



THE ABS STATISTICAL RISK MANAGEMENT PROCESS

*A guide to applying statistical risk
management in practice*



Table of Contents

Introduction	3
Purpose	3
For further information.....	3
SRQA Workshops	5
STEP 0: Preparation.....	5
STEP 1: Establish the context	6
STEP 2: Risk identification	7
Identifying risk areas.....	7
Cause-effect chain.....	8
STEP 3: Risk analysis.....	10
Rate inherent risks	10
Evaluate the effectiveness of the controls	12
STEP 4: Risk evaluation	15
Identify any action required to reduce current risk.....	15
STEP 5: Monitor and Review	16
Risk and Control Registers	16
Review Process.....	16
ATTACHMENT A - PROCESS MAP	17
ATTACHMENT B – DATA SOURCE MAP.....	18
ATTACHMENT C – RISK REGISTER	19
ATTACHMENT D – RISK RATING TEMPLATE.....	20
ATTACHMENT E – RISK RATING MATRICES.....	21
ATTACHMENT F – CONTROL REGISTER TEMPLATE.....	22





INTRODUCTION

Purpose

Risk is defined as the effect of uncertainty on objectives.

Effectively identifying and managing risks can assist in ensuring an efficient and responsive work environment and provide a rational basis for better decision making in business practice. By having a formal statistical risk management plan (SRMP), potential problems can be quickly identified before they occur, as well as a standardised approach to managing the consequences if they do. The ABS is undergoing a period of rapid and expansive change; a well-recognised introduction of risk to a large work program. In response to this change, statistical collections are now required to produce robust statistical risk management plans.

The aim of this guide is to enable areas to define a plan that:

- considers the responsibility for managing statistical risk,
- embeds systematic statistical risk management into business processes,
- develops a positive risk culture,
- ensures communication and consultation about risk,
- helps areas to understand and manage shared risk,
- maintains risk management capability, and
- involves review and continuous improvement in the management of risk.

A completed statistical risk management plan will include:

- the contextual information as introduction
- data source map and process map
- risks outlined in the 'risk rating template'
- a risk register
- a control register

This guide will provide detailed information on ABS best practice for developing each aspect of your statistical risk management plan.

For further information

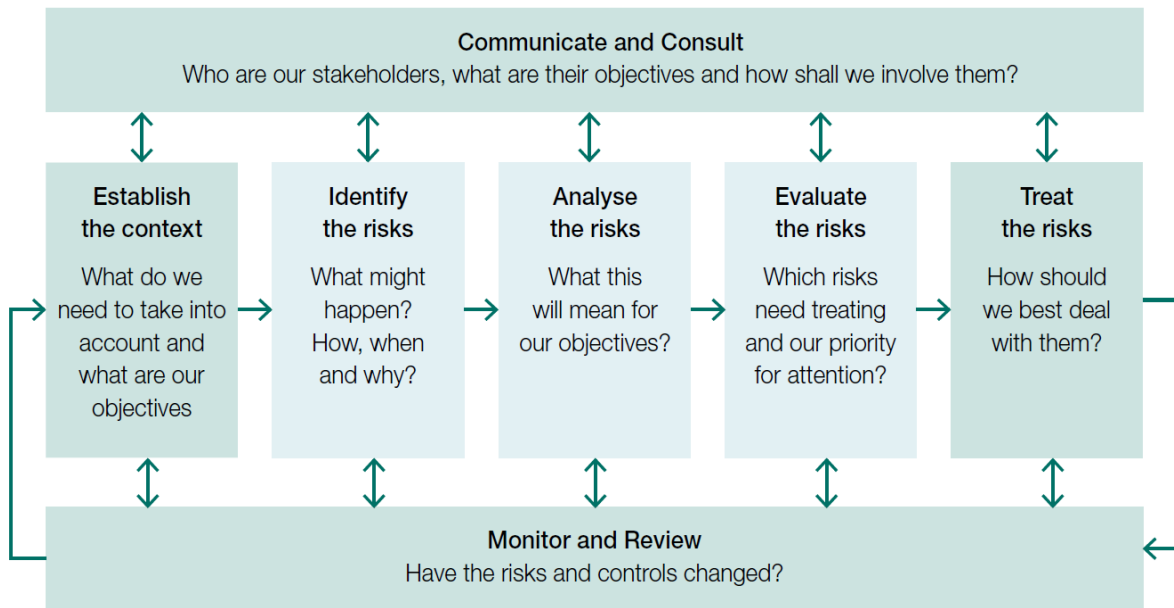
Refer to the [ABS Risk Management Framework](#) and [ABS Risk Management Guidelines](#).



STEP BY STEP OVERVIEW

The following is an outline of the step by step process of risk management.

Communication, consultation, monitoring and reviewing are considered to be ongoing parts of the statistical risk management process, and should be built in to every step. This guide will further explain each step in this process and how to implement this in a statistical collection.





SRQA WORKSHOPS

The Statistical Risk and Quality Assurance team (SRQA) can be contacted to arrange facilitated statistical risk management workshops for your team. SRQA will assist staff in understanding and applying the statistical risk management process explained throughout this guide. It is expected that staff will complete the preparatory work outlined below prior to attending a workshop. SRQA are also available to review and comment on draft plans.

To arrange a workshop, please contact the Statistical Risk and Quality Assurance WDB.

STEP 0: PREPARATION

Before proceeding, the person leading the risk management process should contact SRQA to advise that they are commencing, and then follow the steps below:

Complete the relevant risk management training: E-learning modules on best practice for risk management and the ABS Data Quality Framework are available on the ABS online learning tool Capability Plus. Refer to the [Quality Assistant](#) for more information on relevant training.

Identify key internal and external stakeholders: This will assist in determining who should be consulted throughout your risk management process, and who is affected by any risks that may be realised.

Prepare a high level process map: The process map will outline the step-by-step process of your collection. It is used to assist in determining areas of high risk and to ensure you are examining the end to end process of your collection. An example of these can be found at [Attachment A](#).

Prepare a data source map: A data source map will help identify key stakeholders for your collection, and identify any key areas of risk arising from other areas. Once you have identified key data sources or areas that are reliant on your data, it would be beneficial to investigate if they have completed their own statistical risk management plan with risks that affect your area and lessons that you can draw from. An example of the data source map can be found at [Attachment B](#).

Define your risk appetite: Your risk appetite is the amount of risk your area is willing to undertake in order to meet your objectives. See the Risk Management Framework for more information on risk appetite.

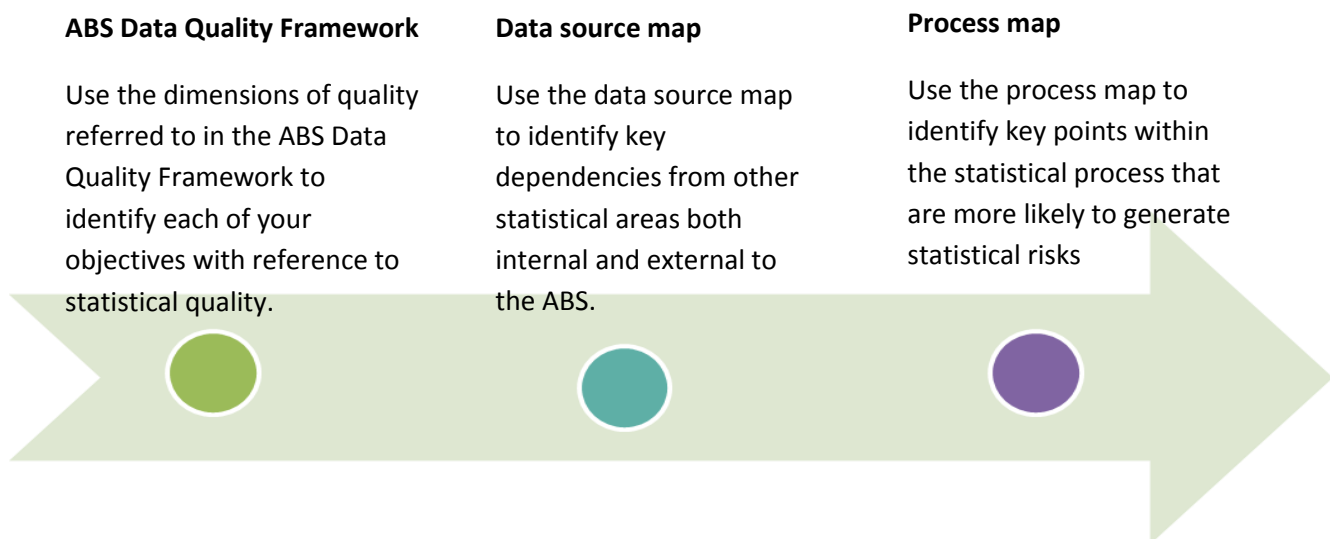


STEP 1: ESTABLISH THE CONTEXT

By establishing the context of your statistical environment, you will be able to identify any sources of risk that may impact upon your collection. A variety of tools should be utilised to complete this step, for example:

- The ABS Data Quality Framework to outline the quality dimension objectives to be considered for each statistical collection.
- Data source map: to have an overview of data sources that are reliant on you doing your job and you are reliant upon, allowing you to identify key dependencies.
- The process map: to identify key points in time throughout your collection that generate more risks or dependencies.

In addition to these, you could also consider the PESTLE (Political, Environmental, Social, Technical, Legal, Economic) or SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis tools to ensure that no sources of risk are left unidentified.



Questions to ask:

- What are the outcomes, objectives, deliverables and priorities in this situation? How much time, money or other resources are there to work with? Is this adequate to cover the risks?
- Who are the internal and external stakeholders? What are their needs and expectations? How can these stakeholders help or hinder the work?
- What lessons have been identified in previous reviews, audits or similar work done in other ABS teams or other external agencies?
- What information will help identify the risks? What information is missing? What is happening in the broader internal or external environment that might affect the work? What are the drivers of risk impacting on the work? What influence does the ABS have over the drivers?
- What policy or legislation will enable or constrain the work? What governance applies to the work? What is the cultural environment?



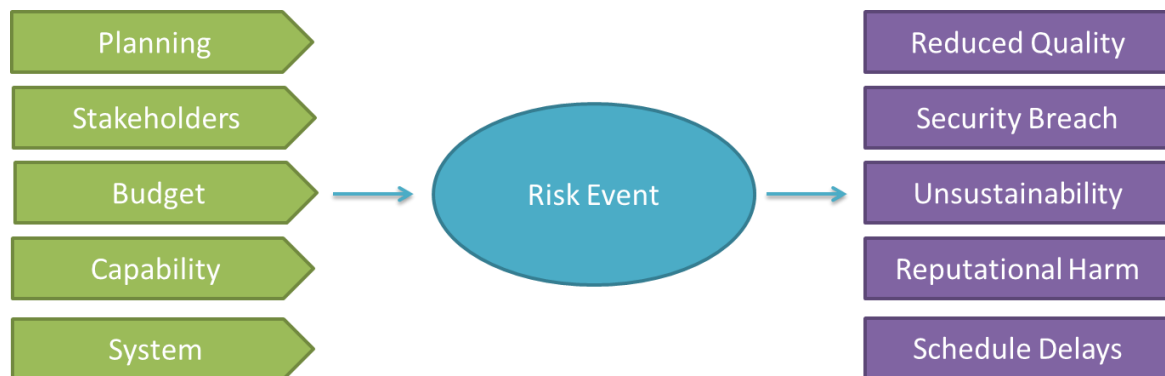


STEP 2: RISK IDENTIFICATION

Identifying risk areas

In consultation with stakeholders, and by analysing the outcomes of Step 1: Establish the context; you will need to identify the events that might create, enhance, prevent, degrade, accelerate or delay the achievement of objectives. You will then have a robust list of possible risk events that may occur which your collection will need to manage. These risks could be internal or external to your area and may range from extreme risks to very minimal risks.

A risk is structured by firstly capturing the objectives that are being compromised, then the event that compromises them, followed by the consequence of the event. The below example of the 'bowtie diagram' demonstrates how to effectively use this method:



This diagram is to help track the cause of a risk (the left hand column) through the risk event to a potential consequence (the right hand column). This relationship does not have to be one to one. There are usually multiple causes and consequences associated with each risk event. The causes and consequences listed above are by no means exhaustive but should provide a framework to assist you in ensuring that your risks are an event that links causes to consequences. An example of a risk that could be generated from the above method is *“The risk that an unsupported technical system leads to reduced quality of outputs.”*



Cause-effect chain

A large number of risks happen in a chain of cause and effect. It can be difficult to ascertain the most useful point to place a risk in a cause-effect chain.

In order to assist in identifying the best place to put a risk, you should consider the following:

- There is no right answer
- Is the item a latent condition? (eg. A hazard, a circumstance, a pre-existing condition)
- Is the item one of many pathways or is this a pinch-point?
- Can we sensibly apply an action to reduce the likelihood or consequence of the risk at this point?
- Is there uncertainty involved, or is it relatively known what the outcome will be?
- What are your circumstances?

When identifying risks, ensure that they are statistically focused, and refer to the quality of the outputs that could be affected as set out in [The ABS Data Quality Framework](#). When addressing multiple quality dimensions, refer to the dimensions of quality that are most affected. Some common areas of risk to a statistical output include: transformation program, systems, security and resourcing

Once you have a list of risks (a good rule of thumb is no more than about 15), you can begin to create a risk register, using the standardised template available at [Attachment C](#). This will continue to be populated throughout this process.

Evaluate the context

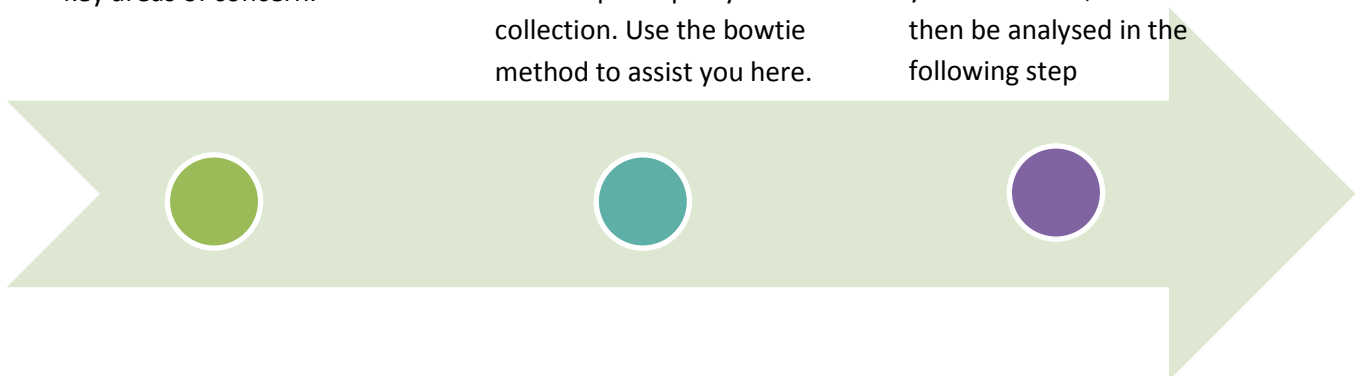
By evaluating the context of your collection, identify key areas of concern.

List possible risks

By assessing the context, list the possible risks that could impact upon your collection. Use the bowtie method to assist you here.

Create a risk register

A risk register is then created that outlines the main risks to your collection, which will then be analysed in the following step





Questions to ask:

- What could go wrong (and what should be managed)? What needs to go right (and so what must be managed)?
- How are clients of the ABS exposed to risk from the work?
- When, where, why, and how are the risks likely to occur? What is the source of each risk?
- What is the potential cost of each risk if realised (in terms of time, money and disruption to customers through a delay or cancellation of publication)?
- What risk areas are the ABS exposed to (e.g. commercial and legal, economic and financial, technological, operational, political, workforce capability, work health and safety, natural events)?
- Have there been any issues or improvements in a collection that could cause inconsistency or errors in the statistics or a break in time series?



STEP 3: RISK ANALYSIS

Each risk that was identified in Step 2: Risk Identification will now be individually analysed, exploring the causes for each risk, applying ratings, and identifying controls. The outcomes from this process will be inputted into Attachment D and will form the basis of your statistical risk management plan.

Rate inherent risks

Firstly, a risk owner should also be identified for each risk. This one person (or position) will be responsible for the management of this risk, and regular feedback should be sought from the risk owner on how well the risk is being managed.

Following this, each risk can be rated based on the risk likelihood and the consequence of it occurring as it is with no discretionary controls in place, using the table below. This is your inherent risk. It is important to ensure that you are rating the consequence of your risks from a whole of ABS perspective. A good thought exercise is to consider is what the rating would be if the risk were realised by a major economic indicator. Does this change how you consider your ratings?

Once you have identified the likelihood and consequence ratings the risk rating matrix (below) will assist you to identify your overall inherent risk rating.

Likelihood thresholds:

Rare	Unlikely	Possible	Likely	Almost certain
May occur but only in exceptional circumstances. It is possible but has not occurred to date in any agency and is considered to have less than 1% chance of occurring in the short term.	Could occur but doubtful. Has never occurred in the ABS but has occurred infrequently in other agencies or is considered to have a 1% chance of occurring in the next few years.	Might occur at some point in the future. Has occurred at least once in the history of the ABS or is considered to have a 5% chance of occurring in the next few years.	Will probably occur. Has occurred in the last few years In the ABS or has occurred recently in other agencies. Or, circumstances have occurred that will cause it to happen in the next few years.	Is expected to occur in most circumstances. Has occurred on an annual basis In the ABS in the past or circumstances are in train that will cause it to happen.

Consequence thresholds:

Insignificant	Minor	Moderate	Major	Catastrophic
Minimal impact on non-core business operations. The impact can be dealt with by routine operations. This is an internal impact only. Self-improvement and review is required.	Some impact on business areas in terms of delays, efficiencies, effectiveness or systems quality. Able to be dealt with at an operational level. There would be no external comments in the press, however possible adverse customer comments. Scrutiny by Executive or other governance to prevent escalation.	An impact on business resulting in reduced performance such that targets are not met. The program/project is threatened, but could be resolved through review. Impacts negatively on the reputation of the ABS. Adverse comments could be in the press. Scrutiny required by external committees or ANAO etc.	A statistical quality incident that causes the breakdown of key program/project leading to reduction in business performance eg. Service delays, legislative breaches. Survival of project is threatened. Results in Ministerial question in Parliament/sustained media coverage, and external consequences challenge the credibility of the ABS.	A statistical incident that results in critical business failure, preventing core program or projects from being performed. Threatens survival of the ABS itself. Significant external consequences, seriously threatening credibility of the ABS. Results in Parliamentary Inquiry/Royal Commission.





5x5 Risk assessment matrix:

Table 3 – Risk Assessment Matrix					
Consequence Likelihood	Insignificant	Minor	Moderate	Major	Catastrophic
Almost Certain	Medium	High	High	Extreme	Extreme
Likely	Medium	Medium	High	High	Extreme
Possible	Low	Medium	Medium	High	High
Unlikely	Low	Low	Medium	Medium	High
Rare	Low	Low	Low	Medium	Medium





Evaluate the effectiveness of the controls

From here, identify the strategies or actions that are currently in place to minimize the risk. These are referred to as your discretionary controls. Discretionary controls are controls that you choose to implement rather than controls that exist without you having any influence over their existence. In this document we will only be focusing on discretionary controls.

There are three types of controls; preventative, detective or remedial.

- Preventative – prevents a risk from happening (before the data arrives)
- Detective – provides early warning that a risk is being realised (while working with the data)
- Remedial – contingency planning, issues management (after we have released the data externally)

Preventative and detective controls focus on the likelihood of the risk. Some examples of controls of this type are formalised agreements for receiving data or regular stakeholder engagement. The consequence of a risk occurring is affected by remedial/mitigation controls. These controls outline what you will do to mitigate this risk once it occurs; delaying the release of a publication if there is a data quality issue is a good example of a remedial control.

Some controls, for example quality gates, can affect both likelihood and consequence. Ensure that you are specifying a range of different controls to lower both your likelihood and consequence ratings, bearing in mind that sometimes you are able to only mitigate a risk (consequence) rather than prevent it from happening (likelihood). For example if you may receive data from elsewhere, you have very little control over the likelihood of that data being delayed (a large risk) however you are still responsible for your output dealing with the consequence of the risk. This is where your remedial controls come in. Remember that you must specify remedial controls that in order to lower the consequence rating and preventative and detective controls to reduce the likelihood.

For each control that you have identified, assess whether it is designed effectively and/or implemented appropriately, using the ratings in the [ABS Risk Management Framework](#):

- **Effective:** The control is well designed to control the risk, has been implemented and is being consistently applied by staff.
- **Partially Effective:** The control is well designed to control the risk, may be partially implemented, and/or is being inconsistently applied by staff.
- **Ineffective:** The control is not well designed to control the risk, and/or it has not been implemented, and/or it is not being applied by staff.



In determining whether a control is effective the following questions should be considered:

Is the control efficient?

- Is the cost of the control justified by the reduction to risk?
- Is the control common across collections? Is it a corporate control?
- Is the control applied across multiple risks within your collection?
- Are controls automated?
- Does the operation of the control heighten other risks?

Does the control act in a timely manner?

- Will the control act quickly enough to reduce the likelihood and/or consequence?
- Is the control acting at the right point in the process?

How well is the control supported?

- Is there training for the control? Is this formalised or ad hoc?
- Is the control well documented?
- Is the control funded going forward including any updates required?

Do we have assurance for the control?

- Do we own the control? How much influence do we have over the control?
- Would it be clear if the control stopped working?
- How much testing was carried out on the control? Was this carried out independently?
- At what level is the the control reviewed? What reporting takes place?

Is the control resilient?

- How well would the control adapt to changes to processes, systems or the risk?
- Can the control be easily over-riden?
- How interdependent are the controls? Will failure in one cause multiple failures?
- Would any of the potential causes for the risk affect the control





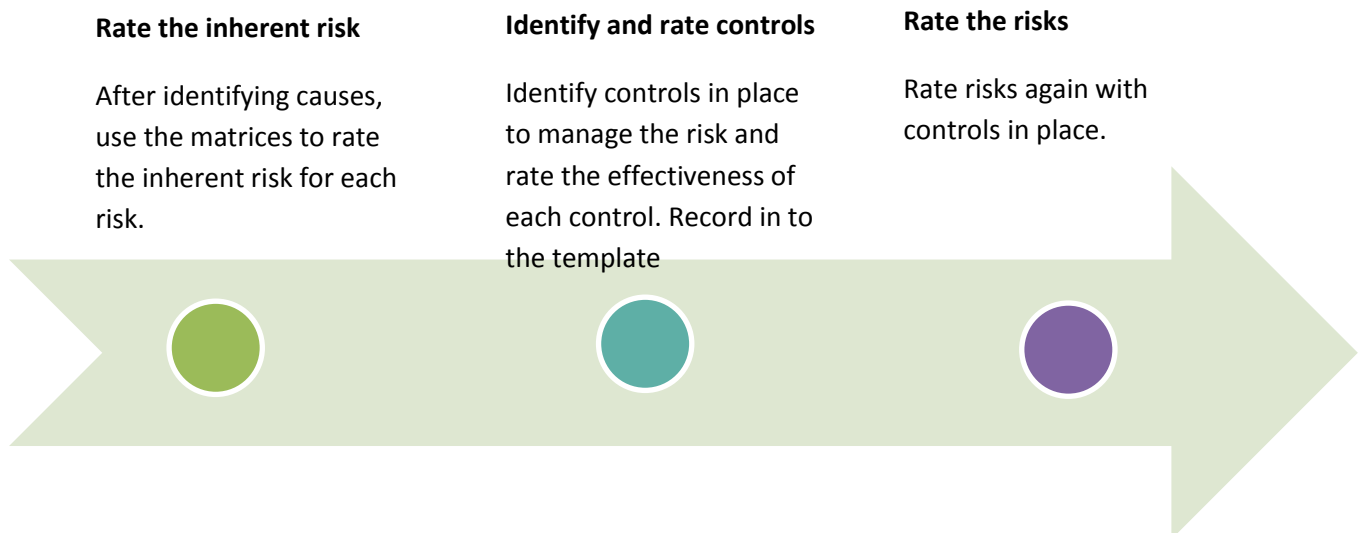
Controls can be used across multiple risks and for multiple purposes. For example, a quality gate may be a preventative control when applied to one risk and remedial when applied to another. Once you have identified all of the controls that you use these can be listed in the control register (Attachment F). This allows you to view your controls holistically. This overview helps to identify any heavily used controls or redundant controls and allows for more targeted resource decisions.

It is important to assess not only individual controls by also the combined effectiveness of the controls applied to a risk and how well the controls work together. The following questions can assist in this process?

- Is there a mix of controls addressing both likelihood and consequence?
- Is there a mix of automated and people controls?
- Do controls support each other?

A combined control effectiveness rating for each risk should be updated in your risk register (Attachment C).

Based on the current risk and control assessment, in consultation with stakeholders, assess and rate the likelihood and consequences again with the current controls in place. This is your current risk rating.





STEP 4: RISK EVALUATION

Identify any action required to reduce current risk

At this stage specify a target rating for each risk, which can be determined by assessing your risk ratings in reference to your risk appetite as analysed in Step 0: Preparation. It is important at this step to assess your controls and identify any gaps.

For any risks to quality that are outside of the target level, identify actions and/or changes to controls that will bring the risk rating to the target level. These will form your control recommendations in the risk rating template (Attachment D). Possible actions to reduce risk further should be considered in the following order:

1. Fix ineffective or partially effective controls. Are there actions that you can take to improve current controls?
2. Influence causes. Are there steps you can take to reduce the likelihood or consequence for any of the causes of the risk being realised? Could objectives be redefined to reduce the risk of them not being met? This may be particularly effective for causes that are driving up the risk rating or where stakeholders would be accepting of a reduction in objectives.
3. Implement new controls. Are there new controls you can implement to reduce the risk rating further? Do other collections have effective controls in place that you could use to manage this risk? Are their new controls you can design to reduce the risk further?

Where possible for the control recommendations detail what the costs to development and/or implementation are and what the effect on the risk rating will be. This will allow the risk owner to make a decision on whether to adopt the recommendations or to accept the current level of the risk. Where a decision is made not to implement the control recommendations and accept the current level of risk this should be detailed and the target adjusted to the new acceptable level.

Where control recommendations are adopted owners and timeframes for development and implementation should be decided. These will be added to the registers that will be developed in the next step.



STEP 5: MONITOR AND REVIEW

Risk and Control Registers

This step involves the further development of registers for monitoring risks and the progress of any control recommendations identified in Step 4: Risk Evaluation.

At this stage the main details from your risk analysis should be included in your Risk Rating Templates (Attachment D). Note you require one for each risk. You are now able to populate your risk register completely (in the format of Attachment C). The purpose of this document is to allow for the ongoing monitoring of your statistical risks. If you have identified control recommendations to be implemented that will reduce the current rating of a risk to within target these will need to be included in risk register. It is also important to populate the 'Date risk will be within target' column in Attachment C with the approximated final date for control recommendations to be implemented.

Once this is complete you will also need to create a control register in the format of Attachment F. The purpose of this document is to allow for the monitoring of the current controls and their effectiveness as well as tracking the progress of developing and/or implementing new controls. The information for this control register will again be taken from the detailed risk rating template (Attachment D).

It is important to note that you may have one control that mitigates multiple risks, for example a quality gate or clearance meetings. When entering a control of this type into the multiple registers ensure that it has been numbered consistently to allow for easy recognition of its impact across multiple risks. A control that is used across multiple risks may also have a different effectiveness for each risk that it is controlling for. Where this is the case, a control should be entered in the control register once but with multiple effectiveness ratings (e.g., effective (risk 1 & 3), partially effective (risk 7)).

It will be important to regularly review and update the action required and timeframe cells as the implementation of the controls progresses.

Review Process

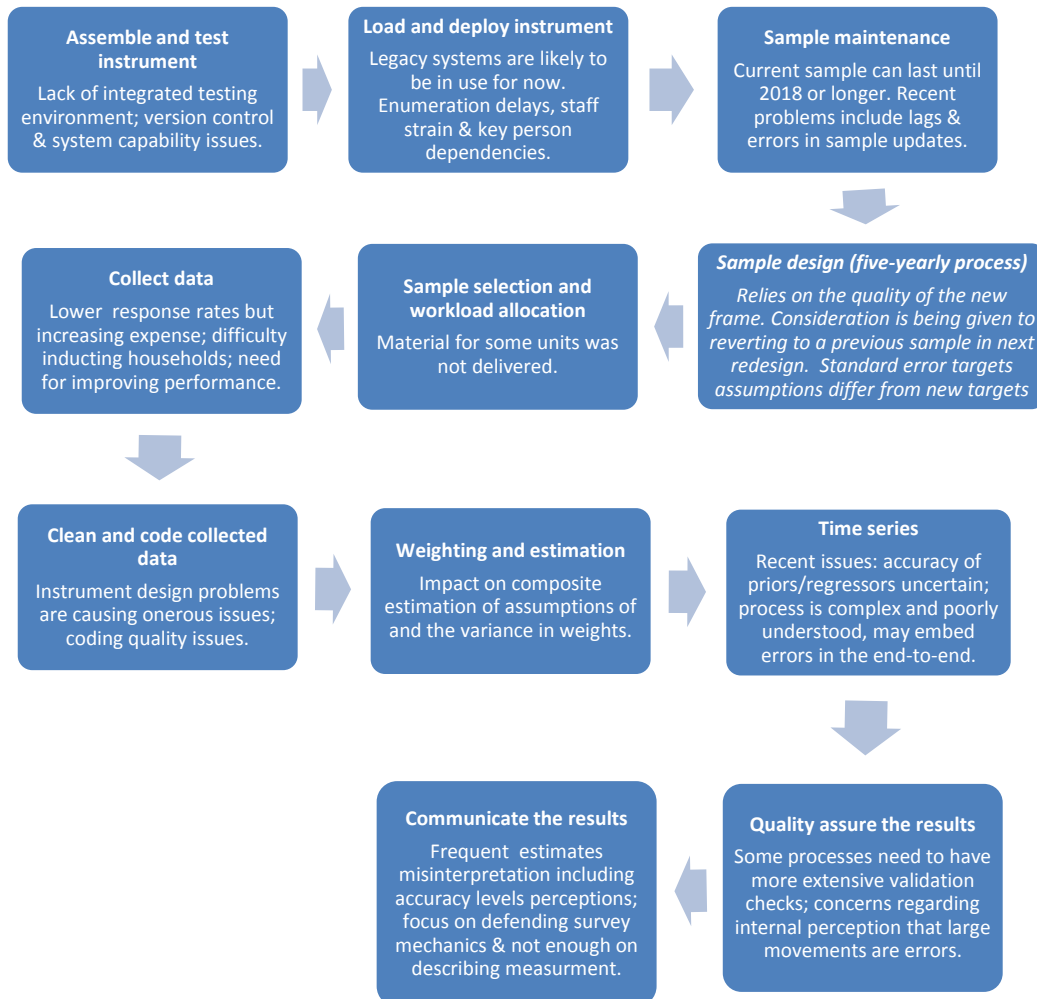
A governance process is required to monitor and review the risks on a periodic basis. It is important to monitor and review each stage of the risk management process to ensure the risks and controls are still relevant.

See the [ABS Risk Guidelines](#) for information and guidance.



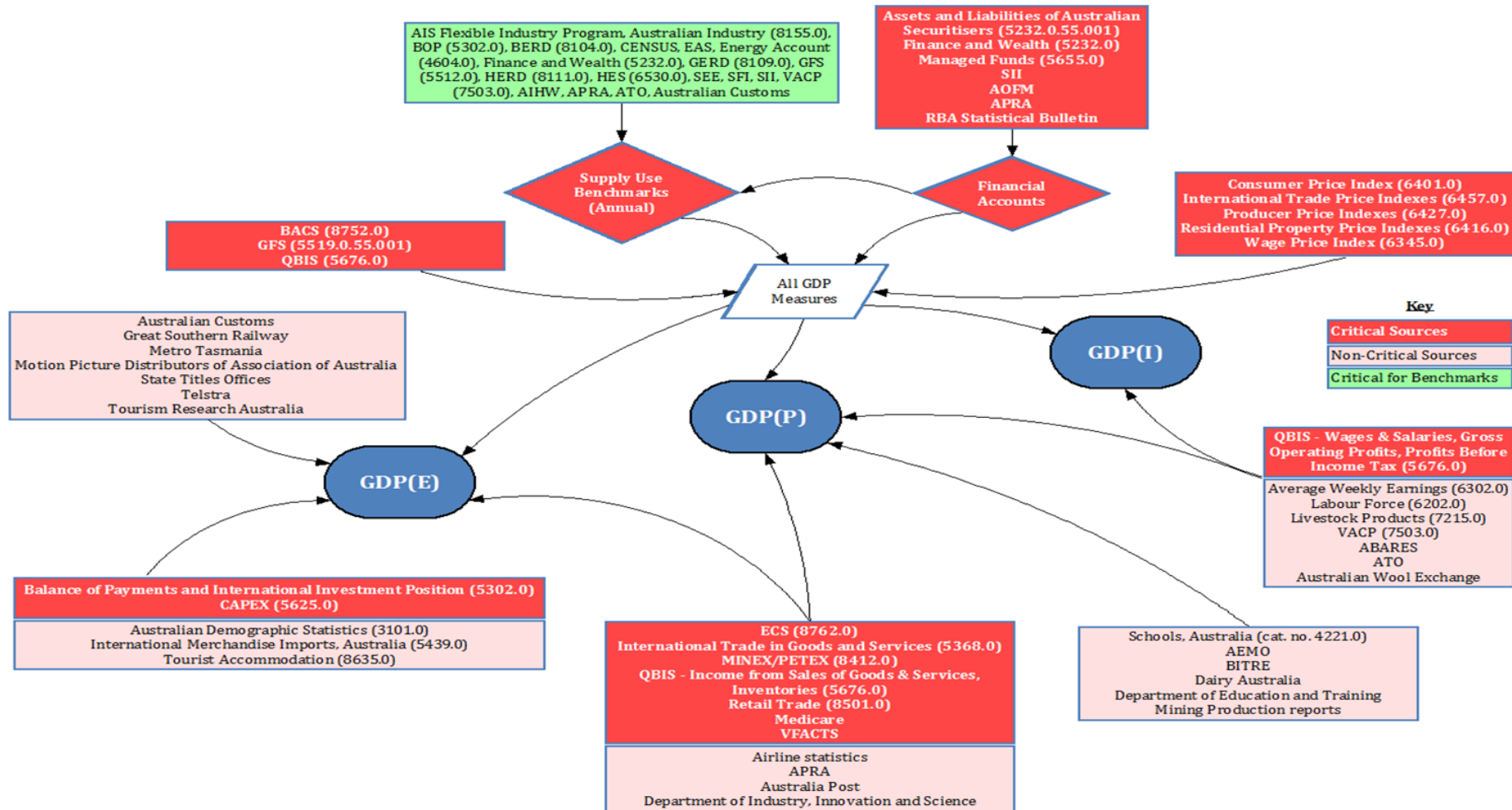
ATTACHMENT A - PROCESS MAP

The process map for these purposes does not need granular detail. A series of process steps highlighting key issues is all that is required. For instance:





ATTACHMENT B – DATA SOURCE MAP





ATTACHMENT C – RISK REGISTER

Risk ref.	Risk	Owner	Current likelihood	Current consequence	Current rating	Target likelihood	Target consequence	Target rating	Current control effectiveness (overall)	Date risk will be within target*
1.01	The risk that SBT-related changes unacceptably impact on the quality of the estimates (or disrupt series)	Program Manager, National Accounts Branch	Possible	Major	High	Unlikely	Minor	Low		TBA
1.02	The risk that SBT changes fail to meet National Accounts business requirements	Program Manager, National Accounts Branch	Possible	Major	High	Unlikely	Minor	Low		TBA
1.03	The risk that SBT on-boarding unacceptably impacts on the quality of the estimates including the possibility of impacts on quality and availability of source data	Program Manager, National Accounts Branch	Likely	Major	High	Unlikely	Minor	Low		TBA





ATTACHMENT D – RISK RATING TEMPLATE

1.04. The risk of... OWNER: XX				
Notes	<ol style="list-style-type: none"> Outcome being sought: This risk covers the 'x', 'y' and 'z' dimension of the ABS Data Quality Framework 			
Examples of events that lead to a risk being realised (causes)				
Discussion	<i>Please insert discussion points relevant to the establishment of this risk, and any other key points of interest</i>			
Control Ref	Control	Control Owner	Type	Effectiveness
1.04.1	XX		Detection / Prevention / Remedial	<i>Effective/Partially effective/Ineffective</i>
1.04.2				
1.04.3				
1.04.4				
1.04.5				
Likelihood without current controls		Consequence without current controls		Uncontrolled rating
Current likelihood		Current consequence		Current rating
Target likelihood		Target consequence		Target rating
Control recommendations	<i>Please insert control recommendations for IMPROVEMENT, REMOVAL, OR IMPLEMENTATION of controls.</i>			





ATTACHMENT E – RISK RATING MATRICES

Likelihood thresholds:

May occur but only in exceptional circumstances. It is possible but has not occurred to date in any agency and is considered to have less than 1% chance of occurring in the short term.	Could occur but doubtful. Has never occurred in the ABS but has occurred infrequently in other agencies or is considered to have a 1% chance of occurring in the next few years.	Might occur at some point in the future. Has occurred at least once in the history of the ABS or is considered to have a 5% chance of occurring in the next few years.	Will probably occur. Has occurred in the last few years In the ABS or has occurred recently in other agencies. Or, circumstances have occurred that will cause it to happen in the next few years.	Is expected to occur in most circumstances. Has occurred on an annual basis In the ABS in the past or circumstances are in train that will cause it to happen.
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Consequence thresholds:

Insignificant	Minor	Moderate	Major	Catastrophic
Minimal impact on non-core business operations. The impact can be dealt with by routine operations. This is an internal impact only. Self-improvement and review is required.	Some impact on business areas in terms of delays, efficiencies, effectiveness or systems quality. Able to be dealt with at an operational level. There would be no external comments in the press, however possible adverse customer comments. Scrutiny by Executive or other governance to prevent escalation.	An impact on business resulting in reduced performance such that targets are not met. The program/project is threatened, but could be resolved through review. Impacts negatively on the reputation of the ABS. Adverse comments could be in the press. Scrutiny required by external committees or ANAO etc.	A statistical quality incident that causes the breakdown of key program/project leading to reduction in business performance ef. Service delays, legislative breaches. Survival of project is threatened. Results in Ministerial question in Parliament/sustained media coverage, and external consequences challenge the credibility of the ABS.	A statistical incident that results in critical business failure, preventing core program or projects from being performed. Threatens survival of the ABS itself. Significant external consequences, seriously threatening credibility of the ABS. Results in Parliamentary Inquiry/Royal Commission.

5x5 Risk assessment matrix:

Consequence Likelihood	Insignificant	Minor	Moderate	Major	Catastrophic
	Almost Certain	Medium	High	High	Extreme
Likely	Medium	Medium	High	High	Extreme
Possible	Low	Medium	Medium	High	High
Unlikely	Low	Low	Medium	Medium	High
Rare	Low	Low	Low	Medium	Medium





ATTACHMENT F – CONTROL REGISTER TEMPLATE

Control ref.	Control	Control owner	Control type	Control effectiveness	Action required	Timeframe for completion/ next milestone	Risks controlled				
							1.0 1	1.0 2	1.0 3	1.0 4	1.0 5
1.01.01	Agile workforce (rapid response teams)	Eg. EL1, DAPM	- Remedial - Prevention - Detection	- Effective - Partially effective - Ineffective	XX	XX/XX/XXXX	X				
1.01.02	Business continuity plan							X			X
1.01.03	Internal stakeholder engagement plan							X		X	
1.01.04	Quality gates								X		X
1.01.05	Security plans										

