SOiL CRC

Performance through collaboration

RISK/REWARD TOOL

Writing Guide & User Documentation

A new tool to better assess the risk/reward of new farming practices and technologies
(Soil CRC project 1.4.005)

PROJECT PARTICIPANTS

INTRODUCTION

This package has been developed primarily to support agricultural industry project and extension officers in improving the accessibility of information provided to farmers when they are deciding on adopting a new farming practice or technology.

Based on the CRC for High Performance Soils project *A new tool to better assess the risk/reward of new farming practices and technologies*, the package consists of a user guide, report templates, and case study examples of the three tools developed as part of the Soil CRC *Risk/Reward Project* (PJA1.4.005). These were developed by the West Midlands Group, Corrigin Farm Improvement Group, and Central West Farming Systems with support from Charles Sturt University. User testing of the three tools and this guide was completed with both next users (farming systems groups, extension officers, etc.) and end users (farmers), with each tool being developed and refined through feedback from both parties.

The traditional approach for communicating completed results from projects, trials and research carried out by farming systems groups is often a final report document set out in a scientific research format. However, as results from surveying of next and end users completed in the initial stages of the *Risk/Reward Project* indicate, this format may not be the most useful or appropriate for many farmers. Survey results also indicate farmers now find themselves with less time available to understand a practice or technology, often relying on trustworthy synthesis of information that will allow them to make a more informed decision about whether (or not) to adopt these in their businesses. As local farming systems groups are one of the key sources of information for farmers when considering these kinds of decisions, it is therefore the role and responsibility of these groups to provide the trustworthy synthesis of information needed.

This guide aims to assist farming systems groups in effective and farmer-centred synthesis, providing a clear pathway of information for farmers to learn about a new farming practice and answer the various questions that may arise in the adoption process. Using this guide will help to improve the consistency in reporting between projects and between organisations to further improve the quality of information provided to farmers.

There are three key report formats that this guide supports: an infographic, a synthesis report, and a full detailed report. Each of these formats present the information generated from a project in a slightly different way depending on the stage of learning for the farmer. Examples of how to use each of these are spread throughout the document based on user testing and case studies from each participating farming systems group. The guide outlines the information required in each section of a report and how this varies for each format.

Having a clear and consistent reporting format will allow farmers to compare farming practices and technologies directly and determine the most appropriate practice to adopt for their farming business.

HOW TO USE THIS GUIDE

This guide is split into 2 sections – Section 1: ‘Which Report for What Purpose?’ and Section 2: ‘Report Writing Guide’.

Section 1: ‘Which Report for What Purpose?’ provides context and will help you understand the three different report formats (Infographic, Synthesis Report and Full Report) and where and when they are most appropriate or useful.

Section 2: ‘Report Writing Guide’ is the nuts and bolts of the package and will help guide you with the key information you need, and what you should be thinking about when producing each of the three different report formats.

The guide is designed to be used by those who may be new to the report writing process, right through to those who are familiar. It is designed to ensure the farmer is the focus of your report writing, scientific communication and research extension.

If this is your first time using this guide, we recommend starting with Section 1 and working through as needed. If you are returning to the guide or consider yourself a great report writer, this might be either an opportunity for a ‘refresher’ or you may find something new.

SECTION 1:
WHICH REPORT FOR WHAT PURPOSE?

INTRODUCTION

The way that information is presented and delivered to farmers has a significant impact on the success of what is trying to be communicated or extended, whether that is new research, the adoption of a new practice or technology or a call for engagement. In the current learning environment, farmers have access to information through many sources including those more traditional, as well as digital, online sources, through mobile applications, and across social media platforms. While there is certainly a benefit to this level of accessibility for farmers, for those trying to communicate with them, such as researchers, project, extension or communications officers, it is of increasing importance to ensure the quality, usefulness and relevance of your information.

Often the quantity of information being presented to farmers through various sources means they are aware of new farming practices and technologies well before they fully understand them. While it was found that farmers often access information on particular topics from greater than 7 sources (West Midlands Group, 2023), it was not clear whether farmers *need* this many to decide, or if all information needed to make an informed decision could not be found in one space. With these initial findings, further surveying (Soil CRC, 2024) indicated farmers would be more inclined to adopt a new farming practice based on information from fewer sources if it was presented in the 'correct' format.

One of the key learnings in developing this guide was that the information required by farmers to assess the risk and reward of new farming practices and technologies was different to the way traditional research reports are written. While the results, discussion and even the background sections of traditional reports serve a purpose of informing the reader of the research and its key outcomes, farmers indicated that they thought about the information differently, often with a more practical mindset, taking in many more factors than those presented in a traditional report format. This proved a significant challenge in the early development of this guide, as the sheer amount of information required to satisfy all the needs of farmers to make an informed decision couldn't feasibly be housed in a single report. Initially, trying to achieve this resulted in a report that was long, complicated, and became the antithesis of what we were trying to achieve – information that was easy to access, understand and base an informed decision on.

It is recognised that when learning about a new practice or technology, all people (including farmers) move through a process of becoming aware, seeking new information, evaluating, and finally making a decision to trial or adopt. This guide seeks to align the information delivered to farmers with this learning pathway so that the right information is presented in a format that works with each stage of the learning process, allowing farmers to step progressively through the information presented. The three key tools that have been developed include the Infographic, Synthesis Report, and Full Report which align with the awareness, evaluation, and trialling stages of adoption (respectively). By presenting information in a clearer format for each stage, it is envisaged that farmers can come to a quicker and more informed decision on new practices and technologies, saving time, effort, and money.

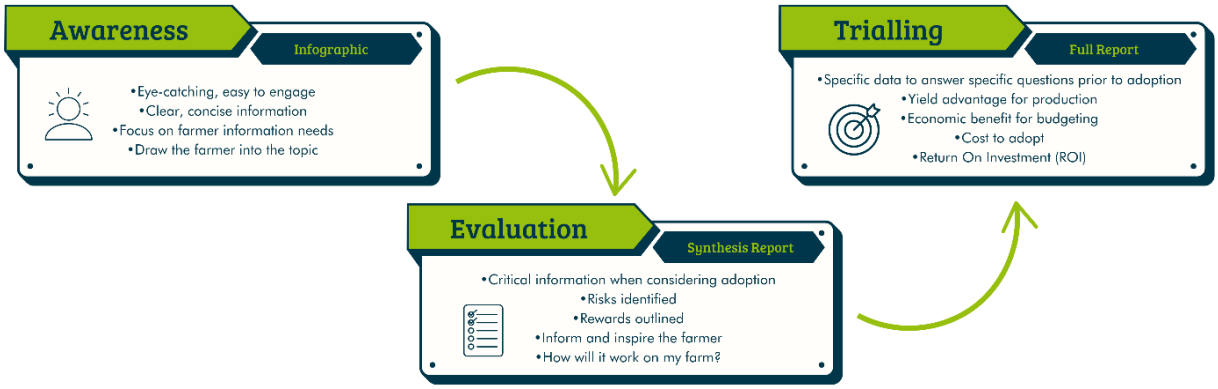

Figure 1. The information-learning pathway: a model for understanding what information is important at each stage of adoption.

INFOGRAPHIC – AWARENESS

At the awareness stage of learning, farmers are keen to understand 'what is in it for them' as they have little time to be indulging every new farming practice or technology. Being able to answer this question early and identify the relevance to their farming business is a key step for them before taking more time to consider, in depth, this piece of farming innovation. For example, in the user testing of the Infographic in the *Risk/Reward Project*, some farmers noted that being beef producers, the content of the report (in this case chickpeas and double break crop rotations) was not relevant to them and that the Infographic was an effective tool in helping them determine that quickly. The Infographic is not a document to give detail, but to attract the reader to follow this more closely, and progress to the evaluation phase.

Surveying of over 60 farmers was conducted in 2023 and again in 2024 to ascertain what information farmers wanted to access to better inform their decision making. The survey found the following key pieces of information were identified as being important in an infographic:

- ***Context:*** Farmers need to understand if this farming practice or technology is relevant to their farming business. This involves identifying the situations where the practice or technology would be implemented and the specific problems it will solve for the farmer.
- ***Reward:*** The economic benefit of the new farming practice or technology is rated as highly important, particularly the annual and long-term (5-year) Return on Investment (ROI). Additionally, the positive impact on the time and effort required to implement farming practices, and the positive effects on the environment and soil health, are also highly valued.
- ***Risk:*** The farm production and negative environmental risks associated with adopting the new practice or technology need to be considered. It is important to be aware of these risks, determine if they have been validated through trials, and assess whether they can be effectively managed.
- ***Key results:*** The key results of the research provide insights into the practical application of the findings. This includes understanding how the research was conducted and what was discovered, which helps farmers decide if they can implement the findings in their farming business.

From the farmer survey, the credibility of the organisation giving the information was also an important consideration in an era when access to online information (easily verified or otherwise) makes it hard to verify credible sources of information. The addition of an organisational logo and a statement of the history of the organisation in providing valuable research outcomes aids in establishing credibility with the reader. It should be noted however, that during the user testing process those farmers who were members of the same

group that had produced the test Infographic (West Midlands Group) noted they already had a high level of trust with the organisation and that this space could be used for another piece of data.

For the Infographic to be highly effective, the addition of a photo or graph that clearly highlights the benefit of using the new farming practice/technology is key. It assists with the need for farmers to 'see it for themselves' and validate that the research presented has been completed. This was validated on multiple occasions through the user testing process, with farmers noting that the first thing they looked at was the central image. Farmers also commented that a graph would be a good addition.

Throughout the user testing phase of this project, farmers across all groups found the Infographic straightforward and easy to understand with the subject matter being immediately clear. The design and layout were well received, with logical and coherent presentation. Positive feedback was given on the use of dot points and pictures to convey information and the focus on practicality. The information was considered relevant and useful, especially for those currently discussing or considering similar practices. Farmers noted wanting to see more specific trial details such as soil type, rainfall and sowing times as well as ensuring the different report formats complement each other without redundancy.

The Infographic is effective at encouraging farmers to read more about a new farming practice/technology, and progress to the Synthesis Report.

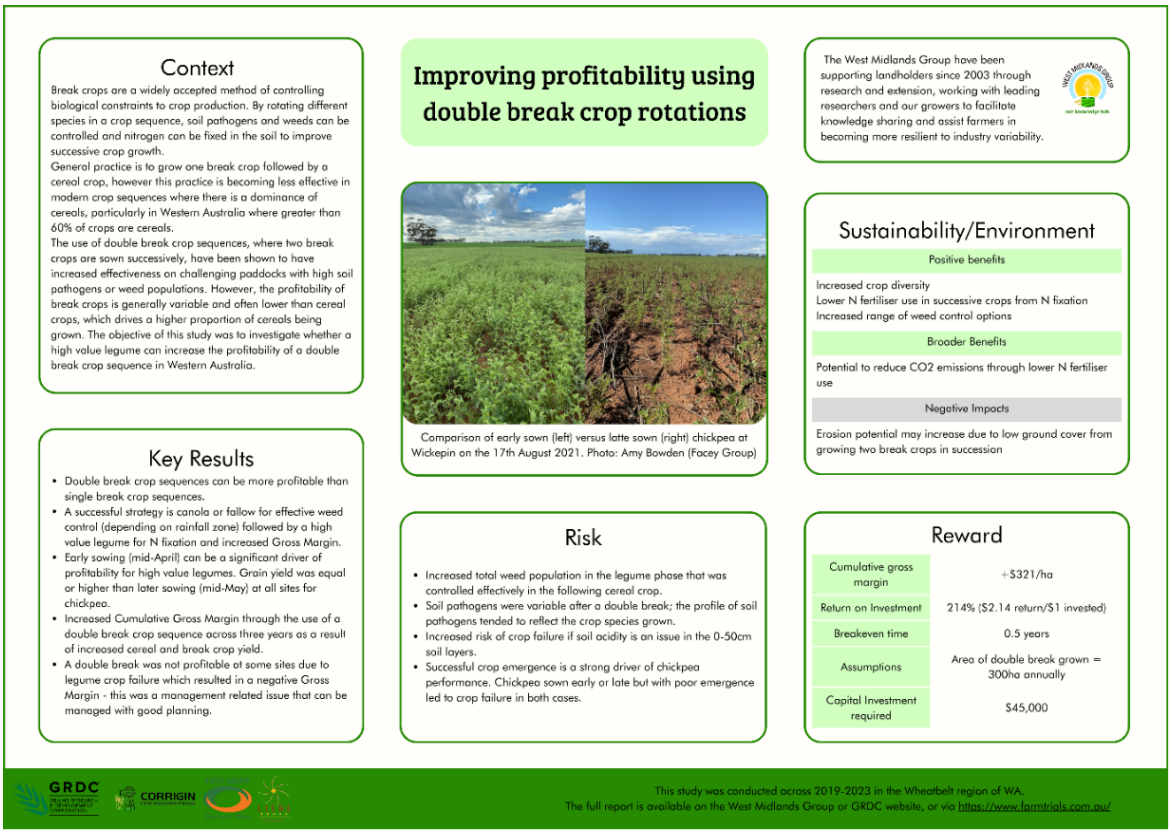

Figure 2. Example of the Infographic being used in a recent project.

SYNTHESIS REPORT – EVALUATION

The second step in the learning pathway is for farmers to evaluate in greater detail how a new farming practice or technology will benefit their farming business. It is crucial to provide the practical information to allow farmers to make a mental model of the new practice or technology. To facilitate this, a Synthesis Report seeks to make the key research findings more accessible and understandable for farmers by distilling all the information from a Full Report. The Synthesis Report should focus on discussing the new practice or technology in the context of its adoption into the farming system, avoiding non-essential information that could confuse the reader.

This portion of the guide outlines the process and benefits of generating a Synthesis Report to help farmers make informed decisions about adopting new practices or technologies. To increase the accessibility and understanding of completed research, it is beneficial to first complete the Full Report to understand the full impact of the research on farm production. From the Full Report, the key messages and supporting information can be derived for the Synthesis Report.

The Synthesis Report will often not provide all the information needed for a decision; it does condense the Full Report into a much more digestible format – a point that was made by farmers throughout the user testing process. The emphasis is on delivering clear, simple messages that farmers can understand, with minimal technical jargon. Ideally, the Synthesis Report should be around four pages long – detailed enough to convey key information but concise enough to avoid overwhelming the reader.

During user testing with farmers, the Synthesis Report was found to be more accessible than the Full Report and provided a greater level of detail that was missing from the Infographic. In many cases farmers noted they would be happy stopping at the Synthesis Report. Many commented they would not want to invest any more time in reading more than 4 to 5 pages, and that they had found enough of the information they needed to make a decision, only wanting to explore some of the very fine details provided in the Full Report format when completely necessary.

While the Synthesis Report does serve as a useful next step for those seeking information on new farming practices or technologies, feedback from farmers during the user testing phase also highlighted the need for clarification of economic analyses and some specific trial detail that they found to be missing, along with an increased focus on how the information can be directly applicable to their own situation.

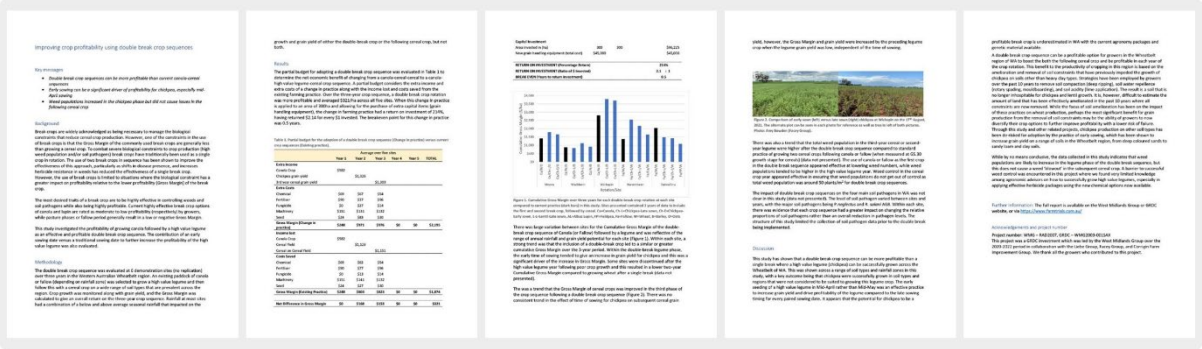

Figure 3. Example of a Synthesis Report being used in a recent project.

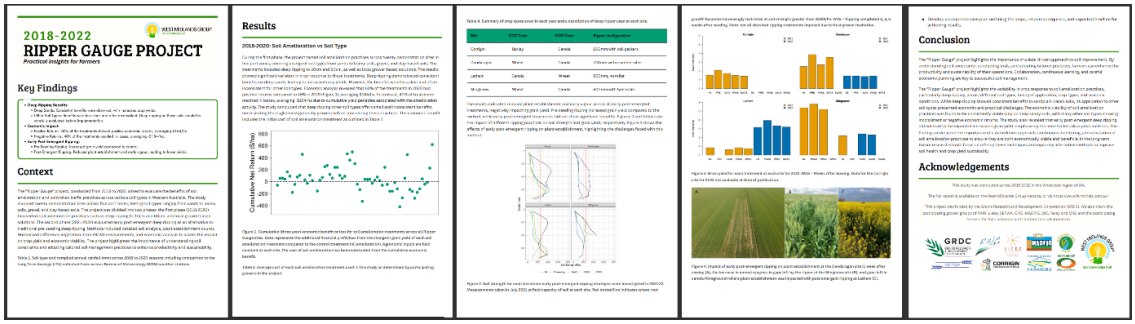

Figure 4. Example of a Synthesis Report being used in a recent project.

FULL REPORT – TRIALLING

A Full Report is a formal report, structured with major headings based on a scientific report format that details the findings of a research experiment, typically on an annual basis. This may include an introduction, methodology, results, discussion, and conclusion. When used as a project final report, the information represents an amalgamation of all the work that has been completed in a particular project, often over many years, to give the full picture of the experiments completed and what was learned as a result. These reports are very detailed, often lengthy (commonly 15 to 35 pages in total), and while they may contain the key messages at the start, often the key information is buried deep within the sections of the document.

Full-length research reports are often seen by farmers and consultants as a decision-making resource that contains data and information that can inform calculations, validate assumptions, and provide a basis for comparison between different options. For Project and Extension Officers, the Full Report is a valuable resource from which other communication outputs can be developed by your organisation to better engage farmers. This may include the Synthesis Report or Infographic but could also drive the delivery of workshops and field walks at trial sites, allowing farmers to learn and simultaneously visualise a new farming practice or technology.

In developing this guide, feedback from farmers highlighted that the Full Report format was seen as a comprehensive resource and considered valuable for those seeking detailed scientific and research data. However, farmers indicated that they wanted a balance between comprehensive data and actionable insights. Some participants felt the report was more suitable for researchers and those needing detailed data rather than farmers. This could be owing to the more formal, scientific structure of the report and not aligning directly with the way farmers think structurally about information (e.g. a focus on practical application and risk management).

Engagement with farmers has also identified a greater emphasis on understanding the risk and reward of the new farming practice and on the practical implications of how this would fit with or change existing farming practices. An addition to the traditional report format has been an economic analysis section which addresses farmers needs to understand the financial impact (reward) of adopting the farming practice or technology.

The Full Report is comprehensive and detailed and can be overwhelming for the reader, making it best suited as a reference document for other communications or for those looking for specific and in-depth data. Section 2 of this guide continues to outline in detail each key element needed in the Full Report format and what to think about and take into consideration when producing one for farmers.

SECTION 2: REPORT WRITING GUIDE

This section is designed to help guide you through each key element of a Full Report: (1) Title; (2) Key Messages; (3) Background; (4) Methodology; (5) Results; (6) Economic Analysis; (7) Discussion; (8) More Information; and (9) Acknowledgements. Each element is provided, with a context and methodology, describing why it is important and what to think about when working on it, as well as specific notes for its use in the 3 report formats.

As noted in Section 1, it is beneficial to first complete the Full Report to understand what impact a project, the research completed, and the results may have for farmers and on-farm production. From the Full Report, the key messages and supporting information can be derived for both the Infographic and Synthesis Report.

1. TITLE – IS THIS REPORT FOR ME?

CONTEXT

A title is important as it is a reader's first impression of any document; its purpose is to attract interest and set expectations. A title should summarise the overall purpose and findings of the document without being too long or use complicated and inaccessible language. The title space in a report is also where the authors and year of publication is included as a subtitle to aid the reader in establishing the credibility and trustworthiness of the article.

METHODOLOGY

- ***Length:*** Think about coming up with a short, punchy title that captures attention and conveys the essence of the key message.
- ***Relevance:*** Think about the context of this project. Which region/soil type/situation does this research apply to? Is this one year or multiple years' worth of research?
- ***Extra detail:*** Include other details often associated with the report as a subtitle if necessary, such as names of contributors or the report date.

FULL REPORT

A trap often encountered by extension officers is the title of the project as submitted to the funding body is used as the Full Report title. This often leaves little for farmers' imagination in determining whether the project is relevant for them. A punchy report title sets the standard and anticipation of how the rest of the report will read. When communicating with farmers, altering the report title to better meet the problem or opportunity that is faced by the farmer is more likely to engage their attention. Know your target audience.

SYNTHESIS REPORT

An engaging title for the Synthesis Report is extremely important as this is the information that looks to engage the reader, for example, on a website or in a web search. Farmers may be looking for specific information to learn more about a topic, so having an accurate description of the research project helps to draw attention to the topic.

INFOGRAPHIC

As the form becomes shorter there is the need to be even more engaging in the title for the

Infographic. That said, the Infographic is largely visual, and the layout and data presented are likely to take precedence in capturing the attention of the reader. When presenting Infographics on digital media, ensure that *Alt. text* for the Infographic has the title included to improve search engine optimisation.

2. KEY MESSAGES – WHAT IS MOST IMPORTANT?

CONTEXT

The Key Messages section of your report should be conceptualised as the 'farmer's digest' or an 'at-a-glance summary', designed to achieve several critical objectives. Firstly, it should provide actionable takeaways by distilling the project's essence into bite-sized, practical, and relevant information that seamlessly links to more detailed content within the report. This approach ensures that the information is not only accessible but also immediately useful. Secondly, it serves as a quick decision-making tool, enabling farmers to swiftly determine whether delving deeper into the Report will be beneficial for them. Lastly, this section should function as a tailored 'elevator pitch', presenting a compelling and targeted overview of your research that directly addresses the specific issues and opportunities faced by farmers.

The Key Messages often are the 'stop/go' point for a farmer in determining if the article is worth reading (i.e. that it is relevant to their farm business or that the article contains information that answers the question on their mind).

METHODOLOGY

- ***Deceptively difficult*:** Don't underestimate the challenge! Pinpointing the most crucial takeaways requires an understanding of both the project topic and your audience. Running the key messages past a senior extension officer, industry peer, or farmer may help to sharpen your focus.
- ***Effort rewarded*:** While demanding, this section deserves your best effort. It can significantly boost the report's impact by simplifying its essence for farmers.
- ***Keep it simple*:** Ideally, use 3-4 clear dot points that avoid jargon and complex terminology, instead use language familiar to farmers.
- ***Inspiration from the Discussion*:** The Discussion section's key implications and conclusions can be a great starting point, transformed into digestible dot points.

By investing in strong Key Messages, you empower farmers to quickly grasp the value of your research and decide if it is relevant to their needs and farming operation, leading to adoption and increased impact.

FULL REPORT

A Full Report may contain the Key Messages section in dot point form, but more likely in the Full Report format, you may see an abstract or a 250-word summary of the project. All 3 options have the same intent of giving the reader an idea of whether the Full Report contains the information that they are seeking. An abstract/summary may be broader than the main research outcomes reported in dot-point Key Messages and include things such as location, years of study, soil types, or crop rotations.

SYNTHESIS REPORT

The Synthesis Report will benefit greatly from using dot-point Key Messages as this report is short and punchy. The messages help to guide the reader in accessing the most important/relevant information on which to evaluate the new farming practice/technology.

INFOGRAPHIC

With relatively few words being presented on the Infographic, it is extremely important to ensure the Key Messages are crafted to be very short, succinct and clear in what they are telling the reader. Remember, the idea of the Infographic is to get the reader excited to learn more about this topic, so should be viewed as a collection of 'teasers' on the topic. In the Infographic used in the user testing phase of the *Risk/Reward Project*, the Key Messages were labelled as Key Results.

3. BACKGROUND – WHY IS THIS RELEVANT?

CONTEXT

The Background section sets the stage for your entire report, justifying the research and leading to a hypothesis or expectation of what the work is attempting to show. In a scientific writing context, this section would encompass a literature review that establishes the previous work that has been completed on this topic and identifies the gap/s in knowledge for which the research hypothesis will be exploring.

Often, project officers, extension officers and farming systems groups do not have the resources available that researchers may have to search peer-reviewed literature. Instead, it is highly recommended to search publicly available research documents to gain an idea of the field of research as this is the same information that is also available to farmers. Including these references in your report shows due diligence, and that you have taken the time to complete this step. This allows the report writer to place the research report in a similar established body of work and helps provide credibility.

Put simply, completing the Background section has three key benefits for the reader: It places your research in the context of other work completed, it shows that you have done your 'homework' to fully understand the topic, and creates trust and credibility.

METHODOLOGY

- ***Start broad and narrow the focus:*** The Background should start in the broader context of the importance to the industry and narrow to the specific topic of the research, paying special attention to local relevancy.
- ***Build context*:** Lay the groundwork for your research by outlining the existing knowledge and understanding of the issue you're addressing. Briefly explain the key concepts, challenges, and gaps in current knowledge.
- ***Identify the need*:** Clearly state the specific problem or opportunity the project and your research aims to address. Why is it important? What impact can it have?
- ***Guide the journey*:** Highlight the key questions you'll be exploring and the findings you'll present.
- ***Tailor the tone*:** Use clear and concise language appropriate for your intended audience. Avoid jargon and overly technical terms unless necessary.

FULL REPORT

The background section of the Full Report format contains the most detail of all the formats and places *your* research in the context of *other* research on this topic. While it is likely that farmers will not read this section in detail, it is a valuable tool to build trust and credibility with the reader. Aim for a Background section of 1-3 pages to adequately cover this section.

SYNTHESIS REPORT

The Synthesis Report contains a one paragraph version of the Background which succinctly steps the reader through a brief view of why the research is important. Aim to pick up the background that is most relevant to the farmer who is reading the report. You want to state the problem or opportunity that has been identified and how it relates to them.

INFOGRAPHIC

The Infographic contains a series of dot points that succinctly spell out why this project is of relevance to the reader. The Background information clearly outlines the problem or opportunity that the research report is addressing and why it is relevant to the farmer. This allows the farmer to identify with the problem/opportunity and to gain interest in reading further about what the research has found. In the Infographic used in the user testing phase of the *Risk/Reward Project*, the Background section was labelled as Context.

4. METHODOLOGY – HOW WAS IT DONE?

CONTEXT

The Methodology section should bridge the gap between your research and practical application, empowering farmers to understand, trust, and act upon your findings. The Methodology is a broad description of what was done in the research so that others could reasonably replicate the work that was completed. While excessive detail is not needed, a brief description of how each result was measured or recorded is important for the reader to gain trust in what you have done, and to conduct similar measurements in future trials if needed. Often, if something doesn't make sense in the Results section, the reader will double check with the Methodology to understand how the measurement was taken and if this could have contributed to the result.

METHODOLOGY

- ***Complementary to the results:*** All results presented in the Results section should have an accompanying Methodology. Additionally, only dictate the Methodology for the results presented, even if there were more sites or measurements taken in the broader project.
- ***Define boundaries:*** If there are limitations to the data, then clearly acknowledge this for the reader (e.g. 'This report focuses on the first year of a 3-year research trial.').
- ***Build trust and confidence*****:** A clear and transparent methodology establishes the legitimacy and rigor of your research, ensuring your findings are reliable and believable.
- ***Connect results to actions*****:** By explaining 'how' you got your results, you enable farmers to understand the context and applicability of your findings to their own situation.
- ***Empower practical application*****:** Providing key agronomic data and identifying influencing factors (like soil types and management practices) empowers farmers to adapt and implement your findings to their specific context.
- ***Tailor information*****:** Consider your audience! Provide the right amount of detail to inform decision making without overwhelming farmers with unnecessary technical jargon.

FULL REPORT

A Full Report has room to cover the broader details of what was conducted in the experiment. For the reader, the Full Report is where the finer details are presented to

answer specific questions that relate to the local relevance, context, or the process of adoption. This may include the soil types where the research was conducted, rainfall zones, or what machinery or herbicide package was used. This information can be used to guide adoption by the farmer or consultant and is likely to be accessed only when the specific information is required.

SYNTHESIS REPORT

A brief outline of the way the research was conducted is required in the Synthesis Report to allow the reader to broadly understand what was completed in the research trial. Include only the necessary detail required to interpret the results as this is a shorter report format. (e.g. a table of background soil pH values may be required for a plant sensitivity trial to understand the differences in plant growth). Most importantly, the Methodology section is likely to be used by the reader to gain trust in the report that the research has been completed to a satisfactory standard.

INFOGRAPHIC

With words at a premium in an Infographic, the context section holds a brief description of the Methodology to link the problem/opportunity that was identified with the way it was investigated. A focus should be on the practical methodology for the reader to visualise how this practice looks in the adoption stage. Describing the farming practice or technology rather than the specific trial is the key for the reader to get excited about the research being presented.

To simplify the document, the year(s) of the trial, regions, and/or soil types can be added in the footer of the document as additional text along with the acknowledgements so that this information is presented to show relevance but not distracting from the main content.

5. RESULTS – WHAT DID YOU FIND?

CONTEXT

The Results section is the heart of your report, highlighting what you found in a clear and impactful way. This is your interpretation of the results, and an astute reader will view the data and test whether they come to the same interpretation. The data tells the story of the research project and should link together coherently to support the Key Messages of the research.

Any data presented should be consistent with what was stated as being completed in the methodology section (i.e. no surprise data) and step the reader through the key results. While it is likely that there has been a multitude of data collected, consider how best to summarise this data so that it is easy for the reader to understand. For example, consider the use of tables where the actual number is important or graphs where the trend is important. Where there is replication in a trial, the use of standard error bars is helpful to indicate the variability of the mean, and statistical analyses helps to clearly identify significant differences between treatments (normally $P<0.05$).

Remember that the Results section points out the key data for the trial, while the Discussion section (explained further below) links this information together to make sense of what the trial has found and how it helps to answer the problem/opportunity identified in the Background section. A variation to this rule is where a report template has a Results and Discussion section together, where each key result is discussed in how it contributes to understanding the data and the problem/opportunity being addressed.

METHODOLOGY

Focus:

- ***Prioritise impact*:** Present the most important results first, emphasising the key outcomes from the project (e.g. improved production, profitability, or natural resource management). Aim for the shortest, but most impactful version.
- ***Tailored precision*:** Balance detailed information with relevance to your key takeaways, audience, and region. Don't overwhelm with irrelevant data.
- ***Context and clarity*:** Ensure data presentations are clear, high-quality, and contextualised.
- ***Guide don't dictate*:** Use text to guide readers to the most important data, explaining why they should pay attention. Help readers understand the 'why' behind any differences (or lack thereof) between treatments.

Visual storytelling:

- ***Graphs*:** Highlight trends, key findings, and connections to Key Messages. Remember, many readers focus on visuals.
- ***Font size:*** Use a font size slightly smaller than the main text (e.g. 10pt).
- ***Colour:*** Use colour effectively without compromising clarity. It can be useful to distinguish between treatments.
- ***Efficiency:*** Minimise border space and maximise data area.
- ***Significance:*** Indicate significant differences where applicable (e.g. l.s.d. or asterisks).
- ***Units:*** Include units of measurement (e.g. L/ha, kg/ha, kg DM/head/day).
- ***Tables*:** Use tables when numerical details outweigh trends, or to summarise large data sets efficiently.
- ***Selection:*** Prioritise 1-2 tables highlighting key results.
- ***Referencing:*** Clearly label each graph or table with a figure number and title for easy reference in the text. A table, complete with title, should be understandable on its own without having to read any further text.
- ***Resolution:*** Ensure that any graphs included in the results are of a high enough resolution so they can be clearly seen and do not distort.

Remember:

- Present summary data with statistical analysis if appropriate, not raw data.
- Focus on clarity and avoid confusing interpretations in the Results section.
- Leave conclusions for the Discussion section.

By following these key points, you can ensure your Results section effectively communicates your research findings in a clear, concise and impactful way, empowering readers to understand and apply your results.

FULL REPORT

A Full Report is where the detail is found and often there are many tables and graphs presented purely because there was lots of data collected. An important consideration when determining what should be presented is to ask the question: 'How does this help me to explain what happened in the research project?' Avoid having 15 pages of graphs when this could be more succinctly summarised in a table. A graph is often in colour and grabs attention, so reserve the use of them for highlighting the key results.

SYNTHESIS REPORT

This shorter report format often has only the key results displayed as the role of the Synthesis Report for the reader to evaluate if the new information is relevant to their farming business. Often, a lead graph and a table of data is more than enough information to present in a Synthesis Report, with the Results and Discussion combined to build a coherent story.

Present the key results in order of importance emphasising the key outcomes from the project. The key outcomes can relate to improved production, profitability, or natural resource management outcomes. Not all information has to be presented, but enough to allow the reader to understand the reasons behind any differences (or lack thereof) between treatments.

Where there are many aspects of one research project, for example, benefits to crop growth and an economic analysis, it may be easier to split these into two concise reports that focus on delivering one piece of information at a time to avoid overwhelm for the reader, and to allow sufficient space to discuss the Results. In this case, the Methodology would be adjusted to suit the Results presented and a clear linkage between the reports for the reader to follow.

INFOGRAPHIC

Use the Results section from the Synthesis Report to inform 'Key Results' in the Infographic by taking the most practical findings and presenting as a series of dot points. The Key Results can be a series of statements based on the data and does not need to get into detail – if the reader is interested in the topic, then they will be inclined to read the Synthesis Report next.

Remember: the purpose of the Infographic is to excite and create interest for the reader, encouraging them to read the Synthesis Report which has greater detail.

6. ECONOMIC ANALYSIS – WHAT ARE THE NUMBERS?

CONTEXT

An Economic Analysis is the main tool by which farmers assess the adoptability of a new farming practice or technology. The reward, or impact on profitability, is the largest consideration for farmers when considering adoption of innovation due to the nature of farming and the need to be financially viable. However, this section is not included in traditional research publications and is often overlooked when preparing reports for this reason.

This format of presenting an Economic Analysis clearly answers three main questions for the reader – it outlines the short-term benefits, long-term benefits, and the capital costs associated with adoption. These are important factors for farmers when considering adoption as they can impact the long-term viability of the farm business along with whether or not the farmer can afford to invest in the practice change in the first place.

The template provided in this guide is based on a partial budget which compares the Gross Margin of the new practice with the Gross Margin of the existing/current practice. For example, this could be changing a crop type or fertiliser strategy. In each case, there will be new income and costs associated with the change in practice and this will replace the existing income and costs that are currently received/incurred. The difference, when positive, means that the change in practice will increase the profitability of the farm business.

To compare apples with apples, Return on Investment (ROI) is a key indicator that can be used to compare new farming practices to determine their impact on profitability. By adding the scale of the adoption (number of hectares) the time to break even can be calculated based on the capital investment required and anticipated Gross Margin. A key factor when presenting economic information is that there are often assumptions required to complete calculations, such as commodity or input prices, and these should be outlined in the relevant section so that the reader can gauge the relevance of the data to their farming business.

Challenges and Solutions:

- ***Missing from reports*:** An Economic Analysis is often omitted due to perceived complexity. Make it a priority to incorporate this valuable information, even if it is simplified.
- ***Accuracy and clarity*:** Ensure calculations are accurate and transparent, explaining how ROI was determined to avoid confusion and doubt.

Impact and Purpose:

- ***Practical ROI tool*:** Clearly demonstrate ROI to show farmers if the innovation or change fits their financial reality.
- ***Decision-making aid*:** Put data in 'dollars and cents' format, helping farmers understand the potential financial risk and reward associated with adoption.
- ***Risk and reward breakdown*:** Provide insights into both the potential gains and the time it takes to break even, informing risk tolerance and investment decisions.

By presenting a clear and well-informed Economic Analysis, farmers are empowered to make informed decisions about adopting your research, paving the way for wider adoption and impact.

METHODOLOGY

Format and Choice:

- ***ROI versus Gross Margin*:** Choose the focus based on the context. ROI is ideal for comparing major investments and highlighting break-even points, while Gross Margin compares income and expenditure for smaller shifts in practice change.
- ***Time factor*:** Consider including time analysis alongside dollars, showing the impact on the existing enterprise over time. Net Present Value (NPV) and payback period can offer additional perspectives.
- ***Indirect impacts*:** Acknowledge and discuss indirect benefits and costs beyond direct financial results. These could include time/labour savings, farm efficiency, or environmental benefits.

Guidance notes:

A partial budget is a tool to evaluate the fiscal impact of a change in farming practice or adoption of a new technology. It works by comparing the Gross Margin of the new versus old farming practice to identify if there is a net benefit after adoption.
The template is designed to accommodate multiple columns of data; this can be configured for multi-year Gross Margins or compare several treatments to a control (current) practice.

The method is as follows:

1. Clearly define the change in farming practice and the question that the economic analysis is looking to answer and write in the 'aim' above the table. You can refer to this as you go to make sure you are answering the question you want to answer. The numbers will then give a definitive answer (based on the assumptions given).

2. Enter all extra income and extra costs that would result from adopting the change in farming practice.
3. Enter all income lost (foregone) and costs saved that would result from not continuing the existing farming practice.
4. Calculate the net difference in Gross Margin per year (new minus existing Gross Margin). A positive number means that the new farming practice is more profitable than the existing farming practice.
5. Define area (ha) that this investment is likely to be implemented across in the farm business.
6. Estimate the capital investment required for the change in farming practice to be implemented at full scale as this is used to drive the ROI calculation.
7. Return on Investment (ROI) is displayed as both the percentage return along with the ratio of return for every $1 invested.
8. Break Even is the number of years that it would take to get the money back on the capital investment required for adoption.
9. Detail any core assumptions that, if they were to change significantly, would change the figures that have been entered above.

FULL REPORT

The full partial budget table should be included in the Full Report as farmers/advisors will likely access this report to find detailed data to answer their specific questions about the practice or innovation. If there are multiple scenarios which require more than one Economic Analysis, add all of these to the report as the impact on profitability is a large consideration of farmers and advisors.

SYNTHESIS REPORT

Often in a Synthesis Report, the key information is summarised to attract the attention of the reader and draw them further into learning about the farming practice. There is often not enough room for a full partial budget table in this format, and so a summary table is more appropriate. This would include the sub-total columns and ROI information so farmers can identify the likely ROI and then peruse the figures to see where the difference originates. For example, ROI is higher because new practice costs are lower than existing practice.

Where the Synthesis Report is focused solely on the economic analysis (i.e. in a split report format), it may be appropriate to include the full partial budget table as the discussion will focus specifically on this.

INFOGRAPHIC

In presenting economic data in an Infographic, only the high-level data is required to encourage interest by the reader to look more closely at this topic. The average increase in Gross Margin and ROI are two key figures that should be included. If there is a large amount of variability in the ROI across many treatments in the trial, giving a range will help the reader to understand the risks involved with the new practice.

The risk and reward sections of the Infographic relate to the Economic Analysis and were the primary focus of farmers during the user testing process as they were keen to understand what they stand to gain and potentially lose by adopting the new farming practice.

7. DISCUSSION – WHAT DOES THIS ALL MEAN?

CONTEXT

The Discussion section brings your research to life by connecting the key results identified earlier into a coherent story that answers the question, problem, or opportunity that the research was addressing. While the Background section starts broad and narrows its focus, the Discussion works back from the 'answer' to discuss the implications of the research for adoption. While traditional research reports focus on the importance of the findings relative to the current body of knowledge, farmers are more practical in nature. Their focus is on how this new practice or technology will integrate into their farming business. From the farmer survey, the risk and reward attributes of the farming practice are of greater importance and emphasis should be on addressing these aspects of the new practice or technology.

METHODOLOGY

Generally presented as a series of well-constructed paragraphs around the key findings, this section has several key functions, and challenges.

Key Functions:

- ***Analyse and interpret*:** Go beyond 'what' to 'why' and 'so what', exploring the meaning and implications of your findings.
- ***Localise relevance*:** Connect your results to the specific context of your audience's area, providing practical insights for local application.
- ***Connect and contrast*:** Bridge your research to existing knowledge, highlighting similarities and differences with other studies.
- ***Acknowledge limitations*:** Be transparent about the research's limitations, addressing any gaps or missing data to avoid bias concerns.
- ***Plan for the future*:** Suggest directions for further research, building on your findings and inviting future exploration.
- ***Offer practical examples*:** Farmers are practical people. Show farmers how your research translates into real-world scenarios by demonstrating potential applications on their farms.

Challenges:

- ***Knowing what to include*:** Selecting relevant material for discussion can be tricky, especially after intensive project involvement. Focus on points that illuminate your findings and resonate with your audience.
- ***Justifying conclusions*:** Ensure your inferences are clearly drawn and supported by the data presented in the Results section. Avoid unsupported claims or biased interpretations.
- ***Clarity matters*:** Steer clear of excessive jargon and scientific complexity. Aim for clear, concise, and engaging language accessible to your audience.

The Discussion section can transform your report from a simple data dump to a meaningful conversation with your reader. It provides the context, interpretation, and practical takeaways that farmers need to understand and leverage your findings for real, on-farm impact.

FULL REPORT

The Full Report will often have around 1-3 pages of Discussion structured as a series of paragraphs. This is the place where the implications of the research can be fleshed out in more detail. The discussion in the Full Report is also where farmers who revel in all the details are likely to read, and so having sufficient detail here is of benefit. A well-constructed

Discussion section in the Full Report also shows that the author understands what the project sought to achieve and how this can be applied in a practical context for farmers.

When writing the Discussion section, it's helpful to consider the following points, which can act as a checklist. While not every point will apply to each result, it's worthwhile to think about each one:

1. Mention the main aim of the project or provide a summary of the key activities undertaken.
2. Review the most important findings, typically in order of significance, addressing whether they support the initial hypothesis or contribute to the main activities of the study, answer the research questions, or meet the research objectives.
3. Offer explanations for the findings and/or propose hypotheses about the findings, always backed by literature where possible.
4. Discuss the limitations that affect the relevance of the findings beyond the study conditions.
5. Consider the implications of the study, including generalisations from the results and their significance in the broader field.
6. Provide recommendations for future research.

(Adapted from Cargill, M., & O'Connor, P. (2009). Writing scientific research articles: Strategy and steps. Hoboken, NJ: Wiley-Blackwell.)

SYNTHESIS REPORT

Being a shorter format, the Discussion section of the report will need to be very succinct in linking the summarised data into a coherent story. A focus on the practical application of the new practice or technology is also of benefit to the reader.

INFOGRAPHIC

The Discussion section is not included in the Infographic as only the high-level, easy-to-digest and attractive information for farmers is being presented. The purpose of the Infographic is to attract interest and encourage further research in the topic by the reader.

8. MORE INFORMATION – WHERE CAN I FIND MORE?

CONTEXT

By investing in a well-developed 'More Information' section, you can transform your report from a standalone document into a gateway to a rich knowledge ecosystem, fostering further engagement and impact. This section can have links to previous work that has been completed by your organisation or key work completed on this topic in the region. It also guides the reader through the information available so that they can make an informed decision on whether to adopt the new farming practice or technology.

Note: It is important to have a clear link between the Full Report, Synthesis Report, and Infographic so that the reader can progress their learning through the various report formats.

METHODOLOGY

Unlock the full potential of your report's More Information section:

- ***Go beyond standard contact details*:** While providing your and your organisation's information is essential, don't stop there. Offer valuable resources to enrich your reader's experience.
- ***Craft a compelling call to action:*** Instead of a generic 'Contact Us', provide clear pathways for further exploration, enticing readers to engage with your resources and deepen their understanding.
- ***Become a knowledge hub*:** Share the tools, research, and additional data that support your work.
- ***Curate valuable resources*:** Don't overwhelm readers with everything; handpick the most relevant reports, links, and tools aligned with your audience's needs.
- ***Show diligence and connection*:** Highlight your awareness of related research and resources, demonstrating the broader context of your work.

Remember: It is about more than just providing contact details. By sharing your insights, resources, and connections, you empower your audience to delve deeper, learn more, and truly connect with the value of your work.

FULL REPORT

The Full Report format can hold the entire range of other work that is related to the project; information farmers or advisors can use to support their decision to adopt.

SYNTHESIS REPORT

The Synthesis Report will have a clear and direct link to the Infographic and the Full Report so that farmers can progress their learning to find the information they require. There may be an additional key reference that farmers can access to assist in making an informed decision on the suitability of a new farming practice/technology.

INFOGRAPHIC

The More Information section in an Infographic can be added in the footer to provide a direct link to the Synthesis Report and Full Report. Often these will be held on a project page on your organisation's website and can be included in the format of a direct link or a QR code.

9. ACKNOWLEDGEMENTS – WHO WAS INVOLVED?

CONTEXT

The acknowledgement section of any report ensures that the individuals and entities that contributed to the research project are honoured. This section also helps to build credibility, trust, and adds a level of humanity and depth to your report. Be sure to include the trial site hosts (if applicable).

Acknowledgment of the funding body should be included in all reports as this is often a requirement when completing project final reporting for said funding body.

METHODOLOGY

Acknowledgements should include:

- ***Proper funding and logos*:** Acknowledge financial support with correct formatting and logo placement.

- ***Legitimacy through citation*:** Linking to others' work strengthens your research and findings.
- ***Farmer host appreciation*:** Thank those who offered land, resources, and time for your project.
- ***Project support network*:** Recognise anyone who provided crucial assistance, like local agronomists.

Avoid:

- ***Omission bias*:** Don't forget key contributors like collaborating farmers, property owners, or those involved in different project phases.
- ***Location limitations*:** Consider acknowledging people beyond the report's end, integrating their contributions within the document itself.
- ***Last-minute fixes*:** Plan and write acknowledgements early to avoid errors and late changes.

Alternative approaches:

- ***Embedded mentions*:** Mention key project partners throughout the report where their contributions are relevant.
- ***Dedicated section*:** If warranted, consider a separate 'Project Team' section to highlight team members' roles.

Remember:

- ***No report is an island*:** Acknowledgements highlight collaboration and add value to your research.
- ***Respect and gratitude*:** Express sincere appreciation to everyone who made your project possible.

FULL REPORT

Acknowledge host farmers, any industry support, project funding provider, and any logos (often specified by funding provider).

SYNTHESIS REPORT

Acknowledgments in the Synthesis Report should be the same as in the Full Report.

INFOGRAPHIC

The Acknowledgements section in the Infographic is best kept on the bottom of the design. Keep in mind you have limited space, so ensure to use an appropriate sizing, leaving as much room as possible for what can be considered more critical information.

10. BONUS TIPS

EDITING

Editing questions to ask yourself while writing paragraphs:

- Have you cut extra, unnecessary words out of each sentence?
- Did you choose concrete words and terms instead of abstract ones when possible?
- Have you avoided technical terms your readers might not understand?
- Is your meaning clear to the reader?
- Can any long nouns or phrases be changed to simple verbs?
- Have you overused prepositions (e.g. to, of, in, on, by, with)?

- Did you vary the length of your sentences?
- Did you vary the beginnings of your sentences?
- Did you use the same word repeatedly throughout a paragraph?
- Can something be said easier or better with a picture?

INFOGRAPHIC AND VISUAL AIDS

Creating effective Infographics and visual aids involves a combination of design principles as well as understanding your audience. Here are some tips when distilling complex information, such as a technical report into a visual format:

- ***Understand the data:*** Before you can represent it visually, you need to understand the data you're working with. Visualisation of complex data can be a challenging task, having a solid understanding of the report focus and results will help you decide on the most important or appropriate data to use and visualise.
- ***Know your audience:*** Design your visual aids to be easily understood by your specific audience. Consider their background knowledge and what visual representations would be most meaningful to them.
- ***Simplicity is key:*** Avoid cluttering your visual aids with too much information. Keep the design clean and straightforward to focus on the key points.
- ***Highlight key findings:*** Use colours, bolding, or other visual cues to highlight the most important data or findings in your visual aid.
- ***Use appropriate charts and graphs:*** Distinct types of data are best represented with different types of charts.
- ***Consistent design:*** Use consistent colours, fonts, and styles throughout your visual aids. This not only makes your presentation look professional, but it also helps the audience follow along more easily.
- ***Label everything clearly:*** This includes the axes, legend, title of graphs, and individual data points or bars if necessary. Acronyms or scientific terms may need to be explained if used.
- ***Size matters:*** Make sure your text and images are large enough to be easily seen by your audience.
- ***Use high-quality images:*** If you're using images, make sure they are high-quality and relevant to your content.
- ***Test your visual aids:*** Before presenting or using your visual aids, test them with others in your organisation to make sure they are easily visible and understandable.

USING CANVA

Canva is a free and relatively simple to use online design tool that offers users the opportunity to create professional-looking visual media such as Infographics. The Infographics produced for the *Risk/Reward Project* were all created using Canva and while there are plenty of tutorial videos available online to help you get the most out of your designs, here are some useful starting tips:

- ***Create a company colour palette and text set:*** Use your logo to create a company colour palette and text set through the 'Brand' side tab for ease of formatting and consistency across all projects.
- ***Group objects:*** Click and drag over objects to 'Group' them, allowing you to move them together or adjust colours and text simultaneously. You can also use this feature to 'Download Selection' to make an Infographic into a PDF or JPG.
- ***Evenly space objects:*** To evenly space objects, click and drag the pointer over all objects and click 'position' on the top bar. The side pop-up menu will show 'Arrange'

→ ‘Space Evenly’ → click ‘Tidy Up’.

- ***Insert pictures and graphs:*** Insert pictures and graphs where appropriate. Icons are also useful to break up blocks of text.
- ***Find icons:*** Icons can be found on the side bar under ‘Elements’. Use the search bar to find graphics that fit with the project.
- ***Hold ‘ctrl’ when moving objects:*** Hold ‘ctrl’ when moving objects to stop them from snapping against grid lines if required.
- ***Use grids and frames:*** Utilise grids and frames to structure your design. They help in aligning elements neatly and maintaining a clean layout.
- ***Experiment with transparency:*** Adjust the transparency of elements to create depth and layering effects. This can make your design more visually appealing.
- ***Stick to a font hierarchy:*** Use a consistent font hierarchy to ensure readability. Typically, this means having a clear distinction between headings, subheadings, and body text.
- ***Align text properly:*** Ensure your text is aligned properly. Canva’s alignment tools can help you centre or justify text to keep your design balanced.
- ***Use high-quality images:*** Always use high-resolution images to avoid pixelation. Canva offers a wide range of high-quality stock photos.
- ***Play with colour contrast:*** Ensure there is enough contrast between your text and background to make your content readable. Canva’s colour wheel can help you find complementary colours.
- ***Keep it simple:*** Avoid cluttering your design with too many elements. A clean and uncomplicated design is often more effective and visually appealing.
- ***Save your work frequently:*** Although Canva autosaves your work, it’s a good habit to manually save your progress, especially before making major changes.