SYSTEMS PROJECT 2024

Cost of Living Crisis NZ - Food

Deliverables

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DELIVERABLES

The Aotearoa New Zealand Ministers of Treasury, Commerce and Primary Industries have requested your consultancy's report. They seek independent advice free from political influence, on impacts that can be made to curb the escalating food costs and the food insecurity/lack of resilience in the food supply chain in New Zealand. Urgency exists with regard to getting food cost rises for the consumer under control and better managed for the future, as these household expenses makes up a significant portion of the cost of living felt by the general population. Yet, any solution must also consider the impacts and contribution to food costs associated with various actors throughout the supply chain and Aotearoa New Zealand's reliance on the Primary Industries sector. Your solution (or a package of solutions) must address **both** of the problems the client has identified, and to do so whilst focusing on two of the four identified tiers of the value chain. They require a solution that is <u>desirable</u> to society, and <u>feasible</u> technologically, regulatorily, and in terms of Aotearoa New Zealand's own major role and position as a food producer. The solution must also be financially <u>viable</u> for the various people and stakeholders that would be impacted (DFV framework). It must address the Key Success Factors derived from stakeholder perspectives and assessments or analogues of input for long-list options assessment. Note that you are not expected to do primary research or actually interview stakeholders as part of this project. Further, your recommendation will need to be sufficiently environmentally and socially <u>sustainable</u>. You'll want to ensure a balance between a 'big-picture' overview whilst still providing sufficient detail for readers to understand the specifics of your recommendation and plan to deliver it. These subjects can become emotional quickly, and it is often difficult to distinguish between facts and language used to scare people into action. **Your analysis, judgement and recommendations should be well reasoned and emotion-free, drawing from factual sources and expert knowledge.**

Note: Remember that this is an educational exercise. Some content within the brief has been simplified. The information provided and the additional references should be a useful starting point for you to form a general understanding. You are welcome to extend the breadth of your research further as you wish, recognising though that this is not intended to be a primarily research exercise. The focus of the assignment is to think very broadly, leveraging the tools and frameworks we've covered, to identify solutions, improvements and innovations that form the foundation of your recommendations to Government (and the other important stakeholders.) Naturally, you will be required to make certain assumptions. **Where applicable, ensure all assumptions are clearly stated**.

1.0 Systems Project: Report + Video Presentation

Deadline: Friday 27 September 2024, 5 pm
Submission:

- Submit via Canvas as a PDF (one submission per team)
- Be sure to include a team *name*, not just team number
- Report file name: [Team Number]_Systems_Project_Report.pdf
- Reports will be assessed via Turn-it-in.
- Video link to be included in the appropriate section of coversheet template provided
- Team photo to be included in the appropriate section of the coversheet template provided.

1.1. Summary of Report Requirements (95% of Total mark)

Requirement	Details	Note
File name	[Team Number]_Systems_Project_Report.pdf	
Page limit	Up to 20 pages Page limit includes: charts and figures Does not include: references, coversheet, table of contents To support your analysis and recommendations, appendices up to an additional 20 pages are allowed to be attached	If you can convey all necessary information in less than 20 pages, that is also encouraged. Reports over the page limit will be penalised, and any pages over the limit will not be assessed.
Formatting	Use: • Headings for sections of work • Titles for all tables and figures • Page numbers Avoid: • Large un-broken sections of text.	Present your report clearly and professionally. Appropriate formatting makes information easier to read and conveys your message effectively.
Page format	• A4 only. • Portrait orientation, with A4 landscape acceptable to display charts etc. • Do not include special or non-standard pages, e.g. A3, etc. • Page margins must be standard (2.54cm)	
Font	Main body in an easy-to-read font (e.g. Verdana) • Font size: 11 pt or bigger • Line spacing: 1.15 to 2.0 • Headings, sub-headings, captions, etc., should be formatted appropriately.	

Referencing	APA 7th edition Use **APA 7th ed.** in-text citations and reference list at the end of your report. To reference the project brief, please use the following: "Systems Project Brief, Cost of Living Crisis NZ - Food, ENGGEN 403, 2024" See additional information for referencing generative AI in the References section below.	
Cover sheet	Must accompany your report. Must include: - Team name and number - Course name - Submission date - Team leader's name and contact info - Team members' names and email addresses - Link to your 3 - 4 min summary video - Team Photo Include permission of release of work on coversheet if team is happy to share with future years.	Coversheet template is located on the Systems report assignment page (Systems week)
Team Photo	Please submit a team photo (of as many members as possible) as part of the Cover sheet	Team photo (preferred in-person photo of team, sometime during Systems week) OR online (e.g., Zoom) photo (with cameras on) if necessary.

1.2 Summary of Video Presentation Requirements (5% of Total mark)

Assume that this video content and delivery would in practice be a key meeting with the relevant ministers and potentially Prime Minister and Cabinet. Explain, support, and justify your recommended proposal. This video presentation should summarise all key recommendations while also providing some compelling facts or supporting information. Typically, this type of presentation would include the following:

- An (often large) investment figure
- The outcomes that can be expected from the investment
- How the investment will be paid back (social and economic IRR)
- Time required for payback

Make your presentation crisp, professional and compelling. Focus on your audience and how you want to change the way they think, feel, or act on this issue. It is not uncommon that many attempts are required (along with sufficient team feedback) before arriving at a presentation that meets all expectations.

- Video submitted as a link to the video in the coversheet

Requirement	Details	Note
Time limit	Min: 3 min 0 sec Max: 4 min 0 sec	
Presenters	Presenting must be carried out by **one** member of your team. This can be any member and need not be a leader or sub leader.	
Software	Zoom, iMovie, Panopto or other video capture/editing tools are acceptable for creating your video presentation. You are welcome to use other software if you wish.	We will be marking based on the delivery and content of your recommendation. Our expectation is a high level of professionalism in regard to delivery, content, editing, and video quality.
Communication	Speaker MUST be visible throughout the presentation. The use of slides or other visual aids is NOT acceptable. Background music or visuals are not appropriate and not typical of this level of presentation. You can (optionally) use a short, simple header page in front of the video with the team name, or another identifier, if you wish.	Ensure the presenter considers: - Pace - Volume - Tone - Clarity of speech The effective use of these elements can make significant contributions to the quality of a presentation.

2.0 Additional Considerations

The following attributes of your report will also be considered when determining your final mark. Please refer to the Systems Project Rubric for more information.

Overall readability/presentation:
Consider the following questions before submitting your final report.
- Is the report consistent, and does this allow for easy reading?
- Does each section of the report build on the previous section?
- Are images useful, or have they simply been used to fill space?
- Has the report been structured well, and does that structure facilitate a logical flow as you read through the report?
- Is the report presented professionally?

3.0 Content

Your team is hired to consult on this problem. As such, ensure you provide your team's perspectives and well considered opinions rather than simply re-quoting material that you have reviewed and read. The intention is for you to demonstrate your quality Systems Thinking thought processes on what is a very complex "wicked problem" topic. Your goal is to complete this work to a high calibre, document it appropriately, and be confident in your position.

As a team, you must deliberate and decide amongst yourselves (using team structure but being sure to capture input from various participants from a wide range of experience, disciplines, and perspectives) how much is 'enough.' This includes deciding what additional research you may want to do and how much detail to include in the report. When reviewing data, you may be evaluating aggregated or averaged information. As such, when conveying key insights from the data to the reader, consider the application and limitations of such data.

Your report should present your recommendations to the reader, along with appropriate supporting evidence to justify your recommendations. Consider the main audience for your report, and articulate necessary high-level details clearly. Be selective of the detailed content you wish to include; irrelevant content detracts and limits the readers' ability to identify the report's key messages.

To determine what to include in your report, consider: 'Is this relevant to the identified Ministers, and Cabinet?' Assume that they have a good understanding of New Zealand's economic, wellbeing, and societal challenges and **need the key information to make an informed decision without getting overloaded with unnecessary detail.** In practice, a 20-page report would likely be summarised into something shorter for Cabinet, but all of the information relies upon solid data and support. Therefore, be sure to reference key information that supports the summary conclusions you present and to include key summaries and support in your appendices.

3.1 Iteration and Stakeholders – Copilot Query Results As Analagous Stakeholder Input

You will need to demonstrate that you have iterated between your Options and the key Stakeholders' Requirements. Iteration is one of the most important steps of the systems methodology. In practice, significant time in any systems review project would be allocated to identifying, meeting with, and eliciting views and priorities from stakeholders. If time allowed within the scope of the Systems Project, you would hold many meetings with your stakeholders to seek their comments and perspectives on a wide range of issues. Since this is not possible in our week-long Systems Project, you are allowed and encouraged to use the University of Auckland (UoA) closed subscription capabilities of Copilot, Microsoft's network-integrated generative AI tool. All students have access to this tool which requires a login via your UPI. You should also use online research, and possibly some UoA databases tools to consider, predict and validate what Stakeholder positions might be. The intention of gathering this information is to understand stakeholders' views as input to identifying Key Success

Factors at the outset of the process. As part of your supporting rationale for your options and recommendations, your team should present iterative options considered.

Note that it is not allowable or recommended to test options against stakeholders via Copilot, as this does not leverage or demonstrate the ST methodology, nor is it likely to produce reliable insights.   Be sure to note below guidelines for referencing Copilot. The University's guidelines for student use of Copilot and AI generally are here: https://www.auckland.ac.nz/en/students/forms-policies-and-guidelines/student-policies-and-guidelines/academic-integrity-copyright/advice-for-student-on-using-generative-ai.html

The Canvas Systems Project resources page has a link to UoA Copilot login.

3.2 General Use of Generative AI is Not Allowed

Though use of Copilot is allowed for Stakeholders as noted above, please do not use generative AI tools more broadly on the Systems Project. We acknowledge that there may be some value to using these in specific workplace or research situations in your future, but since the goal of the Systems Project is to help you understand the processes and use of Systems Thinking in practice, it is important you work through the steps independent of AI tools. Remember that your team is ultimately responsible for the content of the report and being sure it captures your original thoughts and intentions, and is of sufficient quality and integrity to support the case being presented. Even in the limited use of Copilot for Stakeholders, be careful of "hallucinations", incomplete information, or just plain bad data or content that is not fully formed.

4.0 Report deliverables

The suggested deliverables and the order in which they should appear are listed below. Note that this is a proposed list of sections and their possible order only; if you find that some sections are not relevant, wish to add others, or your content is best arranged differently, you are free to do so.

Cover sheet (with video link & Team Photo)
1. Executive Summary
2. The Strategic Case
    1. Project Background
    2. Problem Space
    3. Stakeholder Analysis
    4. Key constraints and assumptions
3. The Economic Case
    1. Initial options assessment (DFV)
    2. Long-list Options Assessment
    3. Narrowing down to the short-list
4. The Financial Case
    1. High-level Cost-Benefit Analysis
    2. Benefits and Societal Considerations
    3. Preferred Way Forward
5. The Management Case
    1. High-level Implementation and Project Plan
    2. Expected Outcomes and Measures of Success
    3. Funding
6. Recommendations and Conclusions
7. Appendices (including example of application of a Systems Thinking tool to analysis of the problem space. See further detail in Appendices section below.)

A brief description of each of the deliverables is provided on the following pages. Please read each section description carefully and ensure that all required sections and sub-sections are complete before submission.

Please note that the inclusion of tables/figures in the report is welcome. Any tables and figures should be captioned and referred to at least once in the body of the text.

4.1 Executive Summary

The executive summary is the most critical part of your report and should address **in brief** the most important details of your report. This includes its purpose, methods, recommendations, preliminary economics and key figures. It should be interesting and easy to read. The items raised do not have to be in the same order that they occur within your report.

Typically, an executive summary is ~500 words. It should not be longer than a single page.

The executive summary gives the reader the first impression of your entire report. In some cases, it is the only part of the report that the Ministers or Cabinet might read. Make a strong impression!

Important: Remember to conclude your executive summary with your proposed recommendations/actions moving forward. If a reader only has time to read the executive summary, you want to give the clear impression that you have thought about 'what next.'

4.2 The Strategic Case

You are applying the skills you have developed across ENGGEN 204, 303 and 403 to meet a need. This portion of the report should describe the project context to the reader. What is the need?

Note: While it may seem strange to re-state the need back to your client, it is good practice. Learning to state what you and your team are working on to the client ensures that all parties are on the same page.

4.2.1 Project Background

The purpose of this section of the report is to present a clear **introduction** to the project, background, objectives and aims. It should contain a brief overview of the reasons why the project came about. Some background information has been provided for you in this brief, along with references to additional resources.

4.2.2 Problem Space

Identifying the problem/opportunity and clearly articulating it is an important skill. It communicates to your clients that you have taken the time to fully appreciate their needs. Similar to the project background, information related to the initial problems is outlined in the brief. You are free to use the information available to inspire your problem statement; however, you must refrain from a direct copy/paste. A high-level problem analysis must be conducted in this section to investigate the root cause of problems and/or cause-and-effect relationships between different elements of the problem. At least **two** specific problem statements should be generated. There should be at least one for each of the high-level problem spaces highlighted in the brief: *escalating food cost* and *food resiliency and security.*

4.2.3 Stakeholder Analysis

This section should highlight the key stakeholders that have an interest in the expected outcomes of the project. Read over the information provided and establish all key stakeholders. List them and briefly describe their role, interest, and influence in the project. Given the scale of this project, you are likely to identify many stakeholders. Recall the different stakeholder analysis matrices that you will have used in previous group projects and discussed in class. Use a similar system here to clarify who your key stakeholders are.

Once you have established who the key stakeholders are, **briefly** describe what your engagement strategy may have been if time had been available for this key activity beyond what you've been able to learn beyond and online research and AI tools.

Key Stakeholder Requirements and Key Success Factors

This section aims to describe the requirements that must be delivered for the project to be considered a success. These are the key stakeholder requirements. Take the stakeholders identified in your stakeholder analysis and list their requirements. Requirements can include

topics such as sustainability, profitability, and safety. It is important to highlight shared/common requirements and those which may be conflicting.

It is suggested that you describe stakeholder requirements as falling into one of three categories.

Necessary: Requirements that MUST be met for the project to be successful. Note that this list may have to be modified as you progress. *If major stakeholders have conflicting requirements, some compromise might be required.*

Nice-to-have: These requirements add value to the final deliverable but are not necessary for the project to be considered 'complete.'

Aspirational: Requirements that a stakeholder might identify but fall outside your project definition scope.

The body of the report should provide the necessary requirements and a supporting discussion on common and conflicting interests. A requirements table containing the Necessary, Nice to Have, and Aspirational Requirements for each stakeholder should be provided in the appendix.

Key Success Factors:
From the requirements, narrow down to a list of 4-6 key success factors. These are attributes that an option (or package of option components) must achieve in the initial assessment for it to be considered for the shortlist. The key point is that they are key to the project, not just desirable, and are set at a level that does not preclude important options at an early stage of the analysis.

4.2.4 Key constraints and assumptions
For every project proposal, there will be numerous constraints and assumptions.

Constraints: Limitations imposed on the proposal from the outset. These can include constrained resources such as time, money, etc. Constraints may also include geographic constraints, such as restricting this project's boundaries to a particular region.

Assumptions: These are factors that have been treated as true or certain, without proof. If things are not certain to happen, treat them as an assumption. For example, you may assume that particular organisations will partner with you for this proposed project.

Capture these constraints and assumptions in whatever format you deem suitable. For details that you feel need further explanation, a small written summary is acceptable.

4.3 The Economic Case
This section of your report serves two main functions.
- It communicates a wide range of options – a 'long-list.'
- It should undertake a 'best-fit' trade-off of some sort, where the 'long-list' of generated options is narrowed down to at least two shortlisted options; **in addition, don't forget the do-nothing option.**

4.3.1 Long-list Options Assessment
The purpose of this section is to demonstrate to the reader that you have assessed a broad range of possible options or alternatives. Your stated options should initially be wide-ranging (a long-list) but within the realm of possibility (i.e., may be new to your application but should not come from "science fiction", undeveloped technology, or implausible regulatory, legal, or political situations). Options should be insightful, with each offering some merit towards achieving the requirements, whether innovative or proven. The advantages and disadvantages of each option should be clear. Further, you should clearly demonstrate what decision-making metrics/process you employed to narrow down your options and determine the best course of action moving forward.

You may think about **packaging** some of your long list options together, as some options may address only one or two of your problem statements, not all of them, e.g. do minimum, do something, do maximum, etc.

4.3.2 Narrowing down to the short-list
To narrow down to the short-list, teams should apply two frameworks, either in series or in parallel. The first framework is applying the Key Success Factors (KSF). Any option which fails to meet more than one KSF or can only partially meet two KSF should be discounted and not carried forward. For a project of this magnitude, you may find that none of the options fully satisfy all of the 'necessary' stakeholder requirements. As such, you will need to think carefully about whatever options you carry forward into your short-list for further investigation. You should clearly articulate which necessary stakeholder requirements were not fully met and why you still feel the solution is appropriate.

The second framework is the Desirable, Feasible, and Viable (DFV). Briefly describe the extent to which each option is Desirable, Feasible, and Viable. Viability should include a very high-level thought about cost. Exact numbers are not required (or appropriate in this context), but estimating if an option has costs and benefits on the order of $10 million, $100 million, or $1 billion, etc., should be done. An option should not be carried forward if it is not technically feasible.

From these two frameworks, you will identify the shortlist. It is possible that options may need to be combined in order to pass both KSF and DFV frameworks. Shortlisted options may not meet every single criteria set forth but will need to meet most.
Note: Remember that the client/audience is NOT interested in the details of the long list in the report itself. Rather, they are interested in the range and breadth of the considerations in the long-list(s) and the critical criteria used to simplify to the short-list. Options do not disappear using these screen tools but are eliminated based on the screening criteria.

In addition to the options generated, teams should include a 'do-nothing' option. Maintaining the status quo is always an option (as spending nothing to gain nothing is better than spending money to gain nothing, if your options do not provide enough economic and social benefit). This option should be included in the assessment of your options. It provides a benchmark to determine the relative value of each option under consideration. It should be noted that 'do-nothing' is a valid conclusion to arrive at, and many projects are stopped at this stage upon the realisation that doing nothing is the best answer. This option must be included in the short-list.

Short-list options justification

Based on this analysis above, the recommended short-list for further assessment in the detailed business case can be listed here. In this section, describe in detail the short-listed options (two or more, in addition to the do nothing).

4.4 The Financial Case

In your financial case, you will be determining a high-level set of financials to be reported to the client Ministries for your shortlisted options. Remember, you will have monetary benefits and costs as well as non-monetary costs and benefits that are also broken down into qualitative and quantitative data. Monetary benefits should be analysed via the social CBA. Qualitative and quantitative non-monetary costs and benefits should be discussed narratively in the benefits and societal considerations.

4.4.1 High-Level Cost-Benefit Analysis

Various decision-making tools have been covered in class. This includes the development of a cost-benefit analysis to determine the economic viability of implementing a given solution. This report section should demonstrate to the reader that you have considered the financial implications of each of the short-listed options. Numbers should be very high-level; you do not have time to do line-by-line calculations. Think about how you will break down your large project into digestible chunks and estimate these costs to the nearest millions or ten million dollars. When determining what level of detail to add, consider whether the Ministers and Cabinet would find the detail useful or necessary.

4.4.2 Benefits and Societal Considerations

We have covered the Living Standards Framework and the four capitals in detail in class. This, as well as the He Ara Waiora framework, should be used to assess the impact of your proposed options. Remember, if the country cannot afford the financial capital, the other three capitals will not compensate for this lack of funds. Also, remember that any money spent on this proposal will mean another equally important or perhaps more important proposal cannot be pursued as the government has limited financial resources.

This report section should assess and identify the societal benefits and costs for each option using the frameworks mentioned above. This, along with your cost-benefit analysis, will be used to determine your 'Preferred way forward' in the next section. As a start, you could consider sustainability, cultural diversity, treaty partnership, and health and safety, but this is

only a starting point. You should expand on this if one of your options has impacts outside of those mentioned above.

4.4.3 Preferred Way Forward
Using the analyses in previous sections, identify and justify a preferred approach. What further considerations should be taken into account?

Alignment with Current Plans

Systems projects do not exist within a vacuum. They are part of wider plans for the country. You should discuss how your final preferred way forward aligns with some of the activity already underway by the Commerce Commission relative to the grocery sector, the Government's MPI Strategy, and the Climate Adaptation Plan. You may also discuss alignment with any other plans or strategies identified throughout your research and analysis.

4.5 The Management Case
The purpose of the Management case is to establish the activities and resources needed to make the project a reality.

4.5.1 High-level Implementation and Project Plan
As you have learned through this semester and in ENGGEN 303, various tools exist that aid with the planning of project execution.

For a project of this magnitude, many 'moving parts' must be identified and coordinated accordingly. As such, when identifying your final solution, the final deliverable should be split into a series of phases and/or sub-deliverables. Also, consider the different timings and rollouts of your solution. What can be done in the short and medium term, and what does this mean for your project timeline? This will allow the reader to understand at a high level how you propose to implement your solution. As well as the approximate period you feel this can be realistically accomplished within. Be sure to include a timeline for your preferred way forward, noting key milestones and outcomes.

4.5.2 Expected Outcomes and Measures of Success
An important aspect of your final solution will be the extent to which you are able to articulate the expected outcomes. You must demonstrate to the reader that your team has established a reasonable methodology for capturing real project outcomes and comparing these outcomes against projected outcomes. For this section, you must clearly articulate 1) what are the anticipated outcomes of your proposed solution (e.g. Are these outcomes clear and measurable, "S.M.A.R.T"?) and 2) what metrics have you identified that will be used to measure the real outcomes. These metrics will help to determine whether the project is a success or a failure.

Measures of success are the key performance indicators that you measure your project success against, which are related to the Key Success Factors. For example, are you within the projected budget and timeline? Have you met certain quality parameters that you may have set, and are your stakeholders satisfied? Have the key milestones along the project timeline been achieved as planned?

4.5.3 Funding
In this section, you should also indicate how your solution will be funded. As stated previously, new government expenditure should be either within specifically identified existing budgets, shifted from other Government budgets with justification as to impacts created, or funded by new borrowings. If within the other Government budget categories, you should indicate which currently funded programmes will be scaled back. If funded by new borrowings, this should consider other initiatives competing for new funding and the impact of interest and debt repayment required. Also, be sure to consider, identify and comment on the impact on GDP and other important overall metrics as taught in the lecture.

4.6 Recommendations and Conclusions
Clearly articulate your recommended course of action for the reader. Given the magnitude of such a project, it is important that you communicate your solution in a manner that the reader can understand. For example, a series of high-level steps may be the best method for communicating your recommended solution. Where necessary and helpful, draw on content from earlier report sections to reinforce how you arrived at recommendations and justify your decision-making.

After detailing your final recommendations, you will then need to form a strong concluding statement that summarises the key points you want your reader to remember.

5.0 References

References should follow the format specified in the guidelines. As use of CoPilot is allowed for Stakeholders as outlined, it is important that you **acknowledge your use** of Copilot in the references.
You should include the following information when referencing generative AI content:

• Generative AI system (e.g. Copilot, Chat-GPT, Claude, Google AI etc.)

• Company (e.g. OpenAI URL of the AI system)

• the web address of the system

• A brief description of how you used the tool
(e.g. edited/corrected/translated/planned/brainstormed)

• Date.

Example Referencing
This work was corrected using Copilot (Microsoft, https://copilot.microsoft.com/) on 30 July 2024.

Important: Save a copy of the transcript of your questions and responses from the generative AI tool.   This could perhaps be managed by subteams and captured in a collaboration tool.

• Team members should consider [taking a screenshot](#), then right click and select Save as to save the webpage file. It is NOT necessary to submit these transcripts or screenshots as part of your deliverable, but they should be retained by the team to respond to any queries from markers. The teaching team acknowledges that the use of generate AI tools across the team for a project of this magnitude is complex and evolving.

Source: [Acknowledging the use of AI and referencing AI](#) 2023 by University College London

Citing generative AI
Failure to reference externally sourced, non-original work can result in Academic misconduct.
References should provide clear and accurate information for each source and should identify where they have been used in your work.
Content from generative AI is a nonrecoverable source as it can't be retrieved or linked.

Citing generative AI content for specific referencing styles:

Reference style

APA 7th
Based on [APA Style](#) guidance.
In-text
Author of generative AI model, Year of version used
Example:
(OpenAI,2022)
OpenAI(2022)
Reference list
Author of AI model used. (Year of AI model used). *Name of AI model used* (Version of AI model used) [Type or description of AI model used]. Web address of AI model used
Example:
OpenAI. (2022). *ChatGPT* (Dec 20 version) [Large language model]. https://chat.openai.com/

6.0 Appendices

Up to 20 pages are allowed and should including supporting information (long lists, analyses, detailed financial models, etc.) that is cited in your report. Your appendices must include a short section (1-2 pages) that captures a diagram, chart, table or other example as to how you specifically used one of the tools of Systems Thinking to understand, evaluate, and define the problem. For instance, we've reviewed causal loops, mind maps, leverage points, stocks and flows, mental models, etc. You'll want to use a variety of these tools in understanding the problem, as well as developing and considering potential solutions. In this section of the appendices, you need only show **ONE** of these tools applied.

7.0 Team Photo

Include a team photo that meets the guidelines of the specifications provided as the final page of the coversheet. Please include or delete language allowing us to use the Team Photo for

course or Faculty of Engineering purposes. This is a separate designation to the language allowing us to use your report for teaching purposes. You'll likely recall our use of some team photos within the lecture materials. This can help in our story telling and create a good understanding of the nature and collaboration amongst teams. Photos will not be identified with names. However, be assured that it is entirely fine to restrict use of your teams' photo if any team members are uncomfortable to share it.

8.0 Peer Assessment

Detailed instructions on the peer assessment will follow. Following submission of the team's reports, you will be required to fill in a short questionnaire via TEAMMATES describing your teammates' contributions. This allows us to determine fair individual grades for each team member. The peer assessment is worth one mark to the student writing it but collectively decides the mark of the student in question.

9.0 Workload and Student Support

The effort required to complete this report is estimated at 40 hours per student during Systems Week. Team leadership will do their best to work around commitments as necessary, and these should be informed by student participants *prior to* the start of the project. Note that everyone is responsible to contribute ~40 hours to the project, regardless of any work schedules, Part IV projects, other courses, etc. so manage your time accordingly and consider taking time off from work as necessary. Keep in mind that all students were informed of the Week 9 Systems Project and 40-hour requirement during the first week of the semester.