



PUBLIC SECTOR KNOWLEDGE BRIEF

STRATEGIC PUBLIC ASSET PROTECTION

Internal audit's role in improving critical infrastructure resilience



Public Sector™
AUDIT CENTER

Table of Contents

Introduction	1
Public assets, livelihood, and well-being	1
Community expectations	2
Protect community services	2
SPA characteristics and concepts	2
The SPAP spectrum range	4
A tool for addressing strategic asset risks	4
Internal audit's role in SPAP	6
Need end-to-end assessments	6
Avoid critical support service gaps and weaknesses	7
Implement a preliminary preparation approach	9
Closing thoughts	11
Protect core public values	11

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INTRODUCTION

Public assets, livelihood, and well-being

Public infrastructure is indispensable in modern civilization. It provides for the protection of life and property and improves the quality of life of citizens.

Water utilities provide a source of safe drinking water that flows through pipes that are local government capital assets. Beyond providing for life-giving nourishment, water utilities ensure fire departments have access to a reliable and plentiful flow for hydrants in the event of fire, and sanitation wastewater services are vital to the overall health of our communities.

When correctly built and maintained, transportation networks (e.g., roads and bridges) give citizens access to work, school, shopping, and more. Local government-owned recreational facilities, such as parks, playing fields, and playgrounds are important to daily lives and livelihood. Public safety in its varied forms relies on specialist equipment and facilities as it provides for the security of the community.

Of course, the nature and extent of public assets vary across cities and communities around the world, but all are foundational to the overall well-being of residents and the economies they serve. These assets play a vital role in the life of a community, and a key requirement is to secure a sustained and sustainable increase in public sector efficiency while providing and managing these assets.

This knowledge brief discusses the vital importance of strategic public assets (SPAs). It points to the role of internal audit within public sector entities that are responsible for cross- or inter-government response and recovery of SPAs in the event of natural or man-made disasters or threats to the operations of SPAs. It also discusses auditing the adequacy and operating effectiveness of controls over preparedness across agencies and between levels of government as opposed to limited audits of entity-level business continuity management (BCM).

COMMUNITY EXPECTATIONS

The need for security and resilience

Protect community services

Critical infrastructure provides the foundation for national security, governance, economic vitality, and a sustainable and attractive way of life. Further, its sustained reliability, robustness, and resiliency creates a sense of trust and confidence, and enables citizens to enjoy comfortable and acceptable standards of living. Successful governments at all levels create a sense of “place” for residents built largely on infrastructure, and provide opportunities for personal achievement, enrichment, and employment. It is therefore a fundamental responsibility of government not just to provide this infrastructure but also to protect it.

Strategic Public Assets

- **Agriculture**
- **Telecommunications**
- **Power**
- **Water and sewer**
- **Public health**
- **Emergency services**
- **Transportation networks**
- **Recreational facilities**

Understandably, citizens *expect* governments to deliver these publicly financed services. However, society is facing the serious and compounding challenges of increasing resource scarcity and degrading environments, including climate change in some locations.

When community assets are lacking or not working as they should, it can lead to a lack of safe and clean water, traffic congestion, and unsafe areas and communities, and this in turn can lead to serious consequences such as a reduced ability to attract skilled workers and families to the area.

Fixed government assets make up the social and economic infrastructure, which enables the provision of services to the public and to businesses. SPAs are those whose unavailability would cause significant and widespread economic and noneconomic harm, such as power plants or wastewater treatment plants. Such harm accrues not just to users and other beneficiaries, but also to economies that are dependent on the ongoing operation of those assets.

SPA characteristics and concepts

- SPAs can be both tangible and intangible and include infrastructure, information, human, natural, and financial assets.
- Assets may be owned by either government or nongovernment entities but are intended for public benefit or to contribute to the well-being of society even if operated by a for-profit entity.
- SPA operators are subject to government regulation and possibly, international regulation.

- SPA operators may have regulatory and enforcement powers to facilitate compliance with domestic and international regulatory obligations.
- Protection of SPAs includes measures taken to minimize the complete or partial loss of capability, or in the event of a capability loss, measures to minimize the impact of that loss and expedite the restoration of capability (e.g., disaster risk financing or insurance). These measures may be taken by the asset controller solely or in conjunction with other agencies at the local, provincial, federal, or international level.
- Strategic public assets protection/prevention (SPAP) typically is a “whole-of-government” accountability. In other words one that potentially is shared across multiple agencies and layers of government. SPAP may be horizontal across a layer of government, vertical between layers of government, or both. Safeguarding against, and in response to, significant disruption to these assets will normally require multi-agency cooperation and collaboration.

Resources

For a helpful discussion of audit programs related to disasters, see *The Audit of Disaster Risk Reduction*, published by INTOSAI (International Organization of Supreme Audit Institutions). It is available at www.preventionweb.net.

The Emergency Planning Society focuses on resources about resiliency for members. Visit www.the-eps.org.

THE SPAP SPECTRUM RANGE

Identify risks with protection and prevention strategies

A tool for addressing strategic asset risks

A **strategic public asset prevention (SPAP) spectrum** is a systematic tool that promotes a range of activities for effective prevention, as described by the Prevention Institute's [The Spectrum of Prevention](#). It can be divided into two broad levels. Level 1, *prevention* and *protection*, ensures ongoing operation of strategic assets. In the event of capability loss, level 2, *response* and *recovery*, at an asset level, ensures business continuity for the agency concerned at the operational level.

The scope of this report is not concerned with local business continuity management (BCM). However, BCM is replicated at a broader level across agencies and levels of government operations to ensure the safeguarding and sustainability of strategic assets for the benefit of society as a whole.

Regardless of the level at which an agency operates, certain concepts still apply. Prevention and protection comprise two components: *defense in depth*, or the physical and logical measures in place that ensure the day-to-day protection of the asset, and *effective risk management*, which drives identification and mitigation of new and emerging risks.

1. **Defense in depth** addresses the most likely threats to the asset. It also includes the contingency plans and emergency response strategies, along with resources available to respond immediately to unforeseen and/or the most dangerous threats to the asset that reduce or eliminate its operational capability.
2. **Effective risk management** is a capability requirement that should be embedded within the protection and prevention strategies to ensure that new and emerging risks are identified and included in protective, preventive, and response strategies.

Response and recovery comprise three phases: *incident response*, *critical incident management*, and *recovery*:

1. **Incident response.** The immediate response to complete or partial loss of SPA capability — saving life and limb and commitment of available resources as directed by contingency plans.
2. **Critical incident management.** The oversight of the initial incident response, considering matters arising immediately after the incident, and initiating the recovery phase when suitable.
3. **Recovery.** The operation of the SPA (or an alternative) while the impacted SPA functionality and utility is restored to full capability and operation. *Restoration* could be considered as either a fourth phase or as part of recovery. Both risk management and the associated controls must be contextualized in the preceding phases.

Jurisdictional plans for protection

BCM is the building block upon which SPAP occurs. At the individual asset level, BCM could be depicted as shown in Exhibit 1.

As SPAs operate for public benefit, their protection and BCM should be horizontally or vertically integrated into other jurisdictional plans for protection and/or response in the case of widespread disruption or unavailability. Exhibit 2 shows one possible configuration of SPAP.

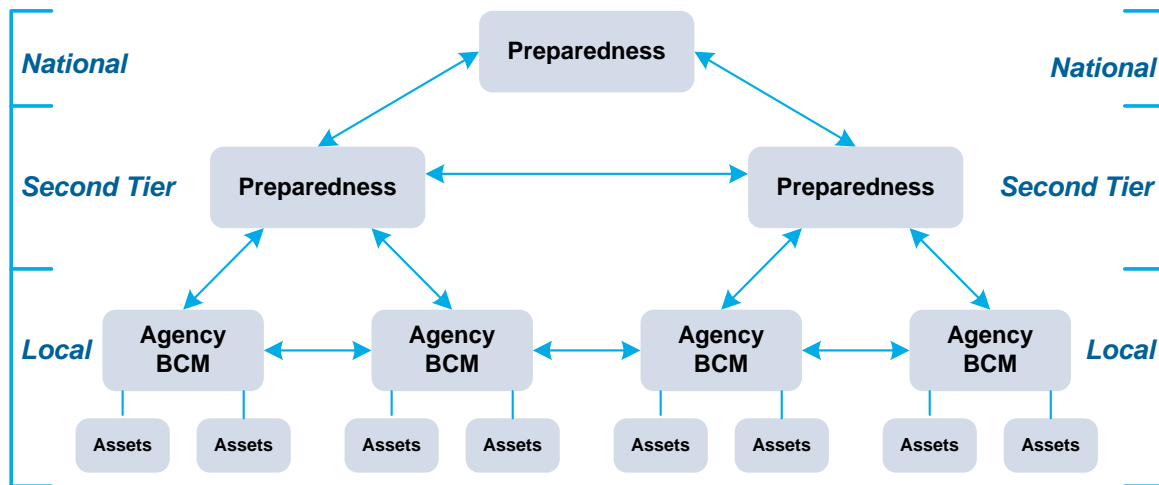
As shown in Exhibit 2, SPAP can be both horizontal and vertical in nature. A public sector auditor may work in an agency that either operates a SPA or in an agency that has cross sector/government responsibility. Based on this, the role of management and/or the boards of SPAP entities may align with either of two positions:

1. Ensure their agency's BCM aligns with SPAP measures required by jurisdiction(s) in which the SPA is located and that these aspects of BCM are tested.
2. If the agency has jurisdictional authority and/or is required to coordinate government-directed responses to SPA disruption, their contingency plans should be current and tested, and there should be broad alignment between these plans and the agencies that may be coordinating efforts in the event of a SPA operation disruption.

Exhibit 1: Business Continuity Management (BCM)

Business Operations	Business Continuity Planning
Effective risk management	Incident response
Defense in depth	Critical incident management
	Recovery/restoration

Exhibit 2: An Example of SPAP Interfaces Across and Between Governmental Levels



Note: SPAP = strategic public asset protection. BCM = business continuity management.

INTERNAL AUDIT'S ROLE IN SPAP

The absence of internal audit can result in the absence of preparedness

Need end-to-end assessments

Within the public sector, internal audit's traditional focus has been on auditing the spectrum of BCM activities, which comprises business continuity planning, critical incident management, and emergency responses, and in turn is inclusive of IT backup and recovery. SPAP is beyond BCM because the risk exposure is lateral and runs across agencies, similar to a supply chain. Organizations that operate SPAs are often interdependent on other SPA operators maintaining their ongoing business operations.

For example, to function effectively, public sector hospitals are dependent upon power and water supplies; a reliable road network; and effective relationships with local, state, and/or federal governments. A significant risk event may flow from a failed power utility to the water supply system, directly and indirectly impacting the hospital.

In most jurisdictions, organizations responsible for emergency management and/or disaster response regularly conduct simulation exercises such as rehearsals for foreseeable disasters that may impede normal operation of SPAs. They may or may not be performed under the leadership of a third party mandated to do this. However, these simulation exercise events will occur with little or no internal audit engagement. Further, reporting on preparedness will be done through the various chains of command, and may result in fragmented or conflicting messages when results of the exercise are analyzed by the organization overseeing the simulation operation.

Internal audits can lead to improvements in asset management. Auditors assess whether or not the organization is complying with regulatory frameworks and whether services are being delivered efficiently and effectively. The absence of internal audit engagement in end-to-end simulation exercises means that more than likely, there will be no objective and independent end-to-end assessment that delivers consistent

Audit Focus

IIA Standard 2120: Risk Management

The internal audit activity must evaluate the effectiveness and contribute to the improvement of risk management processes.

2120.A1 – The internal audit activity must evaluate risk exposures relating to the organization's governance, operations, and information systems regarding the:

- **Achievement of the organization's strategic objectives.**
- **Reliability and integrity of financial and operational information.**
- **Effectiveness and efficiency of operations and programs.**
- **Safeguarding of assets.**
- **Compliance with laws, regulations, policies, procedures, and contracts.**

2120.C1 – During consulting engagements, internal auditors must address risk consistent with the engagement's objectives and be alert to the existence of other significant risks.

2120.C2 – Internal auditors must incorporate knowledge of risks gained from consulting engagements into their evaluation of the organization's risk management processes.

messages across the tested agencies. In the public sector, the only audit body capable of doing this is a supreme audit agency (such as an auditor general), and this depends on the supreme audit agency's mandate and priorities. This gap can impact the quality of preparedness and/or resilience and, as a consequence, does not mitigate the risk to SPAs to the lowest possible level.

Avoid critical support service gaps and weaknesses

After an exposure, post incident reviews are typically conducted by responding agencies and/or the asset operator's management. In extreme cases, formal public inquiries may occur. However, because the formal inquiry occurs *after the fact*, risk mitigation efforts at the time of the exposure are demonstrated to be less than effective.

In this case, there are usually very few questions about the presence or absence of auditors. This contrasts with public inquiries into major financial losses or systemic governance failures in which the presence or absence of auditors is often in the first topic of discussion. The absence of auditors in the scenario of a major SPA disruption is potentially a lost preparedness opportunity. Credible and skilled internal auditors can act as neutral observers and focus on previously unseen or perhaps unforeseen weaknesses in testing regimes and scenarios.

In a typical audit of BCM, internal audit will focus on the arrangements within their agency and where touch points with other critical support services occur. Internal auditors may accept their management's assertion that the other agency has that touch point covered, or if they do reach across to a supporting organization, they may do little testing of the veracity of those assertions.

Further, internal auditors can test their BCM up to a boundary at a point in time, and their counterparts in supporting agencies may test their segment of the risk chain up to a boundary at another point in time. Differing times of audits and testing means the risk of an exposure could have changed while implementing mitigation strategies, creating a *gap*. To minimize the risk of disruption, internal auditors should be aware of and audit these potential gaps so that weaknesses are identified and rectified, resulting in improved preparedness.

Another issue is the differing audit scopes within the agencies that are interdependent. This may mean that testing within agencies may not arrive at a common touch point, impacting the quality of the preparedness and risk mitigation to SPAs. An ability to conduct an end-to-end preparedness audit across agencies would address this gap.

Audit Focus

IIA Standard 2130: Control

The internal audit activity must assist the organization in maintaining effective controls by evaluating their effectiveness and efficiency and by promoting continuous improvement.

2130.A1 – The internal audit activity must evaluate the adequacy and effectiveness of controls in responding to risks within the organization's governance, operations, and information systems regarding the:

- **Achievement of the organization's strategic objectives.**
- **Reliability and integrity of financial and operational information.**
- **Effectiveness and efficiency of operations and programs.**
- **Safeguarding of assets.**
- **Compliance with laws, regulations, policies, procedures, and contracts.**

2130.C1 – Internal auditors must incorporate knowledge of controls gained from consulting engagements into evaluation of the organization's control processes.

The root causes of this situation, along with some possible solutions, are twofold:

- Culturally, the management and operational teams engaged in cross-agency preparedness testing (rightly or wrongly) may believe that auditors are a hindrance in such exercises. In high-pressure circumstances, the presence of internal audit may be perceived as a *lack of confidence* in and by senior management, and that an internal audit may attempt to second-guess what command decisions are made in adverse circumstances.

A counter to this is that internal auditors (as competent observers with a clear mandate and good empathy) can gain valuable insights into end-to-end disruption testing exercises. This may be because they understand an agency's culture. Additionally, with judicious and tactful questioning of assumptions made in the testing along with input into a post-activity report, they can provide useful insights, resulting in enhanced preparedness. Handled well, internal auditors can enhance their status as trusted advisors.

- The internal auditor's mandate and their own priorities may present an opportunity to collaborate with third parties if it is not expressly prohibited. If internal auditors can focus on supply chain risk, they can also focus on disruption risks to the operation of SPAs.

What is needed is the engagement and leadership of oversight committees and agency senior executives to collectively consider their preparedness risk across the disruption chain. To do this, they must seek and agree to a *common scope* of independent and objective assessment on preparedness in the same manner as they seek independent and objective assessments on operations within their agency.

A properly scoped cross-agency audit performed in accordance with The IIA's *International Standards for the Professional Practice of Internal Auditing (Standards)* would objectively identify the vulnerabilities and risks across a disruption chain, particularly at the boundaries in which accountabilities for preparedness change. Such an audit would have the potential to identify previously unknown interface gaps. A single report with one set of common recommendations presented to the various oversight committees and agency leadership teams can enhance the individual and collective knowledge and understanding of the disruption risks to an SPA. In turn, properly implemented audit recommendations can increase preparedness, as well as mitigate risk to the SPAs and their interdependencies.

Essentially, the greater the disruption risk across agencies that are engaged in the operation of SPAs or from part of their critical dependencies, the more effort is required to design appropriate preparedness for such disruptions.

The public sector does test dependencies across agencies, but it is not certain that those test results are objectively verified. Oversight committees and internal audit are well-positioned to do this. As internal auditors and trusted advisors in today's world of disruption and interdependency, internal auditors and oversight committees must reach beyond BCM to the greater objective of SPAP. When they move in this direction, preliminary preparation and this four-phased approach may be useful.

Implement a preliminary preparation approach

The nature of a SPAP engagement goes to the heart of assurance provision. To be effective and sustainable, time and effort in laying the groundwork is essential because it involves collaboration and relationship building and considers some requirements prior to embarking on SPAP assurance:

- Identify collaborators through the organization's disruption chain, and then gain their support.
- Leverage the support to gain the endorsement of the management teams, oversight committees, and governing bodies. A cross-organization steering committee may be appropriate.
- Clearly define roles and responsibilities, including those to assume with caution and those that should be avoided.

Once ground rules are in place, a top-down approach allows strategic imperatives to drive the process. Such an approach also allows public sector auditors and oversight committees to incorporate SPAP into the assurance plans:

- Add disruption interdependency to assurance strategies and assurance maps using a line-of-defense model. This allows the roles and responsibilities to be organized in terms of risk and assurance provision. This should be done across all the organizations dependent upon one another for effective SPAP and SPA resilience.
- With the governing body, oversight committee, and senior management sanction, collaboratively map and agree to physical and informational interdependencies. In a SPAP context, this means those organizations and the processes in which an organization may rely for continued protection and operation, as well as organizations and the processes that may rely on any single organizations' processes for continued protection and operation.
- Based on the interdependency mapping, jointly assess the risks and business impact and associated controls over those interdependencies. A collaborative audit can then be scoped and performed using a BCM maturity approach covering:
 - Documentation.
 - The level and robustness of business impact analyses.
 - Training and communications, with an emphasis on cross-organizational cooperation.
 - Testing with an emphasis on cross-boundary testing where the control environment and accountability is most likely vulnerable.
 - Contractual arrangements and agreements between interdependent organizations, inclusive of risk transfer and financing arrangements.
 - Personnel, including key personnel, deputies, chains of command, and control.
 - Physical infrastructure and supporting and dependent technology.

- Audit reports from previous audits should identify foreseeable risks, preferably evidenced by lessons learned and vulnerabilities of what may go wrong should a significant disruption occur. A collaborative approach includes the benefit of communicating these risks in a common language that may give SPA organization boards more confidence to deal with governments and their policy making and resource allocation roles.

Audit Focus

IIA Standard 2420: Quality of Communications

Communications must be accurate, objective, clear, concise, constructive, complete, and timely.

Collaborating organizations that follow such an approach should consider the lessons learned from each step and incorporate learnings into subsequent iterations of their assurance strategies.

CLOSING THOUGHTS

Rise to the challenge of exercising preparedness

Protect core public values

As the social, economic, and environmental well-being of communities depend on the reliable performance of public infrastructure assets, it is critical to implement a strategic, systematic, sustainable approach to their management and protection. Governments at all levels are responsible for identifying and securing the critical infrastructure and key assets they own and operate, or those that are privately operated within their communities. Simply, communities expect governments to deliver, or facilitate delivery of, critical infrastructure services expeditiously and without serious disruption.

If SPAs suddenly become unavailable, there will be fallout. In the discharge of their duties, governments, boards, and committees who are accountable for the ongoing operation of SPAs need independent operational assurance as to the individual and collective resilience of the organizations charged with SPAP.

Higher levels of government (e.g. national, state, provincial), should facilitate coordinated planning and preparedness for critical infrastructure and key asset protection, applying unified criteria for determining criticality, prioritizing protection investments, and exercising preparedness within their jurisdictions. There is a broad range of issues associated with SPAP to be considered:

- SPA concepts, inclusive whilst infrastructure may be privately owned and operated, the infrastructure could still be a strategic public asset.
- SPAP spectrum that takes BCM concepts and broadens them across organizations.
- Potential roles for internal audit in SPAP.
- The preliminary preparation needed for internal audit collaboration across organizations with SPAP accountabilities.
- An approach to a collaborative internal audit based on the inclusion of interdependency within assurance strategies and assurance maps.

Internal audit can provide an invaluable service in this space. As a cornerstone of good public sector governance and performing their work to the highest standards of integrity, internal auditors are looked to for assurance. They fill a variety of important roles in the sustainability of economic, social, and environmental benefits, and materially increase citizens' ability to hold public sector entities accountable for safeguarding public resources. Public sector internal auditors are expected to protect core public values by providing oversight, insight, and foresight services, and help ensure that managers and officials conduct the public's business transparently, fairly, with equity and integrity, and operate within their appropriate limits of authority and resources.

ABOUT THE PUBLIC SECTOR AUDIT CENTER

The Public Sector Audit Center (PSAC) is a specialty offering of The IIA for public sector auditors. PSAC was established to provide public sector auditors with targeted high-quality professional development; networking opportunities for knowledge sharing among public sector stakeholders; and ongoing, timely, and relevant reporting on trends, benchmarking, and thought leadership in the audit profession. For more information, visit www.theiia.org/PSAC.

ABOUT THE IIA

The Institute of Internal Auditors (IIA) is the internal audit profession's most widely recognized advocate, educator, and provider of standards, guidance, and certifications. Established in 1941, The IIA today serves more than 190,000 members from more than 170 countries and territories. The association's global headquarters are in Lake Mary, Fla. For more information, visit www.theiia.org.

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