levels between the floor of the entrance to the residential unit and the abutting common area must not exceed 50 mm.



From the virtual scan: there is insufficient evidence to assess whether the difference in level between the floor of the entrance to the unit and the abutting area is compliant. Thus, a photo of measurement is required.

4. BCA's Physical Checks — Functional Checks and Audit Checks

Depending on the project typology and size, BCA may select certain areas for a focused physical check on top of the virtual inspection. Project typologies that are likely to be selected are:

- Private Residential Developments
- Commercial Developments
- Institutional Developments

During BCA's focused physical checks, inspectors focus on more critical areas, such as common areas with higher footfall, as well as functional checks, like verifying that audio requirements for accessibility features are installed properly.

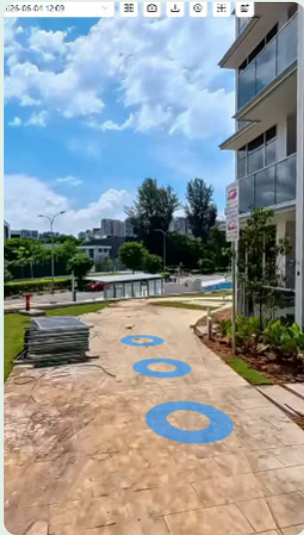
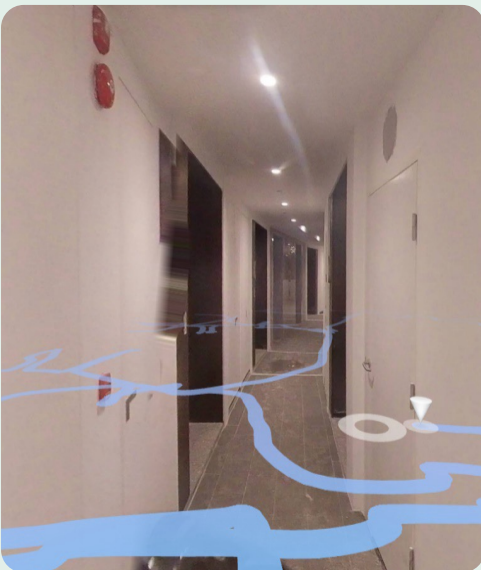
Singapore Civil Defence Force (SCDF)

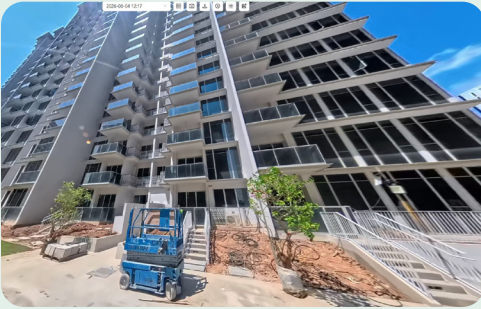
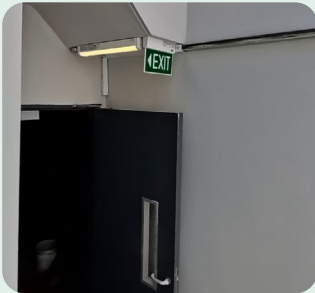
1. SCDF's TOP Requirements

During TOP inspections (SCDF's TFP), SCDF checks that the building is safe in terms of fire safety (pertaining to requirements set out in the Fire Code — Means of Escape, Structural Fire Precaution, Site Planning & External Firefighting Provision, Firefighting Systems, Mechanical Ventilation & Smoke Control Systems, for the building.)

2. Examples of SCDF's Visual Checks

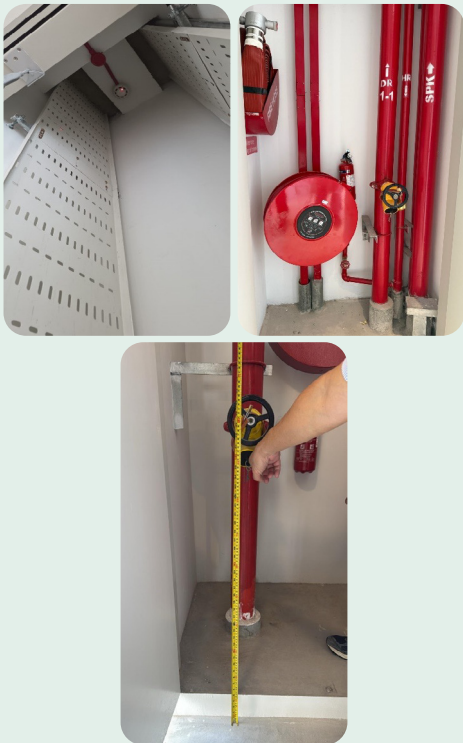
Visual checks conducted during TOP inspections can fully be performed through the 360° scan, without any additional photo of measurement or additional evidence.

Clause	Sample Check via Virtual Scan	Remarks
Fire Code Every part of a fire engine accessway and/or fire engine access road shall be within an unobstructed distance of 50m from a fire hydrant.		From the virtual scan: the fire hydrant is in proximity to the fire engine access.
Fire Code Provision of fire safety provisions such as manual call point, visual fire alarm.		From the virtual scan: the manual call point, bell, and visual fire alarm are provided for the common area.

Fire Code Exit staircase discharge directly to external space.		From the virtual scan: the exit staircase discharges directly to external space.
Fire Code Provision of exits.		From the virtual scan: an exit is provided for the unit.

3. Examples of SCDF's Dimensional and Close-Up Checks

SCDF's dimensional checks consist of ensuring building components are built with a minimum, maximum, or within a range of acceptable dimensions. In addition, small items may not be easily seen through the virtual scan, or items could be hidden behind closed doors. The sample photos below provide context to support a better understanding of SCDF's dimensional and close-up checks.

Clause	Sample Check via Virtual Scan	Remarks
Fire Code Fire protection within compartment, riser shaft, raised floor or false ceiling.		From the virtual scan: all riser doors for fire safety provisions are open and captured. In addition, a photo of measurement of the fire protection within the riser, raised floor or false ceiling is required.

Fire Code

- Certification body label for regulated fire safety products.



From the virtual scan: a close-up photo of the certification body label is provided for the fire-rated door, fire damper, fire-rated shutter, main alarm panel, etc.

Fire Code

- No unprotected openings within 3 m horizontally and 3 m vertically from any part of external exit staircase, 1.5 m horizontally and 3 m vertically below any opening in the external wall of the internal exit staircase.



From the virtual scan: a photo of measurement is provided, showing the shortest available distance between the external/internal staircase and the unprotected opening.

4. SCDF's Physical Checks — Functional Checks and Audit Checks

Depending on the project typology and size, SCDF may select certain areas for a focused physical check. Project typologies that are likely to be selected are:

- Private Residential Developments (e.g. Condominiums, Executive Condominiums, Cluster Houses)
- Commercial Developments (e.g. Malls, Offices, Shops)
- Institutional Developments (e.g. Hospitals, Nursing Homes, Schools)
- Industrial Developments (e.g. Factories, Warehouses)
- Places of Public Resort (e.g. Community Centres, Bus Interchanges)

During SCDF's physical checks, inspectors focus on critical areas, such as common (non-typical) areas with higher footfall, essential fire safety-related rooms and spaces, as well as functional checks, such as ensuring that fire safety and fighting provisions are installed properly and in good operating conditions.

5. Some Things to Note for SCDF

All submitted virtual scan(s) for SCDF inspection must be accompanied with a **Qualified Person's Certificate of Fire Safety Works (CFSW)** and **Registered Inspector's Certificate of Inspection (Form 1 or 2)**.

If the submitted phased virtual scan(s) does not involve Corenet submission for a Temporary Fire Permit (TFP) or Fire Safety Certificate (FSC), the CFSW and Form 1 or 2 shall be sent together with the link for the virtual scan, to the inspection officer via email. If the submissions are in phases, the QP's CFSW and RI's Form shall clearly indicate the areas that are checked and certified for the submitted in this virtual scan, in addition to the main project title. Checks that could not be completed at the point of virtual scan submission (e.g. the operability of the fire alarm system, Home Fire Alarm Device (HFAD), wet riser system, sprinkler system, hydrant system, etc.) should also be clearly listed. These must be complied with and certified in the final overall Forms.

PUB, Singapore's National Water Agency

1. PUB's TOP requirements for Sanitary Work

During TOP inspections, PUB checks that sanitary works have been carried out in accordance with the approved detailed plans, the requirements set out in the Code of Practice on Sewerage and Sanitary Works (COPSSW) and Standard Drawings.

2. Example of PUB's Visual Checks

The visual checks conducted during TOP checks can be fully captured through a 360° scan, without the need for additional photos of measurement or supporting evidence. Before commencing the 360° scan, ensure that all floor trap covers and maintenance access panels concealing sanitary pipes are opened to provide a clear and unobstructed view of the area.

Clause	Sample Check via Virtual Scan	Remarks
Sanitary Appliances/Fittings		
Floor traps COPSSW 4.3.11 - Incoming waste pipe connected to the riser of the floor trap, below the grating and above the water seal. - Grating centrally fixed over the trap opening. - Anti-mosquito device installed.	1)  2)  Trim and remove any protruding pipes to ensure the opening is fully accessible. 	From the virtual scan: include photos to show: 1) Floor trap opened, with antimosquito device placed at the side, and 2) Interior of the floor trap, showing the water seal and incoming waste pipes.

Floor Traps

Standard Drawing: 3-19d

- Double 45° bends incorporated between the floor trap and the WC for a 'P' trap and pan connected in series to the same discharge pipe.

For Unconcealed Pipes**For Concealed Pipes**

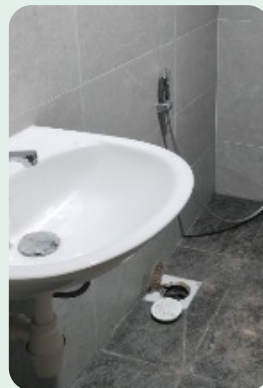
If the discharge pipes are concealed, open the maintenance access and take a photo clearly showing the pipe connection and double 45° bends.

From the virtual scan: double 45° bends for the P trap are seen, and it is connected in series to the discharge pipe.

Wash Basin

COPSSW 4.3.10(c)

- Sink and wash basin to be provided with a bottle trap installed at the outlet before being connected to a waste pipe.



From the virtual scan: a bottle trap is seen below each sink and wash basin.

Inspection Chamber (IC)

Inspection Chamber COPSSW 4.2.1(e)

- The first IC shall be separately ventilated, unless the building's discharge/ventilating stack is connected to the IC.
- ICs located on driveways, car parks or other areas subject to vehicular loading shall be fitted with heavy-duty frames and covers.

1)



2)



From the virtual scan:

- 1) IC cover showing the cover details can be seen (heavy duty for ICs on roads, light duty for those on walkways).
- 2) A photo of the inside of the first IC is included to show the vent pipe connection (if applicable).

Inspection Chamber COPSSW 4.2.1(d)(ii), (e)(vi)

- Measures should be taken to protect IC sited at an embankment.



From the virtual scan:
protection measures are taken for ICs sited at an embankment.

Plumbing System

All Discharge Pipes/Stacks

COPSSW 4.3.3(h)

- Inspection openings/cleaning eyes to be provided at junctions/bends to allow cleaning and maintenance.

For Unconcealed Pipes



From the virtual scan: inspection openings/cleaning eyes are provided for all pipe junctions, bends and at the foot of discharge pipes.

For Concealed Pipes



For concealed discharge pipes, the maintenance access should be removed and a photo taken to show the inspection opening and cleaning eyes for the pipes.

Cross Venting

COPSSW 4.3.5(d)

For a fully ventilated system:

- Cross venting shall be provided at the mid-height of the building (for buildings up to 20 storeys) or at intervals of every 10 storeys (for buildings exceeding 10 storeys).

For a ventilated stack system:

- Cross venting shall be provided at every third story (e.g. the 3rd, 6th, 9th storeys).

Unconcealed Pipes



From the virtual scan: cross venting can be seen at required floors as per standard drawings, depending on the ventilation system.

Concealed Pipes



For concealed pipes, a photo of the cross venting during construction should be provided.

Ventilating Pipe and Ventilating Stack
COPSSW 4.3.5(b)
Standard Drawings:
3-15d, 3-16d

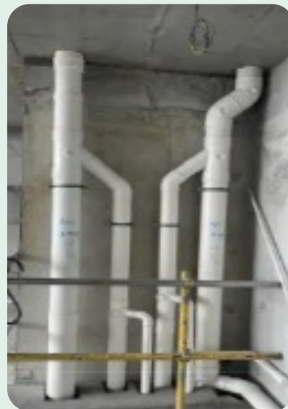
- Ventilating pipes from traps connected directly to a discharge pipe shall comply with the requirements.
- Connection of the ventilating stack to a discharge stack at a point not less than 150 mm above the spillover level of the topmost soil sanitary appliance or floor trap shall be applied, whichever is higher.

Photo of:

- 1) Unconcealed vent pipes from the WC/floor trap.



- 2) Concealed vent pipes from the WC/floor trap.



- 3) Connection of the ventilating stack to the discharge stack at the highest floor.



From the virtual scan:

- 1) Vent pipes from the WC/floor trap can be seen.
- 2) For concealed pipes, a photo should be provided showing the pipes after opening the maintenance access.
- 3) The ventilating stack should connect to the discharge stack at the highest floor.

3. PUB's Dimensional Checks

Clause	Sample Check via Virtual Scan	Remarks
Inspection Chamber (IC)		
Inspection Chamber Standard Drawing: 3-7d - The dimensions of the IC shall comply with the stipulated minimum and maximum sizes. - ICs deeper than 2.5 m, shall comply with the relevant standard drawings for manholes.	1)  2)  3) 	From the virtual scan: attach the following photos: 1) A photo of the measurement of length and breadth of the IC is provided. 2) A photo of the measurement of the cover slab is provided. 3) For ICs with a depth exceeding 2.5 m, a photo of the nylon safety netting is to be provided.

Plumbing system

Discharge Pipe/Stack COPSSW 4.3.3

- The minimum size of the discharge pipe and discharge stack shall comply with the type of plumbing system.



Photographs showing the diameter of the primary/discharge stack and secondary/ventilating stack is to be provided.

Single/Ventilated Stack System COPSSW 4.3.1(b)

- A maximum of two connections shall be made to each discharge pipe.
- The discharge pipe shall not exceed 2.5 m length.

Exposed Pipe



A photograph showing the length of the discharge pipe is to be provided for single/ventilated stack systems.

Termination of Discharge/Ventilating Stack

Standard Drawings:
3-15d, 3-16d, 3-17e,
3-18e

- The top of the discharge/ventilating stack shall terminate:
 - 150 mm above a sloping or flat roof;
 - 2.5 m above roof garden; and
 - 3 m away from any opening in the horizontal direction.



Photographs showing the following measurements is to be provided (as required):

- 1) The discharge/ventilating stack terminates 150 mm above the sloping or flat roof.
- 2) If there is a roof garden present, the discharge/ventilating stack should be 2.5 m above the garden.
- 3) The discharge/ventilating stack is 3 m away from any opening in the horizontal direction.

4. PUB's Physical Checks — Functional Tests and Audit Checks

Depending on the project's features, PUB may conduct focused physical checks on selected areas. Examples include:

- Outdoor/exposed wash areas – to ensure that sullage water is discharged into the sewerage system.
- Car wash areas – to ensure that the area is adequately kerbed and that sullage water is discharged into the sewerage system via a floor trap. The floor trap should also be connected to a cast iron gully trap with a strainer.
- Swimming pools – to ensure that backwash water from the swimming pool filter is discharged into the sewerage system via a floor trap. No sanitary pipes should be installed above the swimming pool.
- Bin centres – to ensure that a hump and scupper drain are provided and that sullage water is discharged into the sewerage system via a cast iron gully trap with a strainer.

Functional tests, including hydrostatic testing and low-pressure air testing, will be conducted for selected inspection chambers, sanitary lines and pipes.

5. Some Things to Note for PUB

Inspection dates can be arranged in advance (>1 month before). However, documents must be submitted and cleared for the inspection to proceed.

Qualified Persons (QPs) / Professional Engineers (PEs) are to make submissions and obtain clearance from PUB for Completion of Sanitary Works.

Documents to be provided for Completion of Sanitary Works submissions include:

- Built sanitary drawings including sanitary schematics
- The following documents where applicable:
 - Waiver approvals
 - Water tightness test reports of new and existing sanitary drain-lines and ICs
 - High & low air pressure test reports of sanitary plumbing systems
 - Form B1 clearance for new drain-line connections to existing sewer/manholes
 - Post-construction CCTV approvals for existing public sewers and re-use of existing drain-line connections to public sewers

National Environment Agency (NEA)

1. NEA's TOP/CSC Requirements

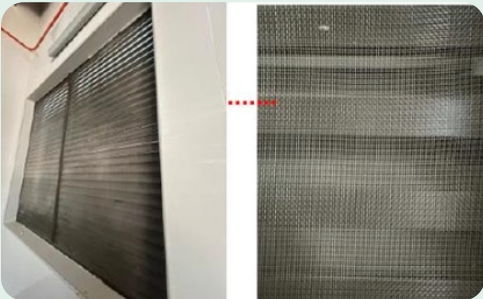
During TOP/CSC inspections, NEA ensures that the development is constructed in accordance with the approved plans. The photos submitted by the QPs are to demonstrate that the Environmental Health (EH) and Pollution Control (PC) requirements are met in accordance with the relevant Regulations and Code of Practices.

2. Examples of NEA's Visual Checks

The sample photos appended below provide context to support a better understanding of some of NEA's visual checks. More sample photos of EH and PC visual checks are available on NEA's website at the following links:

- Sample photos of EH requirements: <https://www.nea.gov.sg/docs/default-source/our-services/building-planning/topcsc-photos-required-for-eh.pdf>
- Sample photos of PC requirements: [https://www.nea.gov.sg/docs/default-source/our-services/building-planning/general-list-of-photos-required-during-topcsc-\(pc\).pdf](https://www.nea.gov.sg/docs/default-source/our-services/building-planning/general-list-of-photos-required-during-topcsc-(pc).pdf)

The sample photos are supplementary and do not constitute NEA's full list of requirements to be submitted as part of the TOP/CSC application.

Requirement	Sample Check via Virtual Scan	Remarks
COPEH • The refuse room shall house a mechanical refuse handling equipment.		From the virtual scan: a refuse room/bin centre houses Refuse Handling Equipment/refuse bins/compactors within.
COPEH • The refuse room shall be rendered pest-proof against birds, rodents and insects.		From the virtual scan: a refuse room has been rendered pest-proof, e.g. using an insect mesh.

COPEH

- A signage shall be provided above the recyclables chute hopper to inform users of suitable recyclables to be disposed into the chute.



From the virtual scan: a photo of recyclables chute hoppers with appropriate signage is provided.

3. Examples of NEA's Dimensional and Close-Up Checks

Requirement	Sample Check via Virtual Scan	Remarks
COPEH The maximum gap between the termination point of the refuse chute and the top of the refuse bin shall be 200 mm.		From the virtual scan: a photo is provided to show compliance of the height.
COPEH Sufficient space shall be provided for the manoeuvring of refuse bins within the room and the bin lifter to operate the bin properly.		From the virtual scan: a photo is provided to illustrate compliance, unless this can be demonstrated during the scan (e.g. scanning the area while the refuse bin has been raised).

4. NEA's Physical Site Inspection – Functional and Audit Checks

Depending on the project typology, NEA may conduct physical site inspection for equipment functional checks and audits. Project typologies that are likely to be selected include but are not limited to the following:

- Residential Developments (e.g. Condominiums, Executive Condominiums) with Pneumatic Waste Conveyance Systems (PWCS) deployed
- Industrial Developments with Pollution Control Equipment

During NEA's physical site inspection, inspectors would likely focus on critical areas including but not limited to the following:

- Operation of the chute hoppers
- Pollution Control Equipment
- Items that do not comply with Environmental Health and/or Pollution Control requirements

Urban Redevelopment Authority (URA)

1. URA's TOP/CSC Requirements

During TOP/CSC inspections, URA checks that development works are completed in accordance with the approved plans and comply with relevant planning, urban design and/or conservation guidelines.

2. URA's Visual Checks

Visual checks conducted during TOP/CSC checks for projects affected by the following schemes can be covered through the 360° scan without any additional photo of measurement or additional evidence.

Affected Scheme	Remarks
Landscape Replacement Areas (LRA)	From the virtual scan, both softscape and hardscape features are clearly shown to demonstrate that the necessary LRA has been implemented.
Decantment of Gross Floor Area (GFA)	From the virtual scan, areas proposed by the developer to be demolished/removed for the purpose of decanting GFA are clearly shown to have been effected.

3. URA's Physical checks — Detailed and Operational Checks

URA may require photo/video evidence and/or physical checks for projects that involve the following:

- Conserved buildings or national monuments, focusing on spatial quality, conservation/preservation details and finishes
- Night lighting requirements, to review how the implemented night lighting scheme relates to surrounding developments and if minor refinements are required
- Integration with common services tunnel (CST) structures to check dimensions, defects, cracks and water leakage, as well as to conduct in-person testing and commissioning of M&E equipment on-site

Agencies Involved in CSC Inspections

Apart from TOP inspections, CSC inspections can also be performed virtually. The agencies involved include LTA and NParks, and other agencies where applicable. However, the industry may choose to submit these virtual scans separately if the requirements could not be fulfilled at the earlier TOP stage.

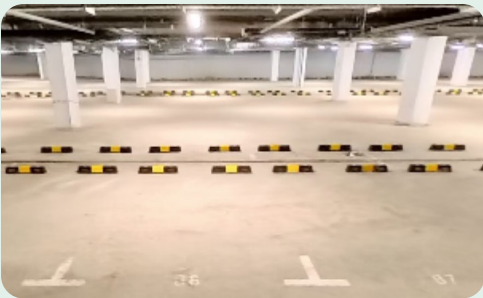
Land Transport Authority (LTA)

1. LTA's CSC Requirements

During CSC inspections, LTA checks that the transportation facilities are built to approved plans and requirements, and are in acceptable conditions for handing over to respective teams for maintenance.

2. Examples of LTA's Visual Checks

Visual checks conducted during CSC inspections can fully be performed through the 360° scan, without any additional photo of measurement or additional evidence.

Clause	Sample Check via Virtual Scan	Remarks
Code of Practice for Vehicle Parking Provision in Development Proposals		From the virtual scan: the no. of lots for cars, motorcycles, bicycles, lorries, loading/unloading and coaches are provided.
Material & Workmanship (M&W) Specification		From the virtual scan: the paint treatment, column verticality and bolted joint system are clearly displayed as per M&W Specification.

3. LTA's Dimensional and Close-Up Checks

LTA's dimensional and close-up checks include ensuring components are built to specifications within acceptable dimensions. The sample photos below provide context to support a better understanding of LTA's dimensional checks.

Clause	Sample Check via Virtual Scan	Remarks
Standard Details of Road Elements (SDRE)		From the virtual scan: a photo of measurement is to be provided, with a measurement tool or a template tool to confirm that the kerb height meets the requirements of SDRE.
LTA's Civil Design Criteria		From the virtual scan: the specific location of access points is to be indicated.

4. LTA's Physical Checks — Functional Checks and Audit Checks

Depending on the facilities provided, LTA may select certain areas for physical checks such as:

- Operations of moving components
- Retro-reflective measurements

National Parks Board (NParks)

1. NParks' CSC Requirements

During CSC inspections, NParks checks that the greenery and park provision requirements within and outside the development boundary are in accordance with the approved plan(s):

- Retention of existing trees, plants, and vegetation approved for conservation
- Provision of planting areas, i.e. green buffer, peripheral planting verges, and other planting areas approved within the development boundary
- Provision and reinstatement of approved green verges and areas under NParks' management
- Planting scheme of approved internal planting areas and external green verges

2. Examples of NParks' Visual Checks

Visual checks conducted during CSC stage can fully be performed through the 360° scan, without any additional photo of measurement or additional evidence. The sample photos below provide context to support a better understanding of NParks' visual checks.

Clause	Sample check from virtual scan	Remarks
Approved plan • Retention of existing trees, plants and vegetation approved for conservation		From the virtual scan: we can see that existing trees are conserved according to approved plan.
Approved plan • Provision of planting areas, i.e. green buffer, peripheral planting verges and other planting areas approved within the development boundary		From the virtual scan: we can see that planting area (with trees) is provided according to approved plan.

Approved plan ● Provision and reinstatement of approved green verges and areas under NParks' management		From the virtual scan: we can see that green verges and areas under NParks' management are provided and reinstated according to approved plan.
--	---	---

3. NParks' Physical checks — Functional and Audit Checks

Depending on the project complexity, NParks may request a focused physical check. Projects that are likely to be selected for site inspection are those with:

- Mature trees to be conserved;
- New or reinstated greenery to be handed over to NParks for maintenance; and/or
- New or reinstated parks to be handed over to NParks for maintenance.

The above scenarios are non-exhaustive.

Agencies Involved in Other Inspections

Apart from TOP and CSC inspection agencies, there are additional firms/agencies that also perform other inspections, such as IMDA's Telco checks.

Infocomm Media Development Authority (IMDA)

1. IMDA's Requirements

During TOP inspections, the Telecommunication Facility Co-ordination Committee (TFCC) checks to ensure that the telecommunication infrastructure (e.g. Main Distribution Frame (MDF) room, lead-in pipes, and telecommunication risers) are provided in compliance to IMDA's Code of Practice for Info-communication Facilities in Buildings (COPIF).

2. Examples of IMDA's Dimension and Visual Checks

Visual checks are conducted through 360° scans, supplemented by photos of measurements taken during the inspection. The sample photos below provide context to support a better understanding of IMDA's visual checks.

Clause	Sample Check via Virtual Scan	Remarks
Measurement of Main Distribution Frame (MDF) room: (a) Length* (b) Breadth* (c) Height** (d) Height of door kerb <i>*For (a) & (b), please indicate (or exclude) the measurement of the column.</i> <i>**For (c), please indicate the measurement from the lowest point of beam(s).</i> Pictures of the location and dimensions of: (e) 3 electrical DB board (f) Earth bar	 	From the virtual scan/ measurement photos: the MDF room is constructed according to the COPIF.
Measurement of width of Cable Ladder provided in the MDF room. Measurement of Height (from floor to base) of Cable Ladder provided in the MDF room.		From the virtual scan/ measurement photos: the cable ladder in the MDF room is built in accordance to the COPIF.

Indicate the number of lead-in pipes provided into the MDF room(s).



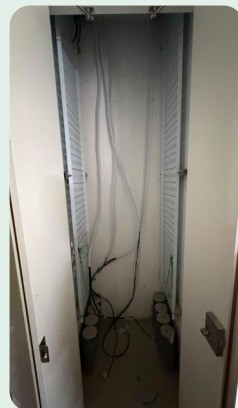
From the virtual scan: the number of lead-in pipes can be seen.

Measurement of width of Cable Tray from MDF room to each Telecom Riser.



From the virtual scan/ measurement photos: the Cable Tray from MDF room to telecom riser is built according to the COPIF.

Indicate the measurement of the risers.



From the photos attached to the virtual scan: the measurements for the risers are shown to be in compliance. The photos are to include the top, bottom and both sides of the risers.

The risers required to be shown are from both the lowest floor and the highest floor.

6. Case Studies

Macpherson Weave



1. Project Details

Project Name	Macpherson Weave (Geylang C13)
Location	Circuit Road
Development Type	Public Housing
Developer	HDB
Architect	3PA Architects Pte Ltd
Main Contractor	Hi-Tek Construction Pte Ltd
No. of Units	1,382 dwelling units
Total GFA	165,949.57 m ²
Pilot Scope	1 block
Agencies Involved	BCA, SCDF, NEA
TOP Obtained	24 November 2025

2. Process

Contractor requirements for VI planning/scanning, and more

Macpherson Weave was the first project to pilot the WOG VI process. Being the first pilot, it was only carried out on one block, with only BCA, SCDF, and NEA requirements involved.

Start-Up and Preparation

The start-up process involved three key steps. First, the QP submitted the Virtual Inspection Plan to BCA, while the main contractor and vendor conducted briefings and training.

Second, the team planned the video routing, capturing the first storey (including all service rooms, common areas, and driveway), a proposed typical storey (with all dwelling units and common areas), roof garden and soft storey where applicable, and the roof level.

Third, the team prepared the necessary equipment: a 360° camera, the 360° Capture app, measurement tools, and a mounting setup on either a helmet or handheld stick.

Documentation Prepared

Before scanning commenced,

- The team prepared the 360° platform, camera, and accessories;
- The QP submitted the virtual inspection plan to BCA, ensuring scan coverage with a capture plan;
- The latest BCA inspection checklist was made available;
- Selected floor plans were uploaded to the 360° platform, organised by folder as blocks; and
- Project users including PMs, site engineers, and the QP were added to the platform.

Scanning

Scanning was carried out in accordance with the planned routing, using the 360° camera, with each unit taking approximately 4 minutes to scan. Close-up measurements were captured using the 360° Capture app with reference to the BCA checklist, and pinned to the virtual scan. This took approximately 3 minutes per unit and 3 minutes per corridor.

Once scanning was complete, the 360° video of the scanned inspection area and close-up measurements were uploaded to the 360° Capture platform.

Pre-Inspection and Virtual Inspection

Before the TOP application, the site team reviewed the virtual scans and close-up measurements. Upon satisfaction, the QP was informed for assessment.

Inspectors were then given access to the 360° Capture platform, and BCA was notified by email that the capture was completed and ready for virtual inspection.

During the virtual TOP inspection, BCA provided their comments directly through the platform. The comments were categorised as Clarifications, Non-Compliance, or Observations.

The QP could filter for comments in “open” status and respond with rectification photos or explanations. The QP then can generate before/after rectification reports in PDF format for submission, in response to the Written Advice.

3. Benefits (Qualitative) and Quotes

The virtual TOP inspection proved to be more efficient compared to conventional physical inspections, significantly reducing travel time and offering greater convenience for all parties involved, streamlining the overall inspection process.

Beyond time savings, the virtual inspection process also supported better project documentation. Compared to physical inspections, virtual inspections allowed the team to inspect remotely from anywhere at any time, automatically created consistent visual records through 360° imagery, enabled “time capsule” revisits of past states, and made it easy to share walkthroughs via link — advantages not available with conventional physical inspections.

4. Productivity Study

Overall, the project found 30% in productivity savings, taking into account overall manhours for BCA, SCDF, and NEA virtual inspections versus estimated conventional inspections. This includes the time taken for conducting the scan and taking photos (such as measurements for dimensional checks).

5. Comments for Project Teams

As this is a newly introduced technology, time is required to explore its features, gain hands-on experience, and build familiarity with both the 360° camera and its platform. It is crucial to ensure the system is properly set up and functions reliably to support a smooth and effective virtual TOP inspection.

Project teams should also be aware that there are limitations in the accuracy of the 360° camera. Other technologies such as LiDAR could also be used, and project teams are encouraged to reach out to BCA and the relevant agencies early to confirm acceptance before fully adopting them.

Grand Dunman



1. Project Details

Project Name	Grand Dunman
Location	Dunman Road
Development Type	Private Residential
Developer	Grand Dunman Pte Ltd
Architect	P&T Consultants Pte Ltd
Main Contractor	China Construction Realty Co. Pte Ltd
No. of Units	1,008 units
Site Area	25,234.30 m ²
Total GFA	96,851.45 m ²
Agencies Involved	BCA, PUB, SCDF, NEA
TOP Obtained	24 November 2025

2. Process

Planning and Preparation

The project team began by reviewing the WOG VI requirements and identifying all areas to be scanned, including typical and non-typical residential floors, basements, roof levels, staircases, corridors, and common areas. A virtual inspection floor plan was prepared to map the scanning sequence, while manpower, lighting, access to ceiling panels and floor traps, and the photo markup workflow were coordinated before scanning began.

A key lesson from Grand Dunman is that virtual inspections do not mitigate the need for site readiness. Areas should be completed, accessible, clean, and well-lit before scanning. Any outstanding works, such as unopened access panels, incomplete services, or missing authority-related items, will be captured in the scan and may require rework.

Scanning

The scanning team comprised a camera operator, a standby operator, a helper to manage lighting and access panels, and a technical coordinator responsible for photo markups.

For residential units, a single video walk per unit proved to be the most efficient approach, with toilets, household shelters, and storerooms captured separately as spot walks. Corridors, staircases and common areas were also divided into manageable video walks, making the scans easier to process, review and, if necessary, rescan.

To maintain scan quality, the team walked steadily, paused for 2 seconds at the start of each video walk and when moving between spaces, ensured adequate lighting, and kept video walks short to prevent camera overheating. The camera was held 150–200 mm above the operator's head and close to the body to avoid blocking the 360° capture.

Photo Markups

Photo markups took longer to complete than the scans themselves. The team found it most efficient to organise markups by level, assign technically competent coordinators to manage them and upload photos via PCs instead of mobile devices. As deleted images and footage cannot be recovered, administrator access should be limited to authorised personnel familiar with the platform.

Challenges and Lessons Learnt

The team encountered challenges including unstable internet connectivity, software unfamiliarity, and the scale of coordinating a large project. These were addressed through trials, vendor support, improved upload methods using a LAN-connected hotspot, and the formation of a dedicated WOG VI team with standby personnel. Continuous feedback across different blocks also helped refine workflow, while the experience gained has strengthened the team's capability to implement WOG VI on future projects.

3. Benefits (Qualitative) and Quotes

The WOG VI process delivered several benefits for the Grand Dunman project team. Remote reviews reduced the need for repeated physical inspections and minimised the time spent coordinating agency access. Progressive reviews across multiple agencies enabled non-compliances to be identified and rectified earlier, reducing time pressure at the TOP stage.

Beyond regulatory inspections, the virtual scans also became a valuable project management tool. During the photo markup process, technical coordinators reviewed the entire project and identified defects and incomplete works that might otherwise have been overlooked. The VI cloud record also allowed completed areas to be reviewed remotely at any time.

“For Grand Dunman, the value of WOG Virtual Inspection was not only in the 360° Capture technology. Its real value was in creating a common visual record for the project team, consultants, contractor, and agencies, so that readiness issues could be surfaced earlier, resolved progressively, and better managed before TOP.”

Ms Lim Hwee Chim, General Manager, Singhaiyi Group

4. Productivity Study

The project team observed productivity gains through fewer repeated physical inspections, reduced coordination for agency access and earlier identification of non-compliances. Progressive reviews allowed rectification works to be prioritised, and completed over approximately 3 months before the final physical TOP inspection, reducing the need for last-minute inspection preparation. The VI cloud record also enabled completed areas to be verified remotely, improving project monitoring and coordination.

5. Comments for Project Teams

Based on the Grand Dunman experience, project teams should consider the following:

- Training or a rehearsal run before full-scale scanning
- One video walk per unit, with separate spot walks where required
- Group video walks and spot walks by date, and complete each floor within a single day, where possible to simplify review
- Avoiding scanning external areas during wet weather
- Allocating sufficient time for photo markups, as it is often more time-consuming than the scanning itself
- Organising photo markups by case and level, and restrict administrator access to the technically competent personnel

The Grand Dunman experience demonstrated that the greatest value of WOG VI lies not only in reducing physical inspections, but also in enabling project teams and agencies to identify readiness issues earlier, resolve them progressively and reduce time pressure at the TOP stage.

7. Frequently Asked Questions (FAQs)

1. Is the WOG VI process mandatory? Which projects are eligible to use it?

No. The WOG VI process is an alternative to conventional TOP/CSC inspections, and project parties can select between the two.

The WOG VI process is available to projects across different building typologies, provided the participating agencies' requirements for virtual inspections can be met.

Qualified Persons (QPs) and project teams are encouraged to assess whether the WOG VI process is suitable for their project, taking into account factors such as project's size and complexity.

To support project teams in making an informed decision and to determine whether the WOG VI process or conventional TOP/CSC inspections are better suited to their project, BCA has developed a WOG VI Guidebook, which sets out the VI requirements and other key considerations for adopting the process.

2. When should I apply for the WOG VI process?

Project teams can apply for the WOG VI process as early as you want. As long as your project has the completed the VI plan and templates, you are able to apply for the WOG VI.

3. What happens if the virtual scan is insufficient or does not meet an agency's requirements? Will a physical inspection be required?

Where the submitted virtual scans do not provide sufficient information for an agency to complete its assessment, the project team may be asked to rescan the affected area and submit additional scans or images. If the additional virtual submissions do not meet requirements, the agency may request a physical inspection of the relevant area to complete the assessment. Separately, certain checks that are not suitable for virtual inspection and will continue to be carried out through physical inspections, regardless of the quality of the virtual scans.

4. Does VI change the regulatory standard, or only the inspection method?

There is no difference in the safety and regulatory standards between VI and current processes. Agencies apply the same standards and checks based on the regulatory requirements that they administer, except that it is through a virtual platform.

5. Will all parties need new equipment or software?

Your project team will need a 360° camera and 360° capture platform to conduct the virtual inspection.

8. Annexes

The following Annexes can be found in the BCA website at

<https://www1.bca.gov.sg/growth-and-transformation/productivity/ops-tech-enabled-inspections/wog-vi>

Annex A – WOG VI Plan Template

The WOG VI plan includes the proposed scan areas, agencies involved, expected date of submission, target inspection milestones, marked up areas and waiver items.

Use this template to fill in and submit your VI plan as part of your WOG VI application.

Annex B – WOG VI Checklist for TOP/CSC Inspections

Each agency's requirements for TOP/CSC inspections via VI have been compiled into a single checklist for industry reference.

Refer to this annex to get a better understanding of all agencies' requirements to be covered in the virtual inspection, and when preparing to conduct your virtual scan.

Annex C – Data Standards for Virtual Inspection Platforms

This annex details the data standards required to be captured in your virtual capture platform as part of the virtual inspection submission.

Refer to this annex when setting up your virtual inspection platform with your selected vendor.