Good Practice Guide

GPG 05

Baseline Data for Routine Service of Fire Protection Systems

Version 1

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FIRE PROTECTION ASSOCIATION AUSTRALIA

FPA AUSTRALIA

Baseline Data for Routine Service of Fire Protection Systems

Leading and supporting a professional industry to minimise the impact of fire on life, property and the environment, for a safer community

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Leading and supporting a professional industry to minimise the impact of fire on life, property and the environment, for a safer community

1.0 Purpose

The purpose of this Good Practice Guide is to provide practical guidance by:

1. Clarifying what the purpose of baseline data is in regards to undertaking routine servicing in accordance with AS 1851.
2. Explaining why baseline data is important.
3. Describing how baseline data can be obtained and should be recorded.
4. Detailing how baseline data should be used.
5. Highlighting the necessity and value of baseline data.
6. Providing specific details of individual system and equipment baseline data.

2.0 Audience

This Good Practice Guide is intended to assist:

(i) FPA Australia members.

(ii) Key stakeholders in the Fire Protection Industry, including:

- (a) Property owners and facility managers
- (b) Maintenance contractors
- (c) Building tenants
- (d) Insurance companies and corporate risk managers
- (e) Design consultants
- (f) Regulators
- (g) Fire services.

3.0 Introduction

Installed fire protection systems and equipment must operate reliably at an expected level of performance in order to be effective in response to fire and related emergencies. This intent is reflected in the objective of routine servicing to AS 1851, which is "to maintain the reliability of fire protection systems and equipment such that they continue to meet the requirements of the approved design and are likely to do so until the next scheduled activity".

Routine servicing includes inspecting, testing and undertaking preventative maintenance at specific intervals to demonstrate that fire protection systems and equipment are performing as required and recording the results of these service activities. Baseline data (i.e. data from the approved design and commissioning) is an important requirement of AS 1851 required to compare the results of certain routine servicing activities against in order to verify that the level of system or equipment performance expected by the approved design is being achieved.

AS 1851 is the Australian Standard for the routine servicing of fire protection systems and equipment. A comprehensive revision of this standard was released in December 2012 and is referred to as: AS 1851-2012, *Routine service of fire protection systems and equipment*. Amendment 1 to this Standard was released on 16 November 2016. The most significant aspect of Amendment 1 was to improve clarity regarding expectations for baseline data required to verify the results of routine servicing.

The need to obtain and consider baseline data for the purpose of routine servicing have been highlighted in AS 1851 since the 2005 edition of the standard and were inherently required in the individual editions of AS 1851 that preceded the combined 2005 edition. Despite this, there has been considerable confusion amongst stakeholders relating to the extent of baseline data required and the reasons for requiring it. Amendment 1 of AS 1851-2012 focussed on addressing these issues via a revised baseline data definition and editing routine service schedules accordingly to align with this definition. This Good Practice Guide complements these amendments to the Standard, and has been developed as a valuable resource to provide additional guidance to increase the understanding and implementation of baseline data to support verification of routine servicing results in accordance with the methodology of AS 1851.

Note: Terminology used in this guide refers to fire protection systems; however, the definitions, descriptions and methodologies provide within this guide could be adopted for other associated fire and life safety systems, such as exit signs and emergency lighting, emergency management and the like.

4.0 Demonstrating Reliability and Performance

All states and territories have enacted legislation requiring building or facility owners (and in some instances tenants) to ensure fire protection systems and equipment required to be installed are kept in a state which enables them to fulfil their purpose as approved. Refer to FPA Australia Good Practice Guide GPG-03 Adoption and use of AS 1851-2012 for information about the specific requirements in your jurisdiction.

AS 1851 is the industry standard methodology for supporting owners to demonstrate they have achieved these legislative expectations and does this by demonstrating the reliability and performance of installed fire protection system and equipment. Application of AS 1851 requires:

1. Undertaking routine servicing activities and recording and reporting results; and
2. Verifying the results of certain routine servicing activities against performance benchmarks required by the approved design.

The performance benchmarks of the approved design constitute the baseline data required to verify the results of routine servicing undertaken in accordance with AS 1851 against.

Figure 1 below illustrates the methodology of AS 1851 in demonstrating reliability and performance of installed fire protection systems and equipment.

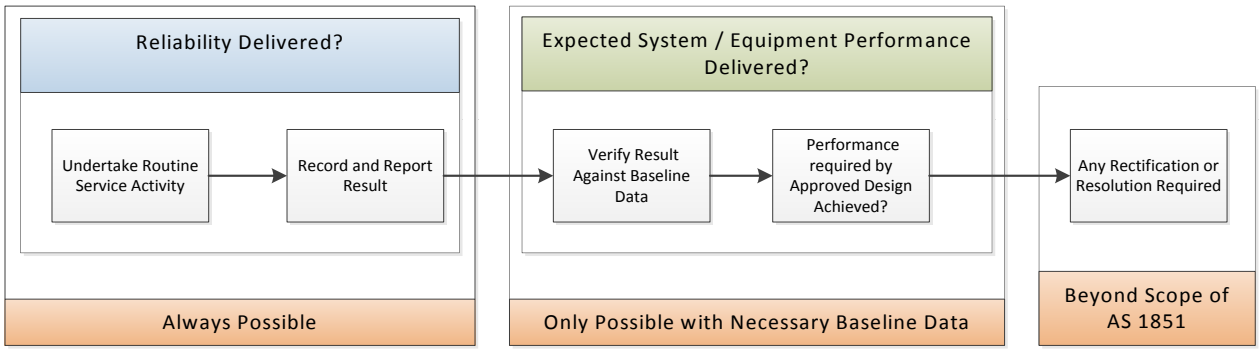

Figure 1 AS 1851 methodology for demonstrating reliability and performance

Figure 2 below expands on this concept by illustrating that fire protection systems and equipment are installed in order to achieve the performance required by the approved design. This performance level is expected to be maintained. Routine servicing activities are required to be undertaken by AS 1851 and the results recorded. For certain activities, AS 1851 requires these results to be verified against baseline data to demonstrate the system / equipment performance required by the approved design is being achieved. Where this is the case, no further action is required. Where system / equipment performance does not achieve that required by the approved design this must be recorded and reported and rectification or restoration sought. Note that rectification and restoration is beyond the scope of AS 1851.

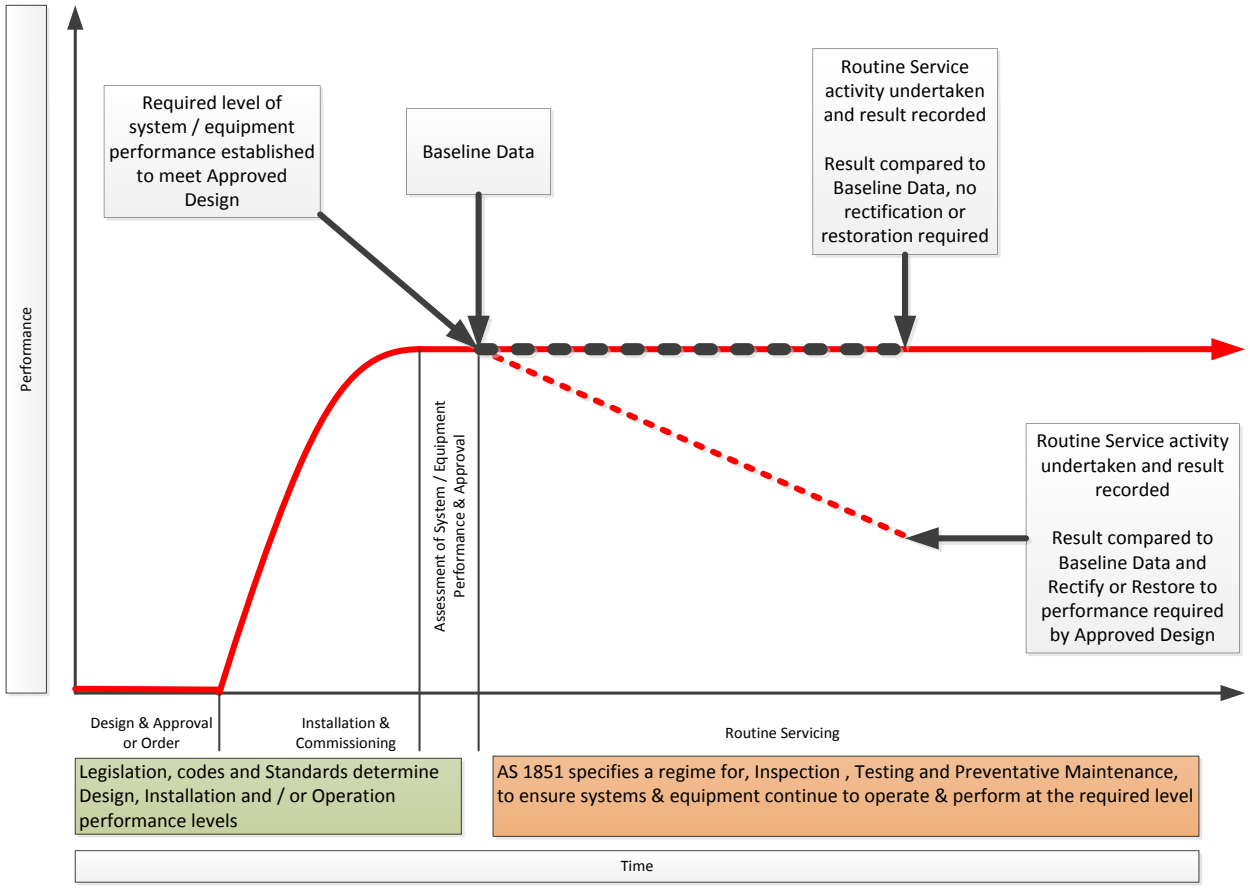

Figure 2 Recording results and comparing to baseline data where required

Baseline Data is applicable to those routine service items in AS 1851-2012 which directly relate to system or equipment performance.

5.0 AS 1851-2012 Amendment 1 Clause 1.8

Standards Australia published Amendment 1 of AS 1851-2012 on 16 November 2016. This amendment includes a significant revision to simplify and clarify the requirement for Baseline Data. Clause 1.8 of AS 1851-2012 Amendment 1 now states:

> *1.8 BASELINE DATA*
>
> *Baseline data may be required to verify the result of a routine service activity required by an applicable service schedule.*
>
> *Baseline data required by this Standard is limited to that—*
>
> *(a) necessary to verify a routine service activity result; and*
>
> *(b) prescribed by the regulations, codes or Standards that applied to the approved design.*
>
> *Irrespective of the availability of baseline data, the routine service activity shall be carried out and the result recorded and reported. Where required baseline data is available, the routine service result shall be verified against it. Where required baseline data is unavailable, its unavailability shall be recorded and reported as a non-conformance.*

This clause clarifies the original intent of AS 1851 in relation to baseline data requirements and supports the methodology of AS 1851 as discussed in section 4.0 above. The clause has several parts which can be broken down as follows in order to increase understanding and consistency of application.

Part	Clause 1.8	FPA Australia Interpretation
A	*"Baseline data may be required to verify the result of a routine service activity required by an applicable service schedule".*	There are several key words that are of importance in this sentence—'May', 'Verify' and 'Result'. **'May'** – The use of the word 'may' indicates that Baseline Data is not required in association with all routine service activities. **'Verify'** – This sentence provides clarification using the word 'Verify' to further explain when Baseline Data is required. If a routine service item doesn't require confirmation or substantiation by evidence to ascertain the correctness of a systems' performance by comparison, then Baseline Data is not required to verify that item (refer to Section 6.0 below). **'Result'** – With respect to AS 1851-2012 we consider this word to be applicable to the recorded measurements, observed operation or the like of certain routine service item actions.

Part	Clause 1.8	FPA Australia Interpretation
		Note: The word 'result' may differ between systems. For example, the result for a sprinkler system yearly water supply proving test is a measurement, the result of a fire detection system 'System Interface Test' is an observation and for a passive system the result may be verification that the required fire resistance continues to perform.
B	*"Baseline data required by this Standard is limited to that—* *(a) necessary to verify a routine service activity result; and* *(b) prescribed by the regulations, codes or Standards that applied to the approved design".*	This part of Clause 1.8 sets the criteria for when to obtain Baseline Data. Note: The Baseline Data criteria requirement is set by (a) and (b). Dot point (a) limits the requirement for Baseline Data to only those items where verification of a result is required and dot point (b) further limits the requirement to only that Baseline Data which was required by the approved design. If it wasn't required by the approved design—or the standards, codes, legislation and the like that apply to the approved design—then Baseline Data is not required to be provided. The 'and' statement between (a) and (b) means that both (a) and (b) must apply in order for Baseline Data to be required to verify that routine service activity.
C	*"Irrespective of the availability of baseline data, the routine service activity shall be carried out and the result recorded and reported".*	If you have Baseline Data: carry out the test, record the results and verify against the Baseline Data. If you do not have the Baseline Data required to verify routine servicing results, this does not prevent you from carrying out the activity and recording the results. Therefore the activity should always be carried out. The lack of baseline data will, however, prevent you from being able to verify the result and therefore demonstrate that the required system performance has been achieved.
D	*"Where required baseline data is available, the routine service result shall be verified against it".*	The word 'required' in this sentence refers to the limiting Baseline Data criteria as set in Part B above. If the routine service test result meets or is better than the Baseline Data performance level, then the activity item shall be recorded as a 'pass'. If test result does not meet the Baseline Data performance level, then the activity item shall be recorded as a 'fail' and reported appropriately.

Part	Clause 1.8	FPA Australia Interpretation
E	*"Where required baseline data is unavailable, its unavailability shall be recorded and reported as a non-conformance".*	The word 'required' in this sentence refers to the limiting Baseline Data criteria as set in Part B above. No required Baseline Data means the results of the activity can be recorded and reported as a non-conformance. Do not record as a critical defect or non-critical defect.

6.0 All Baseline Data v Baseline Data required for AS 1851

Correct application of the requirements of AS 1851 in relation to baseline data is subject to a clear understanding of the expectations of Clause 1.8 of the Standard, the difference between all baseline data, and the baseline data required for AS 1851.

The term 'all baseline data' can be used to reference numerous types of information that describe the installation and performance requirements of a system or piece of equipment. This information can include, but is not limited to:

- Permits, approvals, inspection, commissioning and testing records
- Plans and schematics, including sections, elevations, layouts, reflected ceiling plans and details (approved and as-built drawings);
- Specifications and installation schedules,
- Equipment data sheets, and technical data sheets, including product tests and compliance certificates
- Duty points, interface diagrams, utility supply details, equipment schedules, operating & maintenance manuals, etc.

However, not every part of 'all baseline data' is required in order to verify the results of routine servicing in accordance with AS 1851.

The revised Clause 1.8 included in Amendment 1 of AS 1851, as referenced above, clarifies the original intent—that the baseline data required for AS 1851 is limited to that necessary to verify a routine service activity result. Appendices A to I of this Good Practice Guide identify all of the routine service activities from the AS 1851 schedules where results should be verified against baseline data and suggests what the extent of 'baseline data required for AS 1851' should be for each activity.

Figure 3 below illustrates the types of information that could be considered to constitute 'all baseline data' and that only certain aspects of this are required to verify the results of routine servicing against in accordance with 'baseline data required for AS 1851'.

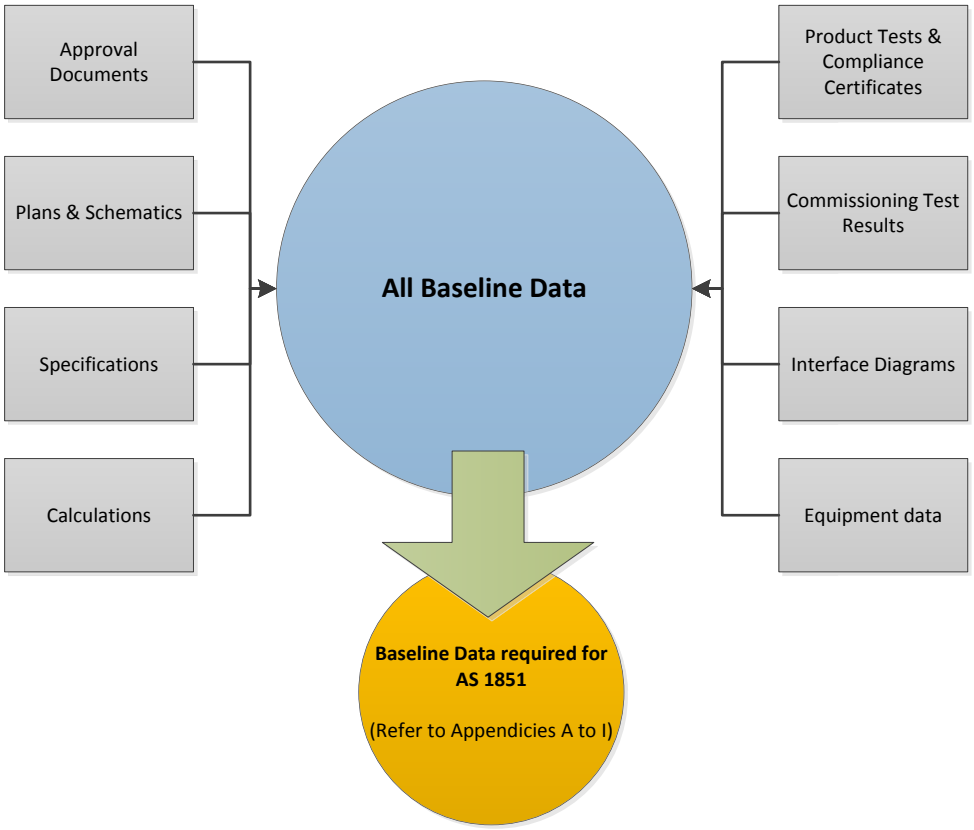

Figure 3 'All baseline data' versus 'baseline data required for AS 1851'

Also, because the objective of AS 1851 is to demonstrate the reliability of installed fire protection systems and equipment such that they continue to perform to level expected by the approved design, baseline data required for verifying routine service activity results should be drawn from the baseline data that supported the approved design or was applicable at the time as prescribed by regulations, codes or Standards. It is proposed that future versions of this Good Practice Guide include historical regulation, codes and Standards information in this regard for easy reference.

7.0 Where can Baseline Data be obtained from?

Amendment 1 to AS 1851-2012 clarifies what baseline data is required to verify the results of routine servicing to AS 1851. However, the Standard does not provide advice on how to source required baseline data. This can be a difficult task depending on the age of the building or facility in question, and the diligence of other stakeholders in the design, approval and record keeping processes to generate or retain critical information.

It is likely that required baseline data will not always be readily available at a site due to the cultural practices that have previously existed in industry.

Figure 4 and the Table below outline a methodology for investigating and sourcing Baseline Data. This methodology should be worked through sequentially and is based on initially exhausting known sources of baseline data before embarking on a process to re-establish it at an appropriate level using reverse engineering techniques.

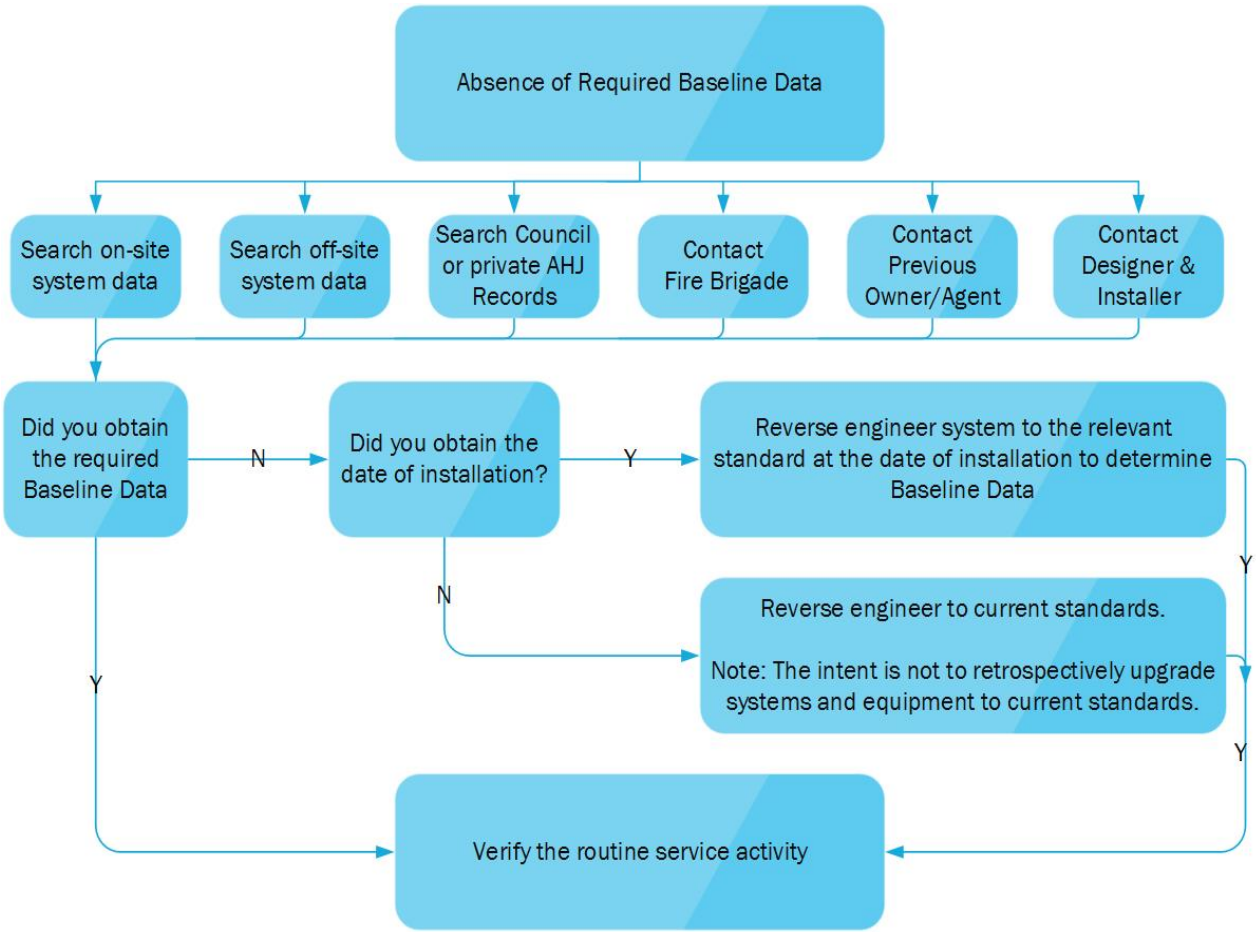

Figure 4 Methodology to obtain Baseline Data

Investigation Methodology

STEP 1: Search all on-site system data:

Carry out an investigation on site for each system to attempt to identify the items that may constitute Baseline Data; such as, drawings, specifications, diagrams, block plans and the like.

It is recommended that this includes a search of the fire control room, sprinkler control valve rooms, fire pump room, fire detection CIE, building manager's office, security control rooms, storerooms and the like.

STEP 2: Search all off-site system data (held by the owner, owner's agent):

Carry out an investigation off site for each system to attempt to identify the items that may constitute Baseline Data; such as, drawings, specifications, diagrams, block plans and the like. This data may possibly be in the possession of the owner, the owner's agent or property manager.

They may have unknowingly obtained the required Baseline Data in documents, manuals and the like which they obtained during construction or purchase of the building.

STEP 3: Search Council records of the system design:

Often, but not always, building legislation requires the Authority Having Jurisdiction (AHJ) to provide the Local Government (Council) a copy of all approved designs for new buildings or modifications to a building.

Likewise, Council is often the organisation that is required by legislation to retain the copy of the approved design for records.

Although most Councils themselves are an AHJ, the last few decades has seen a shift towards an increasing number of designs being approved by private AHJ. Therefore, if the relevant Council is not the AHJ, or does not have the information of the approved design, they may be able to provide you with the contact details of the private AHJ.

(Note: this search may, if nothing else, provide you details of the year of the approved design)

STEP 4: Contact the relevant local fire brigade:

There is a possibility that the relevant fire brigade may have had some involvement during the design, installation, certification or occupancy approval process for a new or modified building.

You should contact them to verify if they have any records of the building and obtain a copy if they do.

(Note: this search may, if nothing else, provide you details of the year of the approved design)

STEP 5: Contact the system designer or system installation contractor:

Attempt to source details of system designers and system installation contactors who have worked on or at the building in the past.

They may have information pertaining to the approved design. If not, they may be able to provide further direction on where this information could be obtained from or who may have it.

STEP 6 Contact previous owner & agent for system details:

Attempt to source details of previous building owners and/or previous property managers. If able, you should attempt to contact them and seek their assistance to:

- Provide a copy of information they may have in relation to the approved design(s), and
- Provide information they may have in relation to other previous owners, agents, building consultants, engineers, architects, AHJ, installation contractors, builders, service contractors and the like.

What to do if the findings of the above investigations do not provide Baseline Data?

If the findings of the investigations in Steps 1 to 6 do not provide the required baseline data for a system, we consider the following to be a reasonable solution to determine a system's baseline data.

STEP 7: Reverse Engineer – Year of Installation

While carrying out the investigations in Steps 1 to 6 above, you may be able to determine the year of installation or approval for the particular fire protection system. If the year of installation is known, you can attempt to obtain the relevant Regulations, Codes and Standards which were applicable to building designs at the time.

If the Regulations, Codes and Standards are obtained then with an inspection of the fire protection system, a competent person should be able to reverse calculate (Reverse Engineer) the system to determine the baseline data very close to that of the approved design.

This would require inspection of the site and installation to identify and record the occupancy use, pipe diameters, sprinkler spacing, sprinkler head type, heights, pipe length, etc.

It is unlikely that that baseline data calculated by Reverse Engineering of a system will exactly match that of the approved design. However, it should be very close and it is significantly better than verifying against no information at all. As such, the person reverse engineering a system should detail any assumptions made and include a minor factor of safety.

STEP 8 Reverse Engineer – Present Year

Where the year of installation is unknown, a competent person could use the process in Step 7 to reverse calculate (Reverse Engineer) a system using the most relevant current Regulations, Codes and Standards.

CAUTION – It is not the intent of AS 1851 to retrospectively upgrade existing systems and equipment to current installation standards. Any reverse engineering to current installation standards should only be used as an indicator of performance for an AHJ to accept.

Case Studies

The following case studies are provided to assist readers to understand some of the work/tasks required to source baseline data.

Case Study 1—Baseline Data (required for AS 1851) available

A routine service contractor is carrying out the yearly 'Water Supply Proving Test' in accordance with Item 3.5 of Table 2.4.2.3 of AS 1851-2012.

1. From the test they obtain and record a series of system flows with corresponding pressures.
2. From the baseline data available on the Block Plan, they obtain the systems' required flow and pressures—duty points—and design density.
3. The test results and baseline data can then be plotted on graph to allow the contractor to verify if system performance has been achieved as required by the approved design.

Case Study 2—Baseline Data (required for AS 1851) unavailable – year of installation known

A routine service contractor is carrying out the yearly 'Water Supply Proving Test' in accordance with Item 3.5 of Table 2.4.2.3 of AS 1851-2012.

1. From the test they obtain and record a series of system flows with corresponding pressures.
2. There is no block plan on site for the system. An exhaustive investigation through Steps 1 to 6 has been carried out, which only reveals the year of installation. However, the applicable system design standard for that year does not require a block plan—or required flow and pressures—to be kept on site.
3. Using the applicable design standard, a competent person inspects the site and installation to record the occupancy use, pipe diameters, sprinkler spacing, sprinkler head type, heights, pipe length, etc.
4. From the information obtained during the inspection, the competent person uses the he applicable design standard to reverse engineer—calculate—the system to determine the required flows and pressures (duty points). This information could now be used as 'baseline data for AS 1851'.
5. The calculated flows and pressures—found by reverse engineering the system—and the recorded test results can then be plotted on graph to allow the contractor to verify if system performance has been achieved.

8.0 Baseline Data Frequently Asked Questions (FAQ)

QUESTION 1:	Is Baseline Data a new requirement?
ANSWER:	No.
Explanation:	Baseline Data has been an inherent requirement of both State and Territory building legislation, the inaugural series of AS 1851 standards and subsequent collated versions. AS 1851-2012 has simply put this inherent requirement into words. This legislation has for a long time required fire protection systems to be inspected, maintained and tested so that they continue to operate at the level of performance required by the approved design.

QUESTION 2:	Can I carry out routine service to AS 1851-2012 if I don't have the required Baseline Data?
ANSWER:	Yes.
Explanation:	The absence of Baseline Data does not prevent AS 1851-2012 from being used for the routine service of fire protection systems and equipment. However, the absence of Baseline Data prevents verification that the system will operate as required by the approved design. This same situation exists under previous editions of AS 1851 – if there is no Baseline data it cannot be confirmed whether the results of servicing (inspection and testing) demonstrate the systems level of performance continues to meet that required by the approved design.

QUESTION 3:	If an item of Baseline Data was not required to be installed at the time of installation (or upgrade), is it required to be installed to use AS1851-2012?
ANSWER:	No.
Explanation:	Refer to Clause 1.9 of AS 1851-2012.

QUESTION 4:	How should the absence of required Baseline Data be recorded and who should the system tester notify?
ANSWER:	The absence of Baseline Data should be recorded as a Non-Conformance as detailed in AS 1851-2012 Clause 1.8. The owner should be notified—within one week (as required by AS 1851-2012 Clause 1.17)—that without this Data, they are unable to verify that the system's level of performance meets that required by the approved design.

QUESTION 5:	This question is for Queensland only. In regards to Queensland Building Fire Safety Regulation 54(3), is the absence of an item of required Baseline Data a matter that is required to be repaired or have other corrective action carried out for the installation?
ANSWER:	We do not consider the absence of baseline data to be evidence that a system fails to perform as required by the approved design. Therefore, it is not evidence that a system requires repair or other corrective action under Regulation 54. However, it is a non-conformance under Clause 1.8 of AS1851-2012 that the owner must be notified of. Additionally and more importantly, without this Data, a service contractor will not be able to verify that the system continues to perform as required by the approved design. This is an issue that is in contravention of most Building and Fire Safety legislation.

QUESTION 6:	This question is for all States and Territories (except Queensland). Is the absence of an item of required Baseline Data a matter that requires repair or have other corrective action carried out on the installation?
ANSWER:	No.
Explanation:	The absence of an item of Baseline Data is not evidence that a system fails to operate at the level of performance required at the time it was approved. It is a non-conformance under AS1851-2012 Clause 1.8 that the owner must be notified of. Additionally and more importantly, without this Data, a service contractor will not be able to verify that the system continues to perform as required by the approved design. This is an issue that is in contravention of most Building and Fire Safety legislation.

QUESTION 7:	Do I record a 'Fail' for an AS 1851-2012 service item that requires Baseline Data—yet there is no available Data— to enable verification of a systems' level of performance?
ANSWER:	Yes.
Explanation:	These service items should recorded as a Fail because there is a 'Failure to Verify'. This fail should not be recorded as a defect (Critical or Non-Critical). A defect is matter that renders a system inoperative, a system impairment or component fault. A 'Failure to Verify' is none of these. It should be recorded as a Non-Conformance. FPA Australia recommends the following text be used: *"Insufficient baseline data available to verify that the system continues to perform as required by the approved design."*

9.0 How should the Baseline Data information be managed?

All documentation relating to the approved design of fire protection system should be provided to the owner in both electronic and hardcopy formats. Where legislated, this information shall also be provided to Council for retention.

Recent, and soon to be published, Australian Standards for fire protection systems are now also requiring specific baseline data and system data to be recorded and provided to the owner at the approval stage. These design and install Standards are also additionally requiring all parties involved from design, installation to certification to provide a signed compliance certificate.

Baseline data:

- Should be kept both on site and at the owners or property managers' office in electronic and hardcopy formats. Electronically it should be kept on disc and a cloud based storage platform.
- Should be handed over to a new owner of the building by the previous owner.
- Should not leave site unless it is being reproduced. In this case, a record of the person and company taking it from site should be maintained.
- Is the property of the building owner—not the routine service contractor.

10.0 Routine Service Items Which May Require Baseline Data

FPA Australia considers that the routine service items tabled in Appendix A to Appendix I relate to system performance and verification of that performance. Therefore—subject to Clause 1.8 of AS 1851-2012 Amendment 1—these routine service items will likely require Baseline Data provided they are prescribed by the Act, Regulations, Codes or Standards that applied to the approved design.

> Important Note:
>
> Some routine service items have clear and obvious performance results; such as the 'Water Supply Proving Test' of Item 3.5 in Table 2.4.2.3.
>
> Some routine service items do not have clear and obvious performance results; such as the 'Wall types, Locations' passive inspection of Item 1.1 in Table 12.4.1.1.

11.0 Disclaimer

The opinions expressed in this correspondence reflect those of FPA Australia however are subject to change based on receipt of further information regarding the subject matter. You should interpret the technical opinion or information provided carefully and consider the context of how this opinion / information will be used in conjunction with the requirements of regulation (state and/or federal); relevant standards, codes or specifications; certification; accreditation; manufacturer's documentation and advice; and any other relevant requirements, instructions or guidelines. FPA Australia does not accept any responsibility or liability for the accuracy of the opinion / information provided, nor do they accept either directly or indirectly any liabilities, losses and damages arising from the use and application of this opinion / information.

For more information, please see www.fpaa.com.au or contact FPA Australia on: 1300 731 922.

Appendix A—Automatic Fire Sprinkler Systems

Important Note: Due to the complex nature of legislation and Clause 1.8 of AS 1851-2012 Amendment 1, the advice provided below is subject to Clause 1.8 of AS 1851-2012 and should only be considered as a guide and may not be appropriate in all circumstances. Further advice may be required from the appropriate authority having jurisdiction to confirm if an alternative approach to the maintenance of fire protection systems and equipment is available or required for a particular site.

Baseline Data for Section 2 of AS 1851-2012 Amendment 1

Table	Item No.	Item	Action Required	Suggested Baseline Data subject to Clause 1.8
Monthly Routine Service Schedule – Wet Pipe Systems				
2.4.2.1	1.13	Alarm signal	VERIFY the correct operation of each alarm signal. Where the system is monitored ensure the alarm has activated the alarm signalling equipment.	Cause and Effect Chart
Yearly Routine Service Schedule – Wet Pipe Systems				
2.4.2.3	3.2	Pressure- reducing valve test (high rise)	(b) VERIFY that pressure readings on the low pressure side of the valves are within the range stated at the pressure-reducing valve station.	Pressure Gauge Label at Pressure-Reducing Station
2.4.2.3	3.5	Water supply proving test	(b) VERIFY that the system flow and pressure requirements are satisfied.	Block Plan or approved design documentation
2.4.2.3	3.8	Sprinkler system interface control test (fire trips)	(b) VERIFY that the interface functions as required.	Cause and Effect Chart
2.4.2.3	3.12	Tank quick fill (reduced capacity or break tank)	CONDUCT a water supply test through a flow-measuring device or other appropriate methods that the flow corresponds to the required quick fill-rate.	Approved Design Documentation
2.4.2.3	3.15	Foam water sprinkler systems—Foam concentrate	DRAW a sample and verify condition in accordance with NFPA 11 (pH, specific gravity, sediment, expansion ratio, 25% drain time).	Approved Design Documentation (inclusive of commissioning test results and data)
2.4.2.3	3.25	Survey— Occupancy	CHECK that sprinkler design remains applicable for the occupancy hazard classification and the category of storage involved.	Block Plan or approved design documentation
2.4.2.3	3.26	Survey—Storage heights, encapsulation	(a) CHECK that sprinkler design remains applicable for storage heights.	Approved Design Drawings

Table	Item No.	Item	Action Required	Suggested Baseline Data subject to Clause 1.8
Five-Yearly Routine Service Schedule – Wet Pipe Systems				
2.4.2.4	4.16	Foam quality	GENERATE foam through test foam maker or by other means. Check proportioning ratio (refractometer or conductivity test) and drainage rate. Top up foam concentrate tank.	Approved Design Documentation (inclusive of commissioning test results and data)
Ten-Yearly, Twenty Five-Yearly & Thirty-Yearly Routine Service Schedule – Wet Pipe Systems				
2.4.2.4	4.18	Sprinklers	Subject the sample sprinklers to the following tests conducted by a registered testing authority: (a) Release temperature. (b) Functional Test. (c) Leak resistance test-Maximum system design pressure test. REMOVE and TEST representative sample of sprinklers at the following intervals:	System installation date as detailed on Block Plan
			i) Dry pendent sprinklers (representative sample), every 10 years.	System installation date as detailed on Block Plan
			ii) All other sprinklers (not less than 14 samples), at 25 years then every 10 years.	System installation date as detailed on Block Plan
Monthly Routine Service Schedule – Dry Pipe Systems				
2.4.3.1	1.7	Local alarm and fire brigade test simulation (in lieu of Item 1.12, Table 2.4.1.1)	SIMULATE operation of dry pipe alarm valve and OPERATE local and fire brigade alarms through the bypass valve(s). Where the system is monitored, ensure the alarm has activated the alarm signalling equipment. (Refer to manufacturer's operating manual.) NOTE: Where multiple control valve assemblies are separately identified at an FIP, only one transmission from the FIP to the monitoring station is required.	Cause and Effect Chart
Six-Monthly Routine Service Schedule – Dry Pipe Systems				
2.4.3.2	2.2	Alarm valve and auxiliaries, local alarm and fire brigade alarm test (in lieu of Item 1.3 in Table 2.4.1.1)	(c) CHECK for correct operation of alarms and accelerator or exhauster.	Cause and Effect Chart

Table	Item No.	Item	Action Required	Suggested Baseline Data subject to Clause 1.8
			(e) VERIFY correct operation of the fire brigade alarms from each control assembly or group of control assemblies. Where the system is monitored, ensure the alarm has activated the alarm signalling equipment. NOTE: Where multiple control valve assemblies are separately identified at an FIP, only one transmission from the FIP to the monitoring station is required.	Cause and Effect Chart
Monthly Routine Service Schedule – Deluge and Water Spray Systems				
2.4.4.1	1.9	Local alarm and fire brigade test simulation in lieu of Item 1.12 in Table 2.4.2.1	(b) OBSERVE correct operation of the fire brigade alarm from each deluge and water spray valve or group of deluge and water spray valves. Where the system is monitored, ensure the alarm has activated the alarm signalling equipment. NOTE: Where multiple deluge and water spray valve assemblies are separately identified at the FIP, only one transmission from the FIP to the monitoring station is required.	Cause and Effect Chart
Six-Monthly Routine Service Schedule – Deluge and Water Spray Systems				
2.4.4.2	2.2	Deluge valve and auxiliaries, local alarm and fire brigade alarm test (in lieu of Item 1.12 and Table 2.4.2.1)	(c) CHECK for correct operation of alarm.	Cause and Effect Chart
			(e) VERIFY correct operation of the fire brigade alarms from each deluge valve or group of deluge assemblies. Where the system is monitored, ensure the alarm has activated the alarm signalling equipment. NOTE: Where multiple deluge valve assemblies are separately identified at an FIP, only one transmission from the FIP to the monitoring station is required.	Cause and Effect Chart
Yearly Routine Service Schedule – Deluge and Water Spray Systems				
2.4.4.3	3.4	Foam concentrate or premix solution (where applicable)	DRAW a sample and verify condition in accordance with NFPA 11 (pH, specific gravity, sediment, expansion ratio, 25% drain time).	Operating Manual (inclusive of commissioning test results and data)
2.4.4.3	3.9	System configuration	CHECK that system layout remains appropriate for protected hazard. Check for possible misalignment of spray nozzles.	Approved Design Drawings

Table	Item No.	Item	Action Required	Suggested Baseline Data subject to Clause 1.8
Five-Yearly Routine Service Schedule – Deluge and Water Spray Systems				
2.4.4.4	4.5	Foam quality	GENERATE foam through delivery device (nozzle, monitor) or test foam maker and check: (a) Proportioning ratio (using conductivity meter or refractometer). (b) 25% drainage time. (c) Expansion ratio.	Operating Manual (inclusive of commissioning test results and data)
Monthly Routine Service Schedule – Pre-Action Systems				
2.4.5.1	1.9	Local alarm and fire brigade test simulation in lieu of Item 1.12 in Table 2.4.2.1	(a) GENERATE a test of the alarm signalling equipment and local alarm in accordance with the manufacturer's operating manual. NOTE: Where fitted, bypass valve may be used for this test.	Cause and Effect Chart
2.4.5.1			(b) VERIFY correct operation of the fire brigade alarm from each pre-action valve or group of pre-action valves. Where the system is monitored, ensure the alarm has activated the alarm signalling equipment. NOTE: Where multiple pre-action valve assemblies are separately identified at the FIP, only one transmission from the FIP to the monitoring station is required.	Cause and Effect Chart
Six-Monthly Routine Service Schedule – Pre-Action Systems				
2.4.5.2	2.2	Pre-action valve and auxiliaries, local alarm and fire brigade alarm test (in lieu of Item 1.12 in Table 2.4.2.1)	(c) CHECK for correct operation of alarm.	Cause and Effect Chart
			(e) OBSERVE correct operation of the fire brigade alarms from each pre-action valve or group of pre-action assemblies. Where the system is monitored, ensure the alarm has activated the alarm signalling equipment. NOTE: Where multiple pre-action valve assemblies are separately identified at an FIP, only one transmission from the FIP to the monitoring station is required.	Cause and Effect Chart

Appendix B — Fire Pumpsets

Important Note: Due to the complex nature of legislation and Clause 1.8 of AS 1851-2012 Amendment 1, the advice provided below is subject to Clause 1.8 of AS 1851-2012 and should only be considered as a guide and may not be appropriate in all circumstances. Further advice may be required from the appropriate authority having jurisdiction to confirm if an alternative approach to the maintenance of fire protection systems and equipment is available or required for a particular site.

Baseline Data for Section 3 of AS 1851-2012 Amendment 1

Table	Item No.	Item	Action Required	Suggested Baseline Data subject to Clause 1.8
Monthly Routine Service Schedule – Fire Pumpsets				
3.4.1	1.14	Compression Ignition engine - Run test checks	During and after the running period CHECK: (a) Pump operates at the correct discharge pressure. Record suction and discharge pressure. NOTE: The discharge pressures may vary with varied suction static pressure. An excessive negative suction pressure may indicate a suction partial blockage or partially closed valve.	Operating Manual (inclusive of commissioning test results and data)
			(d) All local and remote 'pump running' alarms operate.	Cause and Effect Chart
			(e) Running speed is correct, and record the result.	Operating Manual (inclusive of commissioning test results and data)
3.4.1	1.18	Electric Motor Driven - Run test checks	During and after the running period CHECK: (a) Pump operates at the correct discharge pressures allowing for varying suction conditions. Record suction and discharge pressure.	Operating Manual (inclusive of commissioning test results and data)
			(d) Both local and remote 'pump running' alarms and lights operate.	Cause and Effect Chart
Yearly Routine Service Schedule Fire Pumpsets				
3.4.3	3.2	Annual full flow test— Compression ignition (diesel) driven pumpset— Sprinklers and hydrants load test This test may be combined with tests required by Table 2.4.3, Item 3.5 if applicable	(a) With the pump room door(s) closed, and the pump testing technician present. (ii) RUN the pumpset at 130% of duty flow (sprinklers, hydrants or combined as applicable) for 10 min and record the result. (iii) Reduce the flow to the duty flow (sprinklers, hydrants or combined as applicable) for sufficient time to record the water supply proving test results.	Block Plan or Approved Design Drawings (hydrants)

Table	Item No.	Item	Action Required	Suggested Baseline Data subject to Clause 1.8
			(b) SIMULATE an engine fail to start and ensure that engine-start cycling requirements and alarm activations are satisfied.	Cause and Effect Chart
3.4.3	3.3	Annual full flow test—Electric motor- driven pumpset— Sprinklers and hydrants load test	(a) With the pump room door(s) closed and the pump testing technician present: (ii) RUN the pumpset at the most hydraulically favourable duty point (for sprinklers) or 130% of duty flow (for hydrants) for 4 min and record the results. (iii) Reduce the flow to the most hydraulically unfavourable duty point (for sprinklers) or duty flow (for hydrants) for sufficient time to record the water supply, proving test results.	Block Plan or Approved Design Drawings (hydrants)
3.4.3	3.12	System pressure-relief valve	CHECK that the system pressure relief valve opens and closes at the pressure required. NOTE: Inappropriate settings for pressure-relief valves can result in very large quantities of water flowing to waste. Ensure settings are maintained to have pressures as high as allowed by system component rated working pressures.	Block Plan or Pressure Gauge Label at Pressure-Relief Valve
3.4.3	3.16	Remote pump start/stop function	Operate the pump start/stop functions from the remote location, and ensure the appropriate indications are received at the FIP/remote stop/start panel.	Cause and Effect Chart

Appendix C —Fire Hydrant Systems

Important Note: Due to the complex nature of legislation and Clause 1.8 of AS 1851-2012 Amendment 1, the advice provided below is subject to Clause 1.8 of AS 1851-2012 and should only be considered as a guide and may not be appropriate in all circumstances. Further advice may be required from the appropriate authority having jurisdiction to confirm if an alternative approach to the maintenance of fire protection systems and equipment is available or required for a particular site.

Baseline Data for Section 4 of AS 1851-2012 Amendment 1

Table	Item No.	Item	Action Required	Suggested Baseline Data subject to Clause 1.8
Monthly Routine Service Schedule – Fire Hydrant Systems				
4.4.1	1.3	Pump-starting devices function test—Compression ignition engine (diesel)	(c) RECORD the pump cut-in pressures and verify that they are within the ranges required.	Operating Manual (inclusive of commissioning test results and data)
Six-Monthly Routine Service Schedule - Fire Hydrant Systems				
4.4.2	2.11	Pressure-reducing/ pressure-limiting valves	CHECK pressure readings on the low side of pressure-reducing and pressure-limiting valves for deviations from designed operating pressure. NOTE: Gauges or facilities for gauges should be installed immediately upstream and downstream of the valve(s).	Pressure Gauge Label at Pressure-Reducing/Limiting Station
Yearly Routine Service Schedule - Fire Hydrant Systems				
4.4.3	3.3	Hydrant water supply valves	(c) TEST each valve monitor (where fitted) by closing and re-opening the valve. Verify correct indication at the CIE.	Cause and Effect Chart
4.4.3	3.6	Pressure-reducing station test	(a) OPERATE all pressure-reducing valves and verify correct operation under flow conditions.	Pressure Gauge Label at Pressure-Reducing Station
			(b) VERIFY that pressure readings on the low pressure side of the valves are within the range stated at the pressure-reducing valve station.	Pressure Gauge Label at Pressure-Reducing Station
			(c) OPERATE pressure-relief valve and record operating pressure. If necessary, adjust the setting to relieve at 50 kPa above the operating pressure of the pressure-reducing valve. Replace the tamper seal if necessary. NOTE: The pressure-relief valve test may be carried out using a portable test apparatus.	Pressure Gauge Label at Pressure-Reducing Station

Table	Item No.	Item	Action Required	Suggested Baseline Data subject to Clause 1.8
4.4.3	3.7	Water supply proving test	CONDUCT a water supply proving test for each water supply verifying that the system flow and pressure requirements meet the design criteria, using either— (a) a fixed flow meter test facility; or b) a portable test apparatus at the most hydraulically disadvantaged hydrant valve(s).	Block Plan and Approved Design Drawings
4.4.3	3.8	Hydrant system interface control test (fire trips)	(a) CONDUCT a functional system test via the pressure switch or flow switch with other interfaced fire systems.	Cause and Effect Chart
			(b) VERIFY that the interface functions as required. NOTE: It is recommended that the responsible entity coordinate testing the interfaced fire protection systems.	Cause and Effect Chart
4.4.3	3.12	Survey—Design	(a) Occupancy—CHECK that hydrant design remains applicable for current building arrangement or use.	Block Plan and Approved Design Drawings

Appendix D — Water Storage Tanks for Fire Protection Systems

Important Note: Due to the complex nature of legislation and Clause 1.8 of AS 1851-2012 Amendment 1, the advice provided below is subject to Clause 1.8 of AS 1851-2012 and should only be considered as a guide and may not be appropriate in all circumstances. Further advice may be required from the appropriate authority having jurisdiction to confirm if an alternative approach to the maintenance of fire protection systems and equipment is available or required for a particular site.

Baseline Data for Section 5 of AS 1851-2012 Amendment 1

Table	Item No.	Item	Action Required	Suggested Baseline Data subject to Clause 1.8
Yearly Routine Service Schedule – Water Storage Tanks for Fire Protection Systems				
5.4.3	3.36	Pressure Tanks	(b) VERIFY low water level alarm switch operates at predetermined level	Identification plate, Permanent label or Operating manual

Appendix E — Fire Detection and Alarm Systems

Important Note: Due to the complex nature of legislation and Clause 1.8 of AS 1851-2012 Amendment 1, the advice provided below is subject to Clause 1.8 of AS 1851-2012 and should only be considered as a guide and may not be appropriate in all circumstances. Further advice may be required from the appropriate authority having jurisdiction to confirm if an alternative approach to the maintenance of fire protection systems and equipment is available or required for a particular site.

Baseline Data for Section 6 of AS 1851-2012 Amendment 1

Table	Item No.	Item	Action Required	Suggested Baseline Data subject to Clause 1.8
Monthly Routine Service Schedule – Fire Detection & Alarm Systems, Special Hazards Systems and Smoke Hazard Management Systems				
6.4.1.2	1.4	Fire alarm	SIMULATE an alarm condition and confirm that all required common or general visual and audible indications operate and the external alarm is activated. Where the system is monitored ensure the alarm has activated the alarm signalling equipment. Where CIE is a sub-indicator panel, confirm that the alarm condition is indicated at the FIP.	Cause and Effect Chart
6.4.1.3	1.5	Occupant warning system	SIMULATE an alarm and confirm the alarm initiates the occupant warning system including any visual warning devices (VWD).	Cause and Effect Chart
6.4.1.4	1.6	Isolate/Disable	INITIATE an isolate/disable condition at the fire indicator panel and confirm that all required common or general visual and audible indications operate. Where the system is monitored, ensure the isolate is received by the monitoring service provider alarm signalling equipment. Where the panel is an SIP, confirm that the isolate/disable condition is indicated at the FIP as either a fault or isolate/disable.	Cause and Effect Chart
Six-Monthly Routine Service Schedule - Fire Detection, Alarms and Controls for Special Hazard Systems				
6.4.1.3	2.4	Local control station (LCS) discharge inhibit switch	TEST the operation of each inhibit or auto/manual switch and confirm that: (c) Causes the illumination of a visual indicator at the LCS and the system FIP.	Cause and Effect Chart

Table	Item No.	Item	Action Required	Suggested Baseline Data subject to Clause 1.8
6.4.1.3	2.7	System operation and logic	TEST the system logic (e.g. dual detector operation or dependency on more than one alarm) and confirm that the operation of— • VWDs • audible alarms • directional valve signal/output • equipment fire mode signal/output • HVAC fire mode signal/output • system discharge actuator • door and damper release and • ancillary controls	Cause and Effect Chart
Yearly Routine Service Schedule – Fire Detection & Alarm Systems, Special Hazards Systems and Smoke Hazard Management Systems				
6.4.1.4	3.8	Fire Detectors	TEST detectors as specified in Appendix G and confirm correct alarm zone indication. Where the detectors are used as part of special hazards systems 100% of the detectors shall be functionally tested yearly.	Cause and Effect Chart
6.4.1.4	3.10	Occupant warning system sound pressure level	MEASURE and record the sound pressure level from at least one reference point for each amplifier used and ensure at each reference point the measured value is consistent with the required sound pressure level at each reference point.	Approved Design Drawings
6.4.1.4	3.12	Alarm investigation facility	TEST the alarm investigation facility if enabled and check it functions as required.	Cause and Effect Chart
6.4.1.4	3.17	Protected areas survey	SURVEY all areas of the building from floor level and check— (a) that the fire detection and alarm system has not been altered, damaged or compromised; (b) detection device and remote indicators are appropriate for the current use; (c) for any condition that may cause a nuisance alarm or the unintentional operation of a suppression system; (d) all exposed cabling, conduits, junction boxes and the like for any condition that may impact on the performance of the system and are labelled correctly; and (e) all CIE to ensure all components are appropriately mounted and secure.	Approved Design Drawings
6.4.1.4	3.18	Interfaced system initiation	Simulate alarm(s) to verify that each interface transmission path initiates the corresponding interfaced system(s) as required.	Cause and Effect Chart
6.4.1.4	3.29	Suppression system directional valves	SIMULATE the system operation and confirm that each electrical directional valve operates as required.	Cause and Effect Chart
6.4.1.4	3.30	Discharge time delay	TEST and RECORD the system discharge sequence and confirm the time delay period is as required.	Cause and Effect Chart

Table	Item No.	Item	Action Required	Suggested Baseline Data subject to Clause 1.8
Five-Yearly Routine Service Schedule - Fire Detection and Alarm Systems				
6.4.1.5	4.3	Fault	SIMULATE a circuit fault condition at the FIP and confirm that all required common or general visual and audible indications operate. Where such faults are monitored, ensure the fault has activated the alarm signalling equipment. Where the panel is an SIP confirm that the fault condition is indicated at the FIP.	Cause and Effect Chart
6.4.1.5	4.7	Interface and control test	CONDUCT a functional test with each system's interface and VERIFY that each interfaced system responds to the signal as required (see Appendix D).	Cause and Effect Chart
6.4.1.5	4.10	Alarm verification facility	TEST one detector of each type per circuit with alarm verification facility enabled to check that it functions as required.	Cause and Effect Chart
Yearly Routine Service Schedule - Fire Detection and Alarm Systems				
6.4.2.3	2.2	Interconnecting alarms	Where alarms are interconnected, TEST that the activation of each alarm operates the audible alarm indication in other alarms.	Cause and Effect Chart
Yearly Routine Service Schedule – Emergency Warning System				
6.4.3.2	2.19	Interface and control test	CONDUCT a functional system test with other interfaced fire systems (see Appendix D) CHECK that the interface functions as required.	Cause and Effect Chart
6.4.3.2	2.22	Change of occupancy or use	INSPECT all areas of the building to ensure that changes to the occupancy are not likely to affect the required performance of the system.	Approved Design Drawings
Five-Yearly Routine Service Schedule – Emergency Warning System				
6.4.3.3	3.2	Speech intelligibility	UNDERTAKE tests to ensure intelligibility in all areas of the building where required to meet the requirements of the approved design.	Approved Design Drawings
6.4.3.3	3.3	Sound pressure level	MEASURE and record the sound pressure level from at least one reference point for each amplifier used and ensure at each recorded point the measured value is consistent with the reference sound pressure level.	Approved Design Drawings
Yearly Routine Service Schedule – Emergency Intercom System				
6.4.4.1	1.16	System interface	CONDUCT a functional test with any interfaced systems (see Appendix D).	Cause and Effect Chart
6.4.4.1	1.18	Survey—Change of structure	INSPECT building to ensure that no structural changes have occurred to change zones.	Approved Design Drawings
6.4.4.1	1.19	Change of occupancy or use	INSPECT the building to ensure that no changes to occupancy have affected the audibility of the warden call signal at the WIP.	Approved Design Drawings

Appendix F — Special Hazards Systems

Important Note: Due to the complex nature of legislation and Clause 1.8 of AS 1851-2012 Amendment 1, the advice provided below is subject to Clause 1.8 of AS 1851-2012 and should only be considered as a guide and may not be appropriate in all circumstances. Further advice may be required from the appropriate authority having jurisdiction to confirm if an alternative approach to the maintenance of fire protection systems and equipment is available or required for a particular site.

Baseline Data for Section 7 of AS 1851-2012 Amendment 1

Table	Item No.	Item	Action Required	Suggested Baseline Data subject to Clause 1.8
Six-Monthly Routine Service Schedule – Special Hazard Systems				
7.4.3	2.4	Detection systems (mechanical), e.g. fusible links	TEST operation of automatic mechanical detection systems and confirm the alarm activates the warning system and is capable of initiating suppression system discharge.	Cause and Effect Chart
Yearly Routine Service Schedule – Special Hazard Systems				
7.4.4	3.12	Type of hazard	VERIFY fuel class and type.	Include on Control & Indicating Equipment Nameplate and Certificate of Completion
7.4.4	3.13	Enclosure volume (total flooding systems)	VERIFY volumes (gross and net).	Enclosure Architectural Drawings and Certificate of Completion
7.4.4	3.14	Design concentration or application density	VERIFY design concentration or application density.	Include on Control & Indicating Equipment Nameplate and Certificate of Completion
7.4.4	3.15	Dimensions of protected objects (local application systems)	VERIFY dimensions.	Include on Control & Indicating Equipment Nameplate and Certificate of Completion
7.4.4	3.16	Enclosure integrity (total flooding systems)	COMPLETE an enclosure integrity test for total flooding systems in accordance with ASISO14520.1 for gaseous systems, and CONFIRM that the results satisfy the requirements. NOTE: Where an integrity test cannot be conducted due to factors such as physical dimensional constraints, or large un-closable openings, confirm enclosure integrity by visual inspection.	Include on Control & Indicating Equipment Nameplate
7.4.4	3.19	Ventilation dampers	Test operation of automatically operated ventilation dampers.	Cause and Effect Chart

Table	Item No.	Item	Action Required	Suggested Baseline Data subject to Clause 1.8
7.4.4	3.22	Directional valves	SIMULATE a system operation and confirm that directional valves operate as required.	Cause and Effect Chart
7.4.4	3.23	System interface test (see Clause 1.12.2)	(a) CONDUCT a functional system test with other interfaced fire systems (e.g. HVAC, EWS). (b) VERIFY that the interface functions as required. NOTE: It is recommended that the responsible entity coordinate testing the interfaced fire protection systems.	Cause and Effect Chart

Appendix G — Passive Fire and Smoke Systems

Important Note: Due to the complex nature of legislation and Clause 1.8 of AS 1851-2012 Amendment 1, the advice provided below is subject to Clause 1.8 of AS 1851-2012 and should only be considered as a guide and may not be appropriate in all circumstances. Further advice may be required from the appropriate authority having jurisdiction to confirm if an alternative approach to the maintenance of fire protection systems and equipment is available or required for a particular site.

Baseline Data for Section 12 of AS 1851-2012 Amendment 1

Table	Item No.	Item	Action Required	Suggested Baseline Data subject to Clause 1.8
Yearly Routine Service Schedule – Fire and Smoke Barriers - Walls, Service Penetrations and Control Joints				
12.4.1.1	1.1	Wall types, locations	INSPECT against drawings (see Clause 12.2.5) that no fire and/or smoke walls have been added, removed or modified.	Passive Drawings showing location and FRL or element
12.4.1.1	1.2	Service penetration and control joint inspection	(a) INSPECT against drawings and associated penetration schedules that no penetrations have been added, removed or modified.	Passive Drawings showing location and FRL or element
Yearly Routine Service Schedule – Fire and Smoke Barriers - Floors, Service Penetrations and Control Joints				
12.4.1.2	2.1	Fire rated floors	INSPECT against drawings (see Clause 12.2.5) that no fire-rated floors, including resistance to incipient spread of fire, have been added, removed or modified.	Passive Drawings showing location and FRL or element
12.4.1.2	2.2	Service penetration and control joint inspection	(a) INSPECT against drawings and associated penetration schedules that no penetrations have been added, removed or modified.	Passive Drawings showing location and FRL or element
Yearly Routine Service Schedule – Fire and Smoke Barriers - Ceilings, Service Penetrations and Control Joints				
12.4.1.3	3.1	Ceiling types, locations	INSPECT against drawings (see Clause 12.2.5) that no fire-rated ceilings, including resistance to incipient spread of fire, have been added, removed or modified.	Passive Drawings showing location and FRL or element
12.4.1.3	3.2	Service penetration and control joint inspection	(a) INSPECT against drawings and associated penetration schedules that no penetrations have been added, removed or modified. NOTE: All light fittings and access panels/ceiling hatches should be inspected.	Passive Drawings showing location and FRL or element
Yearly Routine Service Schedule – Fire and Smoke Barriers – Fire and Smoke Rated Access Panels and Hatches				
12.4.1.4	4.1	Access panel label	INSPECT against drawings (see Clause 12.2.5) that access panels or hatches, including resistance to incipient spread of fire, have been added, removed or modified.	Passive Drawings showing location and FRL or element

Baseline Data for Routine Service of Fire Protection Systems

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Table	Item No.	Item	Action Required	Suggested Baseline Data subject to Clause 1.8
Yearly Routine Service Schedule – Fire Protected Structural Members				
12.4.2	2.1	Structural members	INSPECT against drawings (see Clause 12.2.5) that no structural steel members have been added, removed or modified.	Structural Drawings
Six-Monthly Routine Service Schedule – Hinged and Pivoted Fire-Resistant Doorsets				
12.4.3.1	1.15	Doors held in the open position	TEST that doors held in the open position, which require activation of detection system to close, to ensure the door closes satisfactorily upon power failure or detector activation.	Cause and Effect Chart
Six-Monthly Routine Service Schedule – Horizontal Sliding Fire-Resistant Doorsets				
12.4.3.2	2.8	Automatic operations	(e) PERFORM a full operational test (mechanically and electrically) as appropriate to ensure correct automatic closing of the door is achieved.	Cause and Effect Chart
Six-Monthly Routine Service Schedule – Hinged and Pivoted Smoke Doors				
12.4.4	4.1	Location	INSPECT against drawings and all schedules (see Clause 12.2.5) that no smoke doors have been added, removed or modified.	Passive Drawings showing location and FRL or element
12.4.4	4.6	Doors held in the open position	TEST smoke doors held in the open position, which require activation of detection system to close, to ensure that they close satisfactorily upon power failure or detector activation.	Cause and Effect Chart
Yearly Routine Service Schedule – Fire Shutters				
12.4.5	5.1	Location	INSPECT against drawings and all schedules (see Clause 12.2.5) that no fire shutters have been added, removed or modified.	Passive Drawings showing location and FRL or element
12.4.5	5.7	Operation test	(a) TEST that under simulated automatic operation the fire shutter curtain descends to the threshold at an average speed of between 0.15 m/s and 0.3 m/s.	Cause and Effect Chart
			(b) TEST that under simulated automatic operation the curtain does not rebound creating a gap greater than 25 mm between the bottom rail and the threshold.	Cause and Effect Chart
Yearly Routine Service Schedule – Fire-Rated Glazing				
12.4.6	6.1	Location	INSPECT against drawings (see Clause 12.2.5) that no fire-rated glazing has been added, removed or modified.	Passive Drawings showing location and FRL or element
Yearly Routine Service Schedule – Fire Protected Air Ducts				
12.4.7	7.1	Location	INSPECT against drawings and all schedules (see Clause 12.2.5) that no air duct has been added, removed or modified.	Mechanical Ventilation Duct Drawings

Table	Item No.	Item	Action Required	Suggested Baseline Data subject to Clause 1.8
12.4.7	7.2	Fire-protected duct	(a) INSPECT fire-resistant ducts from drawings, plans and schedule for condition of fire protection system or coating, including supports.	Mechanical Ventilation Duct Drawings

Appendix H — Fire and Smoke Control Features of Mechanical Services (Smoke Hazard Management Systems)

Important Note: Due to the complex nature of legislation and Clause 1.8 of AS 1851-2012 Amendment 1, the advice provided below is subject to Clause 1.8 of AS 1851-2012 and should only be considered as a guide and may not be appropriate in all circumstances. Further advice may be required from the appropriate authority having jurisdiction to confirm if an alternative approach to the maintenance of fire protection systems and equipment is available or required for a particular site.

Baseline Data for Section 13 of AS 1851-2012 Amendment 1

Table	Item No.	Item	Action Required	Suggested Baseline Data subject to Clause 1.8
Yearly Routine Service Schedule – Fire and Smoke Features of Mechanical Services – Fire Curtains and Smoke Curtains				
13.4.1.12	11.4	Operating Speed	CHECK the ascent and descent speeds. RECORD results and adjust if necessary.	Smoke Control System Functionality Test Chart
13.4.1.12	11.5	Automatic operation	CHECK automatic deployment of curtain via alarm signal activation.	Cause and Effect Chart & Smoke Control System Functionality Test Chart
13.4.1.12	11.12	Split/dual drop delay (where fitted)	(a) CHECK the half drop height. (b) CHECK the hold time at the half height position. (c) CHECK that the curtain closes when activated by the second alarm source (dual drop only).	Cause and Effect Chart & Smoke Control System Functionality Test Chart
Yearly Routine Service Schedule – Fire and Smoke Features of Mechanical Services – Motorised Relief Openings, Windows and Shutters				
13.4.1.14	13.5	Operation	ENSURE all relief openings, windows and shutters operate open and close in accordance with the system requirements (Refer Appendix I).	Cause and Effect Chart & Smoke Control System Functionality Test Chart
Yearly Routine Service Schedule – Fire and Smoke Features of Mechanical Services – Variable Frequency Inverters				
13.4.1.22	21.3	Fire mode override	CHECK operation of fire-mode override functions and correct if necessary.	Cause and Effect Chart & Smoke Control System Functionality Test Chart

Table	Item No.	Item	Action Required	Suggested Baseline Data subject to Clause 1.8
Three-Monthly Routine Service Schedule – Fire and Smoke Features of Mechanical Services – Fire Isolated Exit Pressurisation Systems				
13.4.2.2	1.1	Simulation (from FIP)	SIMULATE by activation from FIP, the fire/smoke situation required to effect operation of the pressurisation system. Check fans, dampers and indicator lamps operate in fire mode as documented. Check for excessive noise, ease of opening doors and correct movement of air from each pressurised area through a selected open door (See Appendices H and I) (a) Fan operation. (b) Damper operation. (c) Indicator lamps. (d) Noise. (e) Ease of door opening. (f) Air movement.	Cause and Effect Chart & Smoke Control System Functionality Test Chart
Yearly Routine Service Schedule – Fire and Smoke Features of Mechanical Services – Fire Isolated Exit Pressurisation Systems				
13.4.2.3	2.2	Simulation (from Detector)	SIMULATE a fire/smoke situation from any device such as a sprinkler, heat of smoke detector, to effect operation of the pressurisation and all other systems required to operate in fire mode.	Cause and Effect Chart & Smoke Control System Functionality Test Chart
			CHECK that the following parameters meet the performance requirements (See Appendices H and I and Notes 1 and 2).	Cause and Effect Chart & Smoke Control System Functionality Test Chart
			(e) When smoke is introduced to the supply smoke sensor of any air-pressurisation system, the associated pressurisation fan is shut down. Verify re-start when smoke clears and verify that the FFCP manual override 'ON' operates while the fan has shut down due to supply smoke detection.	Cause and Effect Chart & Smoke Control System Functionality Test Chart
			(f) Operation of the manual switch provided for fire brigade personnel starts and stops fans supplying air to the pressurised fire-isolated escape routes.	Cause and Effect Chart & Smoke Control System Functionality Test Chart
			(h) With all air-pressurisation and other systems operating simultaneously, check that any specific air relief is fully operational and enables the required airflow from pressurised areas to be sustained.	Cause and Effect Chart & Smoke Control System Functionality Test Chart

Table	Item No.	Item	Action Required	Suggested Baseline Data subject to Clause 1.8
Yearly Routine Service Schedule – Fire and Smoke Features of Mechanical Services – System Changeover Under Fire Condition				
13.4.2.5	4.2	Simulation (from Detector)	CONDUCT a simulation of a fire/smoke situation (for each system or zone where relevant) to effect changeover from normal mode to fire mode or shutdown as appropriate. CHECK fans, dampers and indicator lamps operate in fire mode (see Appendices H and I). Tests required in Items 4.4, 4.5 and 4.6 are carried out during this simulation test (See Notes 1 and 2).	Cause and Effect Chart & Smoke Control System Functionality Test Chart
13.4.2.5	4.3	Fans start and stop at Fire fan control panel (FFCP)	OPERATE the manual switches at the FFCP. Check that fans start and stop and dampers, if applicable, open and close as documented (see Appendices H and I).	Cause and Effect Chart & Smoke Control System Functionality Test Chart
13.4.2.5	4.4	System shutdown	Where supply air systems are fitted with a smoke detector(s), check system shuts down when the detector is automatically activated as documented (see Appendices H and I). Verify re-start when smoke clears and verify that the FFCP manual override 'ON' operates while the fan has shut down due to supply smoke detection.	Cause and Effect Chart & Smoke Control System Functionality Test Chart
13.4.2.5	4.5	Zone smoke control	CHECK zone smoke control system performance criteria as documented (see Appendices H and I).	Cause and Effect Chart & Smoke Control System Functionality Test Chart
Three-Monthly Routine Service Schedule – Fire and Smoke Features of Mechanical Services – Smoke Exhaust Systems				
13.4.2.6	5.1	Simulation (from the FIP)	SIMULATE a fire/smoke situation by activation from the FIP, to effect operation of the smoke exhaust system and all other systems required to operate in fire mode. Check fans, dampers, automatic doors and indicator lamps operate in fire mode as documented (see Appendices H and I). Check for excessive noise and correct movement of air.	Cause and Effect Chart & Smoke Control System Functionality Test Chart
Yearly Routine Service Schedule – Fire and Smoke Features of Mechanical Services – Smoke Exhaust Systems				
13.4.2.8	7.1	Simulation (from detector)	SIMULATE a fire/smoke situation from any device such as a sprinkler, heat or smoke detector, to effect shutdown of all mechanical ventilation systems not required to operate in fire mode. CHECK all systems required to shut down are not operating (see Appendices H and I).	Cause and Effect Chart & Smoke Control System Functionality Test Chart

Table	Item No.	Item	Action Required	Suggested Baseline Data subject to Clause 1.8
Yearly Routine Service Schedule – Fire and Smoke Features of Mechanical Services – System Shutdown				
13.4.2.7	6.2	Partial simulation	CONDUCT a simulation of a fire/smoke situation from any device such as a sprinkler, heat or smoke detector, to effect operation of the smoke exhaust system and all other systems required to operate in fire mode. Check fans, dampers, automatic doors and indicator lamps operate in fire mode as documented (see Appendices H and I).	Cause and Effect Chart & Smoke Control System Functionality Test Chart
Yearly Routine Service Schedule – Fire and Smoke Features of Mechanical Services – Smoke Dampers				
13.4.2.9	8.1	Normal operation	ENSURE all dampers operate open and close in accordance with the system requirements (see Appendices H and I). CHECK all systems required to shut down are not operating (see Appendices H and I).	Cause and Effect Chart & Smoke Control System Functionality Test Chart
Yearly Routine Service Schedule – Fire and Smoke Features of Mechanical Services – Active Fire and Smoke Control Systems				
13.4.3.2	1.2	Alterations	CHECK to ensure mechanical services additions and removals, building work, or unintentional obstructions have not affected the functionality or performance of the original design.	Architectural and Mechanical Ductwork drawings
Yearly Routine Service Schedule – Fire and Smoke Features of Mechanical Services – Smoke Reservoirs				
13.4.3.4	3.1	Changes	CHECK to ensure that changes to the smoke reservoirs have not been made, such as the addition of light fittings or openings created, which would otherwise compromise the integrity of the system.	Architectural and Passive drawings

Appendix 1 — Emergency Planning in Facilities

Important Note: Due to the complex nature of legislation and Clause 1.8 of AS 1851-2012 Amendment 1, the advice provided below is subject to Clause 1.8 of AS 1851-2012 and should only be considered as a guide and may not be appropriate in all circumstances. Further advice may be required from the appropriate authority having jurisdiction to confirm if an alternative approach to the maintenance of fire protection systems and equipment is available or required for a particular site.

Baseline Data for Section 14 of AS 1851-2012 Amendment 1

The following are examples of baseline data information:

Table	Item No.	Item	Action Required	Suggested Baseline Data subject to Clause 1.8
Six-Monthly Routine Service Schedule – Critical Emergency Evacuation System Elements				
14.4.2	1.7	Emergency Response Procedures	INSPECT the emergency procedures testing for relevancy to the facility or to a nominated incident covered by the emergency procedures by conducting and evacuation exercise.	Emergency Management Plan

Appendix J — Delivery Lay Flat Hose, Fire Hose Reels, Portable and Wheeled Fire Extinguishers & Fire Blankets

We do not consider that there are any performance elements, which are not currently detailed in AS 1851-2012, for these fire protection systems and therefore provide no suggestions for Baseline Data.

Appendix K — References

6. Australian Standard AS 1851-2012 (incorporating Amendment 1), *Routine Service of Fire Protection Systems and Equipment* – Published by Standards Australia International Ltd.
7. FPA Australia Technical Advisory Committee for Maintenance of fire protection systems and equipment (TAC/1)