SOUTH STAR
CONSULTING

CITY OF MARION:
FINAL CONSULTATION REPORT

AUTHOR: SOUTH STAR CONSULTING
DATE: 28/06/19

CONTENTS PAGE

1.0 EXECUTIVE SUMMARY 5

2.0 INTRODUCTION 7
- 2.1 Our Client 7
- 2.2 Project Objectives 7
- 2.3 Deliverable 1 7
- 2.4 Deliverable 2 7

3.0 KEY RECOMMENDATIONS 8

4.0 DELIVERABLE 1: RESEARCH OUTCOMES 9
- 4.1 Research Outline 9
- 4.2 Research Outcome Overview 10
- 4.3 Geographic Information System (GIS) Map Structure 10
- 4.4 GIS Map Attribute Variables 10
- 4.5 South Australian Smart Cities Ecosystem Map 11
- Figure 1: South Australian Smart Cities Ecosystem Map 11
- 4.6 Council Smart City Plans 13
- Identification of Smart City Strategies and mentions of a 'Smart City' within Strategic Plans are outlined in Figure 2. 13
- Figure 2: South Australian Smart Cities Ecosystem Map 13
- 4.7 Survey Findings 14
- Figure 3: Resident Status and Age 14
- 4.8 Survey Findings: Issues Faced by Residents & Visitors 15
- Figure 4: Issues Faced by City of Marion Residents & Visitors 15
- Figure 5: Issues Faced by City of Marion Residents 16
- Figure 6: Primary Concerns of City of Marion Residents & Visitors 16
- Figure 7: Issues Faced by 18 - 34-year-old Residents & Visitors 17

5.0 DELIVERABLE 1: MAIN IMPLICATIONS OF THE RESEARCH OUTCOMES 18
- 5.1 South Australian Ecosystem Map Analysis 18
- Figure 8: Count of Innovation Beneficiaries 18
- Figure 9: Status Percentage Chart 19
- Figure 10: Smart City Category by Percentage 20
- Figure 11: Energy Efficiency Focus 21
- Figure 12: Data Percentage Chart 21
- 5.2 Trends 22
- Figure 13: South Australian Ecosystem Map Trends 22
- 5.3 Gaps 23
- Figure 14: South Australian Ecosystem Map Gaps 23

6.0 DELIVERABLE 1: STRATEGIC RECOMMENDATIONS 25
- 6.1 Develop a Framework to Prioritise the Value of Chosen Innovations 25
- Figure 15: Example of a Scatter Chart 25
- 6.2 South Australian Ecosystem Map Management 26
- Figure 16: Management of the South Australian Ecosystem Map 26
- 6.3 Recommendation for Waste Management 27
- Figure 17: The Bigbelly Smart Bin 27
- 6.4 Recommendation for Smart Lighting 28
- 6.5 Visitors as an Opportunity for the City of Marion 29

7.0 DELIVERABLE 2: RESEARCH OUTCOMES 30
- 7.1 What is Open Data? 30
- 7.2 What Data is being made Open? 30
- 7.2.1 Data.SA 31
- Figure 18: Data.SA Categories 31

7.2.2 Location SA 32
Figure 19: Location SA Map Viewer 33
Figure 20: Spatial Representation on Location SA 33
Figure 21: AgInsight Land for Potential Apple Harvest 34
Figure 22: "Get more data" Groundwater Salinity Statistics for Apple Harvest 35
7.2.3 DataStart 35
7.3 Data for People 35
7.4 Data for Business 37
7.5 Data for Commercial Reuse 38
7.6 How is Data Currently Published? 39
7.6.1 Advantages of Publishing in Data.SA 40
7.6.2 Data Formats 40
Figure 23: Open Data Formats for Publishing 40
Figure 24: 5-Star Deployment Scheme for Open Data 42
7.7 Engaging with Open Data – Education & Promotion 43
7.7.1 Findings Council Interaction 43
Figure 25: How often do you access information from your local council? - All Respondents 43
Figure 26: How often do you access information from your local council? - Marion Residents 44
Figure 27: How do you get information from your council? - Marion Residents 45
Figure 28: How do you get information from your local council? (18-34-year-olds) 45
Figure 29: How do you get information from your local council? (35 – 54-year-olds) 46
Figure 30: How do you get your information from local council? (55+ year-olds) 47
Figure 31: What do you believe council could use to better connect with you? 47
Figure 32: What do you believe council could use to better connect with you? (55+ year-olds) 48
7.7.2 Open Data Engagement 49
Figure 33: Roles of Governments in Open Data 49

8.0 DELIVERABLE 2: MAIN IMPLICATIONS OF THE RESEARCH OUTCOMES 53
8.1 Opportunities for Data Governance with Data.SA 53
8.2 Council-Driven Open Data Opportunities 53
8.3 Creating Value with Data 54
Figure 34: Focus Points to Create Value 54
8.4 Commercialisation of Data 55
Figure 35: Traditional Commercialisation Model 55
Figure 36: Open Data Commercialisation Model 56

9.0 DELIVERABLE 2: STRATEGIC RECOMMENDATIONS 58
9.1 Keeping Data Open 58
9.2 Use Data.SA 58
9.3 Recommendation: What data should the City of Marion open? 58
9.3.1 STEP 1: Gain Experience with Low Risk Data 58
9.3.2 STEP 2: Service the Needs of People & Business 59
9.3.3 STEP 3: High Involvement & High Value Data 59
9.4 Publishing Open Data 62

10.0 CONCLUSION 63

11.0 REFERENCES 64

12.0 APPENDIX 66
1.0 Dataset of Smart City initiatives facilitated by 18 Metropolitan Councils and Innovation Hubs – section screenshot 66
2.0 Interactive Geographical Information System (GIS) Map 66

This is the first layer of information on the GIS Map **66**
2.1 Innovations facilitated by Council 67
2.2 Innovations facilitated by Innovation Hubs 67
3.0 South Australian Ecosystem Map – Expanded Information **68**
4.0 Description of South Australian Ecosystem Map Categories **69**
5.0 Data.SA Open Datasets **70**
6.0 Data.SA Framework **71**
7.0 What Data to Open Recommendation (Step 1) **74**
8.0 What Data to Open Recommendation (Step 2A) **75**
9.0 What Data to Open Recommendation (Step 2B) **76**
10.0 What Data to Open Recommendation (Step 2C) **77**

LIST OF FIGURES

Figure 1: South Australian Smart Cities Ecosystem Map 11
Figure 2: South Australian Smart Cities Ecosystem Map 13
Figure 3: Resident Status and Age 14
Figure 4: Issues Faced by City of Marion Residents & Visitors 15
Figure 5: Issues Faced by City of Marion Residents 16
Figure 6: Primary Concerns of City of Marion Residents & Visitors 16
Figure 7: Issues Faced by 18 - 34-year-old Residents & Visitors 17
Figure 8: Count of Innovation Beneficiaries 18
Figure 9: Status Percentage Chart 19
Figure 10: Smart City Category by Percentage 20
Figure 11: Energy Efficiency Focus 21
Figure 12: Data Percentage Chart 21
Figure 13: South Australian Ecosystem Map Trends 22
Figure 14: South Australian Ecosystem Map Gaps 23
Figure 15: Example of a Scatter Chart 25
Figure 16: Management of the South Australian Ecosystem Map 26
Figure 17: The Bigbelly Smart Bin 27
Figure 18: Data.SA Categories 31
Figure 19: Location SA Map Viewer 33
Figure 20: Spatial Representation on Location SA 33
Figure 21: AgInsight Land for Potential Apple Harvest 34
Figure 22: “Get more data” Groundwater Salinity Statistics for Apple Harvest 35
Figure 23: Open Data Formats for Publishing 40
Figure 24: 5-Star Deployment Scheme for Open Data 42
Figure 25: How often do you access information from your local council? - All Respondents 43
Figure 26: How often do you access information from your local council? - Marion Residents 44
Figure 27: How do you get information from your council? - Marion Residents 45
Figure 28: How do you get information from your local council? (18-34-year-olds) 45
Figure 29: How do you get information from your local council? (35 – 54-year-olds) 46
Figure 30: How do you get your information from local council? (55+ year-olds) 47
Figure 31: What do you believe council could use to better connect with you? 47
Figure 32: What do you believe council could use to better connect with you? (55+ year-olds) 48
Figure 33: Roles of Governments in Open Data 49
Figure 34: Focus Points to Create Value 54
Figure 35: Traditional Commercialisation Model 55
Figure 36: Open Data Commercialisation Model 56

1.0 EXECUTIVE SUMMARY

The following report will outline the market research, analysis and subsequent recommendations for the Smart South venture for the City of Marion, as conducted by South Star Consulting. A Smart City may be defined as ***"An urban area that uses different types of electronic data collection methods to supply information used to manage resources";*** as derived from (Aliga 2018). However, in our understanding, the City of Marion believes that a Smart City is much more than what this statement entails. The City of Marion has requested that we provide a more practical and holistic approach to our recommendations for best practices.

To develop an understanding of the current Smart Cities environment, we conducted an environmental scan and showcased the results in an interactive Geographical Information System (GIS) Map. From this research, we identified **129 Smart City innovations** within Metropolitan South Australia.

Through analysing the trends of the South Australian Ecosystem Map, we found that **43%** of all innovations within the state pertain to **Energy Efficiency**, including **Electric Vehicle Charging**, **Smart Energy** and **Smart Lighting**. We identified gaps in this ecosystem with few innovations and initiatives relating to Traffic Management, Waste Management, Smart Parking, Public Safety and Modern Ageing.

We conducted a survey with the residents and visitors of Marion to grasp a more rich understanding of the wants and needs of the people. Our survey collected 75 responses from individuals predominantly located around the Westfield Marion Shopping Centre. From this survey, we found that **Parking**, **Traffic** and **Transport** were the most common pain-points for Marion's people; these issues of which highlight a serious issue with mobility within the City of Marion.

Recommendations have been provided regarding the management of the South Australian Ecosystem Map, and for initiatives pertaining to **Smart Waste Management**, **Smart Lighting**, in conjunction with our survey, a recommendation regarding **visitors as an opportunity** for the City of Marion. These recommendations can be found in the Strategic Recommendations section for Deliverable 1.

When delving into the concept of Open Data, we gathered that to better engage with the community, create transparency, improve the lives of residents and assist businesses in sparking economic activity, the City of Marion must release as much data as possible to the

public. The purpose of open data is to serve the people. The use of open data is what creates intrinsic value within a community, and this is the fundamental ambition of open data. It is vital to understand that open data should not be commercialised.

Data.SA is the South Australian Open Data portal utilised by institutions to release data to the public. There are various resources and frameworks within Data.SA that will assist the City of Marion with appropriately and effectively disclose data; this is our recommendation for data governance for the City of Marion. We found that the most common datasets found on Data.SA pertain to **Dog Registrations** and **Waste Management**. There are many opportunities for the City of Marion to release data to the public. The recommendations regarding Data.SA and open data for the City of Marion can be found in the Strategic Recommendations section for Deliverable 2.

2.0 INTRODUCTION

2.1 Our Client

Our client, the City of Marion, is a local government area located in the south-west of Adelaide, and is home to over 90,000 residents. The City of Marion have requested our services in the implementation of their Smart Cities Strategy, expressing further clarity around the environment and the efficient application of innovations.

2.2 Project Objectives

Within this Smart Cities project, the City of Marion engages two overarching objectives:
1. To improve the quality of life for residents through Smart City innovations.
2. To implement Smart City innovations to stimulate and nurture economic development in the region, allowing businesses to develop and thrive.

2.3 Deliverable 1

Considering these objectives, our team has derived recommendations on Smart City practices based on the development of a South Australian Smart Cities Ecosystem Map, GIS Map, and Marion resident and visitor survey. From our findings, and as requested by the City of Marion, we have selected the key Smart City categories to develop our vision for the City of Marion. This vision will be conveyed in subsequent sections of the report.

2.4 Deliverable 2

Our team has developed recommendations pertaining to the management of Open Data, as well as Open Data opportunities that will produce optimal value for the City of Marion. Value creation will be outlined through defining the data needs of people and business, and exploring the role of commercialisation in the Open Data value chain. Finally, effective publishing and promotional methods will be recommended to ensure data is consumable and accessible to residents and business. This second deliverable will be addressed in the latter part of the report.

3.0 KEY RECOMMENDATIONS

The **South Australian Ecosystem Map** is a tool that, to be effective, must be updated continuously. A 6-Step process is suggested to manage the update of this tool. The success of the Ecosystem Map tool depends on the council's ability to keep it updated. As the technological environment quickly changes as new technologies and innovations are developed, the City of Marion should be able to periodically input new information into the Ecosystem Map. Further discussion on this recommendation is in **Section 6.2** of the report.

It is recommended that the City of Marion utilise Smart Bins, like the Bigbelly, for more effective **Waste Management** practices. This recommendation stems from our research around the South Australian Ecosystem Map. This has been recommended as our research suggests that it is feasible, as other councils are already implementing this initiative. Further discussion on this recommendation can be found in **Section 6.3** of the report.

It is recommended that the City of Marion implement **Smart Lighting**. This recommendation also stems from our research around the South Australian Ecosystem Map. This has been recommended as our research suggests that it is feasible, as other councils are already implementing this initiative. Further discussion on this recommendation can be found in **Section 6.4** of the report.

It is vital that the City of Marion strive to **publish as much open data as possible**, to better serve the community, create transparency and spark economic activity within the region. Further detail for this recommendation can be found in **Section 9.0** of the report.

It is recommended that the City of Marion utilise **Data.SA** for data governance to effectively and appropriately release data to the public. Further discussion for this recommendation can be found in **Section 9.0** of the report.

4.0 DELIVERABLE 1: RESEARCH OUTCOMES

4.1 Research Outline

To define the scope of our South Australia Ecosystem Map, our team focused on gathering information on the 18 Adelaide Metropolitan Councils that surround Marion, as well as 4 key Innovation Hubs in South Australia.

• 18 Adelaide Metropolitan Councils

When examining the 18 Adelaide Metropolitan councils, our team were interested in finding council-driven Smart City innovations, as well as the most prominent business-driven innovations facilitated within each council. Council websites, business websites and relevant news articles were analysed to identify and understand the nature of these innovations.

While the council and local government websites provided varying amounts of information into their Smart City innovations, it became evident that these councils did not always provide information on the Smart City initiatives proposed for planning, development and implementation. In these cases, councils were contacted directly to conduct research into the Smart City initiatives being prepared out of the public eye. Through this research, we also identified whether these councils hold a Smart City Strategy or Plan to implement these innovations.

• 4 Innovation Hubs

Through initial web-based research, our team identified four key Innovation Hubs within South Australia that highlighted Smart City innovation and infrastructure as a key feature within their precincts. These four Innovation Hubs consist of:

• Tonsley Innovation Precinct - Marion
• Lot Fourteen – Adelaide CBD
• SA Innovation Hub - West Torrens
• Innovation House - Mawson Lakes

Within these hubs, our team focused on identifying the existing business-driven Smart City innovations primarily facilitated by businesses associated within each precinct. Site visits were conducted within each of the established Innovation Hubs, and where possible, business executives and innovation officers were interviewed to gain further insight into the Smart City innovations currently being developed and implemented.

4.2 Research Outcome Overview

Through our research, we have identified **129 Smart City initiatives** in South Australia. For each identified innovation, a series of variables have been outlined and analysed to form several key research outcomes; including an Interactive Geographical Information System Map, a South Australian Smart Cities Ecosystem Map, and derived research findings. Each of these outcomes are discussed in following sections of the report.

4.3 Geographic Information System (GIS) Map Structure

Through research, we found an online GIS solution to best illustrate our findings, providing a comprehensive snapshot of Smart City innovations across the 18 Metropolitan councils and 4 Innovation Hubs in South Australia. A dataset of identified 129 initiatives were entered into the GIS software, “Batch Geo”, which then generated an interactive pin map using location data; in this case, the addresses of the councils and Innovation Hubs. Location data was then coupled with attribute data of each Smart City innovation; including Innovation Title, Smart City Category, Technology Providers and Partners. The purpose of this GIS Map is to assist the City of Marion in understanding the innovations at play within the South Australian Smart Cities environment.

The partnership of both spatial and attribute data makes the GIS Map an effective tool for the council to continuously feed data of Smart City initiatives into the system to analyse Smart City trends, gaps and opportunities. The platform maintains the added security of a password protecting the data, limiting the number of users accessing information. The platform also allows for easy exportation of data into PDFs and mobile applications, which could potentially benefit the council decision making processes.

4.4 GIS Map Attribute Variables

For each identified innovation, a series of variables have been outlined to provide a distinct summary of **(1)** What the innovation is, **(2)** Who it benefits, and **(3)** How it works. These variables were compiled into an Excel spreadsheet as shown in **Appendix 1.0.**

A description of each variable is outlined below:

- **Location:** Identification of the council or hub the innovation is part of.
- **Innovation Title:** The name of the innovation.

- **Smart City Category:** The Smart City category the innovation belongs to. For example, Smart Parking, Electric Vehicle Charging, etc.
- **Users:** Whether the innovation benefits council decision making, Residents, Businesses or Visitors travelling through Marion.
- **Status:** If the innovation is in the phase of Planning, Development, Trial or if the innovation is already Implemented and in use.
- **Technology Providers:** Companies that provide the technology and infrastructure to facilitate Smart City innovations.
- **Key Partners:** Partners and collaborations that are involved in the Smart City programs.
- **Relevant Documentation:** Incorporation of any Smart City Plans or Strategic documents that councils have in place.

Refer to **Appendix 1.1 and 1.2** for an example.

4.5 South Australian Smart Cities Ecosystem Map

***Figure 1:** South Australian Smart Cities Ecosystem Map*

After gathering research on Smart City innovations by location, the data was grouped by alternate variables to develop a snapshot of the current Smart Cities Ecosystem in South Australia, as shown in ***Figure 1***. This Ecosystem consists of four layers, with the course of action flowing from the centre outwards.

At the centre of the Ecosystem are the 18 Metropolitan Councils, who are the key **Drivers**, decision-makers and initiators of change in the Smart Cities environment. These organisations decide what is important in a Smart City, and facilitate the planning and implementation of Smart City innovations to benefit their cities. The state's key Innovation Hubs are also classified as Drivers. These firms operate differently to Councils; however, they are at the forefront of producing new technology within the state to benefit cities. While these Hubs house companies that deal with innovation and technology in a very broad sense, many of these businesses were found to produce products and services that are directly related to Smart Cities. In fact, **28 of the 129** Smart City innovations identified in this study were found to exist within the four selected Innovation Hubs.

Drivers are ultimately attempting to reach the outer layer of the Ecosystem; the **Users and Beneficiaries**. This layer comprises of the parties that the Drivers seek to benefit. Residents and their quality of life are the main concern, however Councils also seek to improve quality of experience for Visitors including commuters and tourists, as well as enable local businesses to develop and thrive. Finally, Councils seek to improve their own efficiency and effectiveness within internal processes and management. Councils can provide for each of these four users through the development of Smart City innovations.

The third layer of the Ecosystem outlines **Smart City Innovations**. These enable Drivers to reach their Users and provide benefit to their city. This layer comprises of innovations grouped by Smart City category, and is presented in a pie chart ring to highlight the prominence of each category within the ecosystem. These categories are further clarified in **Appendix 3.0,** and a definition of each individual category is outlined in **Appendix 4.0**. While this layer may be used as a guide to determine the types of Smart City innovations appearing most and least often in the South Australian Ecosystem, it is important to note that each of these categories overlap and interrelate. Further analysis of this layer is outlined in subsequent sections of the report.

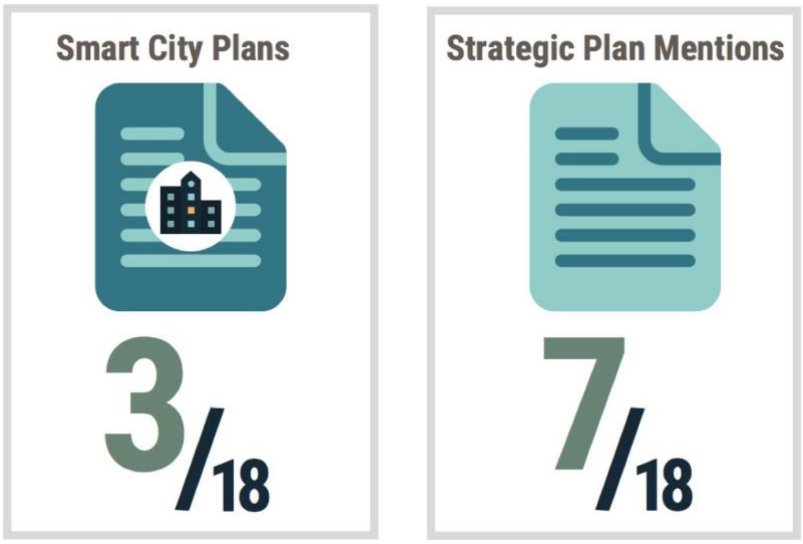
To implement these Smart City innovations, Drivers require resources and expertise from a range of organisations, which are identified in the second layer: **Partners and Providers**. This layer includes companies that provide technology for Smart City initiatives, Government

bodies that provide funding, as well as universities and consulting groups that provide research and advice. While this layer outlines predominantly Council partners, it also includes businesses within Innovation Hubs that develop Smart City technology and could feasibly provide this technology for Council initiatives. These Partners and Providers are grouped by Smart City Innovation category. This enables the Ecosystem to be used as a tool to identify the Partners that would be of interest to the City of Marion relevant to the type of Smart City innovation to be explored. For instance, the Partners and Providers for Smart Transport are identified to be RAA, Beam, Easy Mile, Sage Automation, Local Motors, Maven Car Sharing, Flinders University, and The University of Adelaide.

4.6 Council Smart City Plans

Identification of Smart City Strategies and mentions of a 'Smart City' within Strategic Plans are outlined in **Figure 2**.

***Figure 2:* South Australian Smart Cities Ecosystem Map**



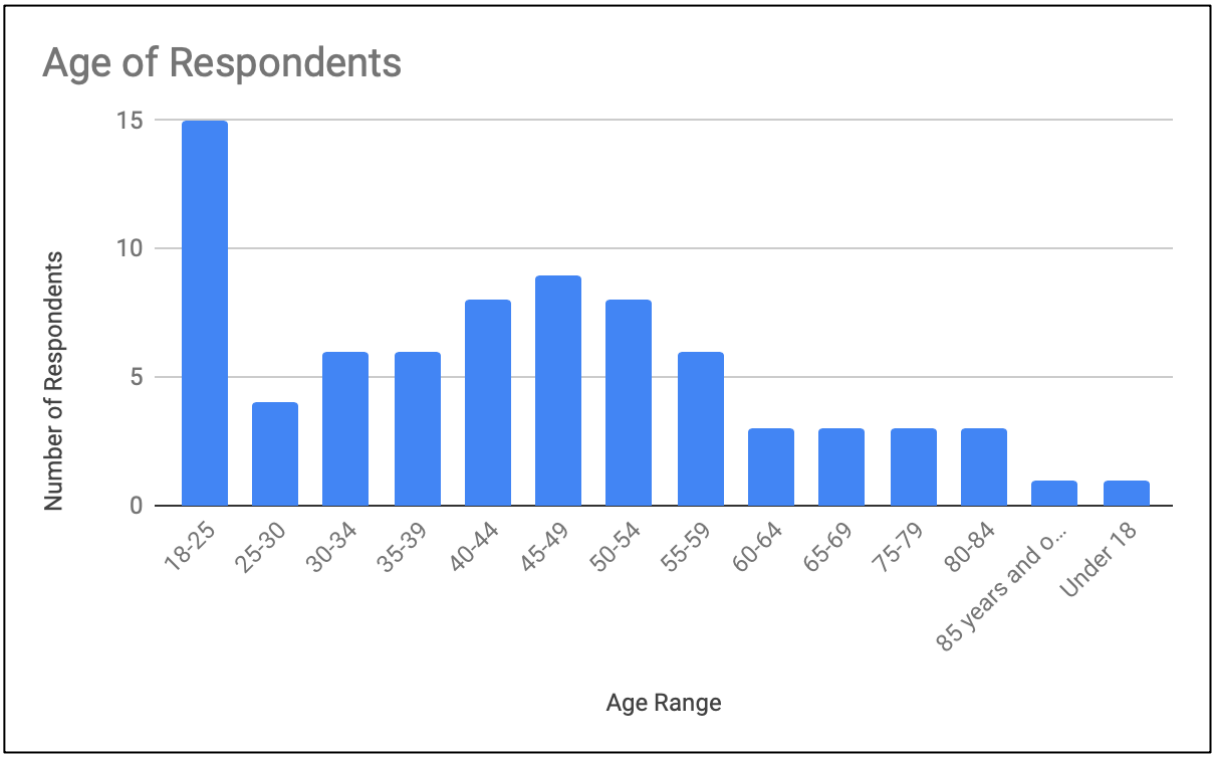
Smart City innovations were primarily sourced from publicly disclosed Council information. However, while most Councils provide website information on initiatives that may be determined Smart City innovations, only **3 of the 18** Metropolitan Councils were found to publicly disclose a Smart City Plan or Strategy. These Councils are: City of Adelaide, City of Charles Sturt, and City of Prospect. Furthermore, only **7 of the 18** Councils mention the term 'Smart City' in their Strategic Plan. This demonstrates a significant gap in attention given to Smart City Strategies from a holistic perspective. These findings also bring into question the need for a Smart City Strategy as opposed to individual strategically driven initiatives.

4.7 Survey Findings

With a comprehensive understanding of the current South Australian Smart Cities environment, we sought to understand the wants and needs of Marion's residents and visitors, determining whether these needs correlate with the identified Ecosystem trends. To better understand these wants and needs, we created a survey. This survey set out to gather insight into **(1)** The issues residents and visitors face within the City of Marion and **(2)** How often residents are interacting with council resources.

The survey gathered responses from individuals predominately at the Westfield Marion Shopping Centre on the 24th of May 2019. In total, we gathered insights from **75** respondents. **27** (36%) of these respondents were **Residents** within the City of Marion, while the remaining **48** (64%) of respondents identified as **Visitors** to region. There was diversity in the age groups surveyed, as highlighted in ***Figure 3***; 18-25-year-olds (20%) made up the highest group of respondents, while 70-74-year-olds were the only age group not represented in the survey responses.

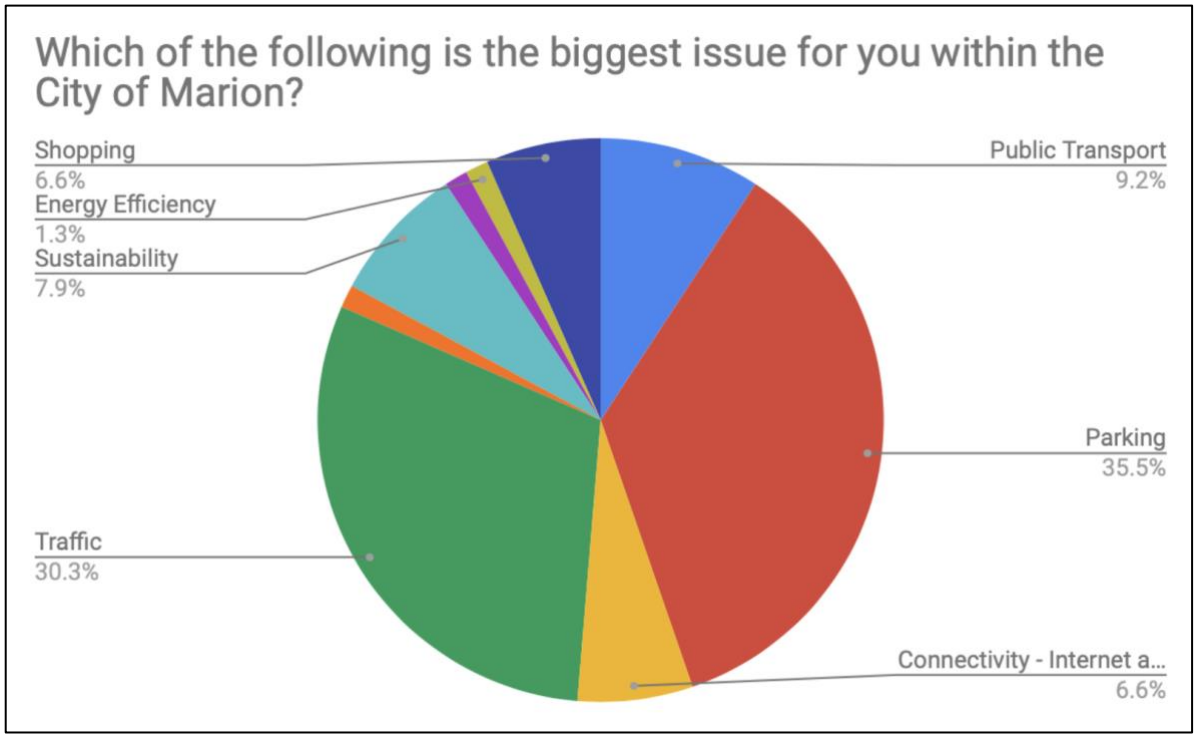
Figure 3: ***Resident Status and Age***



4.8 Survey Findings: Issues Faced by Residents & Visitors

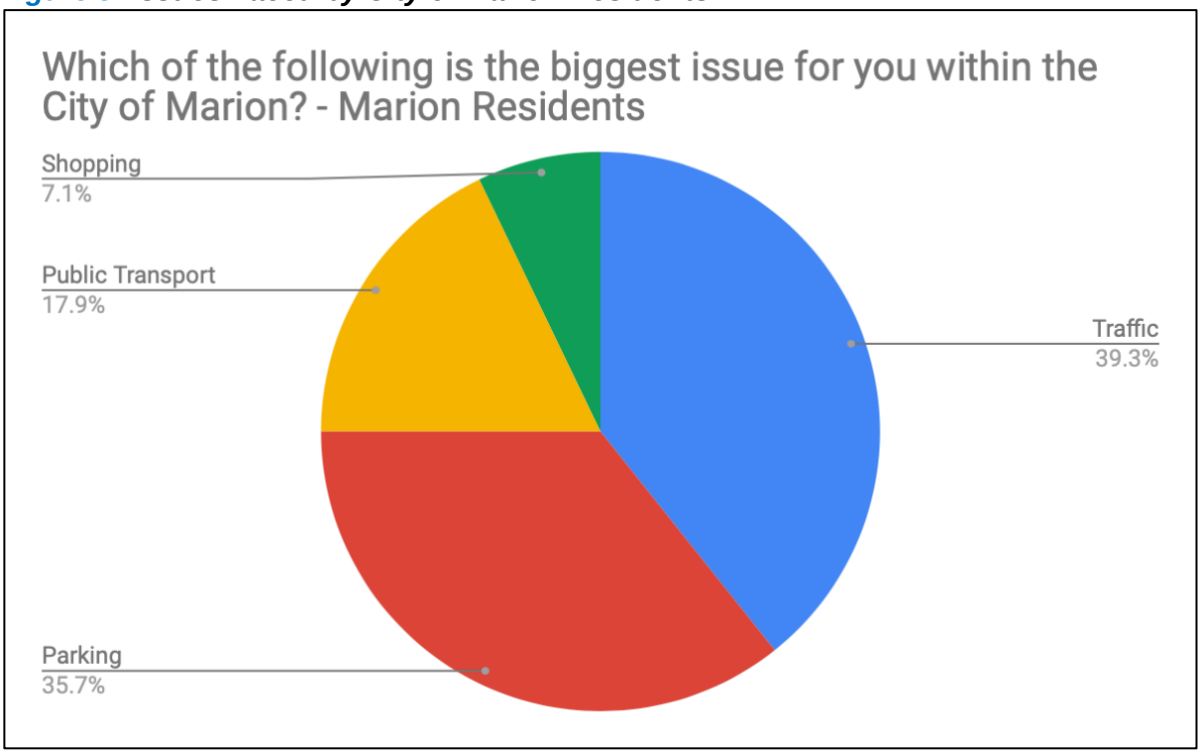
Respondents were asked to disclose their greatest concern with the City of Marion from a provided list of issues. The results for all respondents are shown in ***Figure 4***. **Parking** was the most common response, closely followed by concerns with **Traffic**. Additionally, **4** of the **5** respondents who suggested **Shopping** as their biggest concern further commented that the lack of available parking contributed to their issues with shopping. These results have highlighted **Transport** as a major concern for residents, with over **75%** responses connecting to this issue. However, councils concern for energy was not overly supported by the people, with only **1** individual listing this as their biggest concern.

Figure 4: ***Issues Faced by City of Marion Residents & Visitors***



To further understand these results, it is best to analyse them firstly by resident status, and then by age. Those who lived within the City of Marion listed **Traffic** as their biggest concern, with **Parking** also receiving over a third of the vote. This is a theme that continues among all individuals from various age groups. Therefore, to gain the best insight to differentiate each respondent category, we have elected to base our recommendations on the third biggest concern, **Public Transport**. Public transport is a major concern for elderly residents, as the third biggest concern for those in the **55+ age range**. Many respondents cited that public transport is *"unreliable"*, *"has a lack of options"*, *"not close enough to my house"*, and finally, one elderly resident stated that *"it is faster to walk to Marion shops than catch public transport"*.

Figure 5: ***Issues Faced by City of Marion Residents***



Visitors share similar concerns for **Parking** and **Transport.** However, there is also a strong concern for **Sustainability** (**13%**). The concern for Sustainability was most prominent among the 35-54-year-olds, with **17%** of these respondents raising this as their greatest concern within Marion. An idea that was common among these responses stemmed from the concern of young parents, stressing their concern for the world that their children will live in if serious action is not taken by government bodies in the foreseeable future. Many individuals also wanted to see a greater emphasis on recycling and smart ways to collect, store, dispose and recycle waste.

Figure 6: ***Primary Concerns of City of Marion Residents & Visitors***

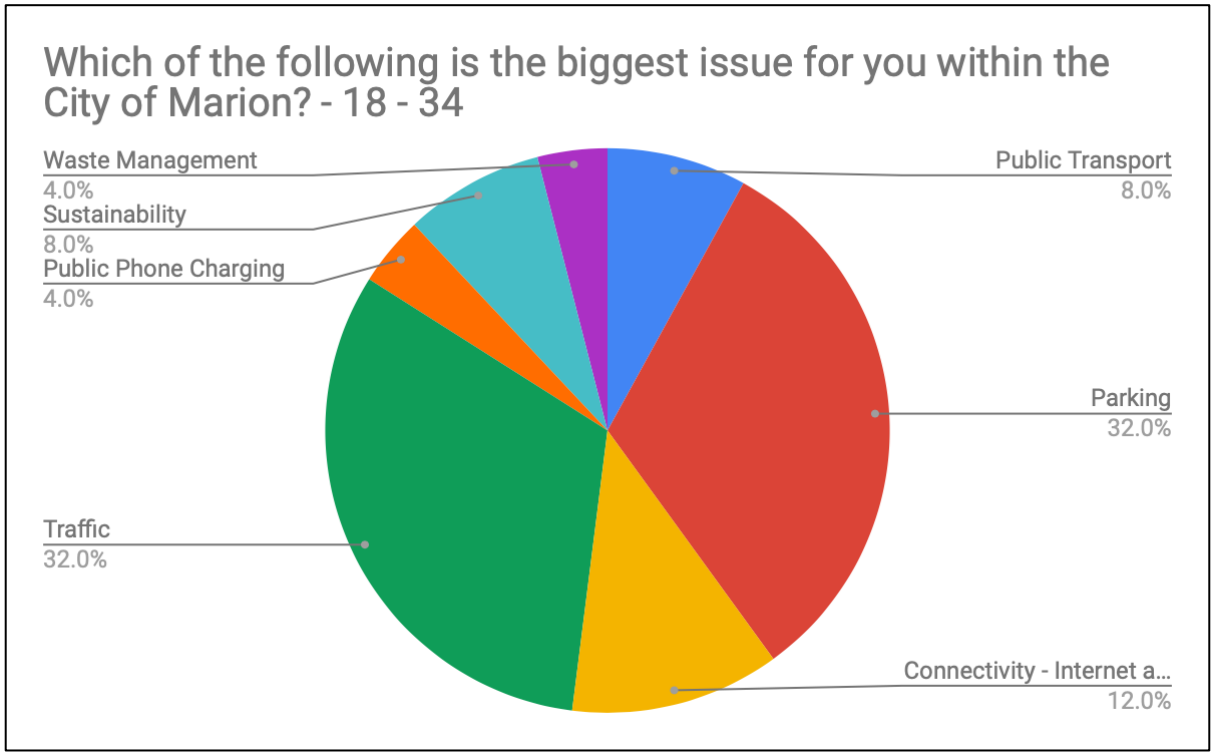
RESIDENTS	
Traffic	37%
Parking	37%
Public Transport	19%

VISITORS	
Traffic	35%
Parking	25%
Sustainability	13%

Figure 6, based on our survey findings, highlights **mobility** as a key issue within the City of Marion for both residents and visitors; with several of the respondents stressing their issues with **Traffic**, **Parking** and **Public Transport** – previously discussed.

Our 18-34-year-old respondents, with 25 individuals in this age range, possess great concerns for Marion's **Connectivity and Wi-Fi**; 12% of respondents in this age group listed this is their biggest concern. With regards to Connectivity, many individuals believe that there are too many telecommunication dead spots within the City of Marion. Another individual cited the lack of public Wi-Fi, while one small business owner shared concerns about the slow NBN connection speed, and how this issue effects his ability to conduct business.

Figure 7: ***Issues Faced by 18 - 34-year-old Residents & Visitors***



5.0 DELIVERABLE 1: MAIN IMPLICATIONS OF THE RESEARCH OUTCOMES

5.1 South Australian Ecosystem Map Analysis

Through our research, we have identified **129 Smart City associated initiatives** in South Australia. This data will be analysed in four distinct manners:

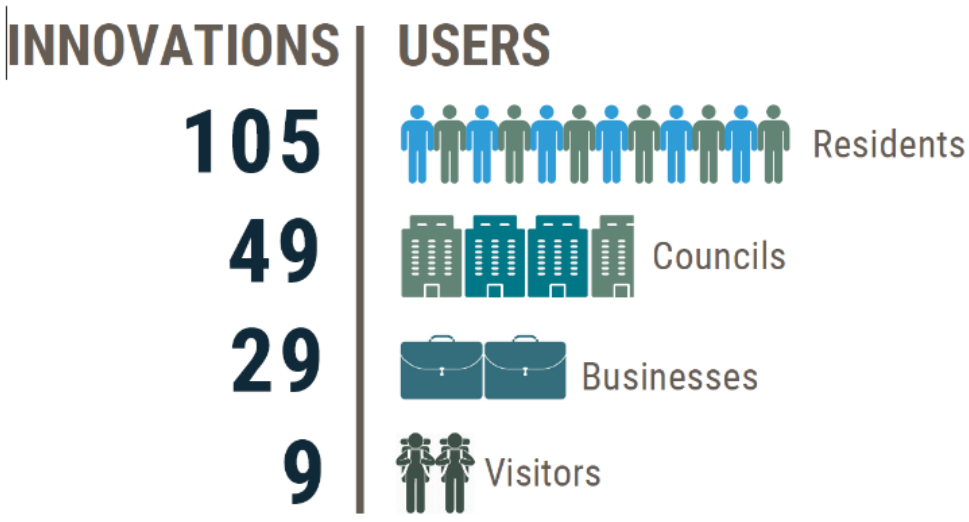
1. By the main ***User*** or ***Beneficiary*** of the innovation.
2. By the ***Status*** of the innovation.
3. By examination of the statistics regarding the innovation ***Categories.***
4. By the analysis of ***Data-Related*** innovations.

This analysis will allow for further understanding of the collected data and will further our capabilities to create coherent recommendations.

1. Beneficiary - Main Users

In the initial analysis phase, a count of the main Beneficiary or User for each innovation was conducted; as presented in ***Figure 8***. It is important to note that innovations may be directed towards more than one beneficiary group. This fact explains the final count being a sum larger than 129; as we identified **129 innovations**. From this analysis by Beneficiary, we can appreciate that People are the key motivator of the innovations within the South Australian Smart City Ecosystem.

Figure 8: ***Count of Innovation Beneficiaries***

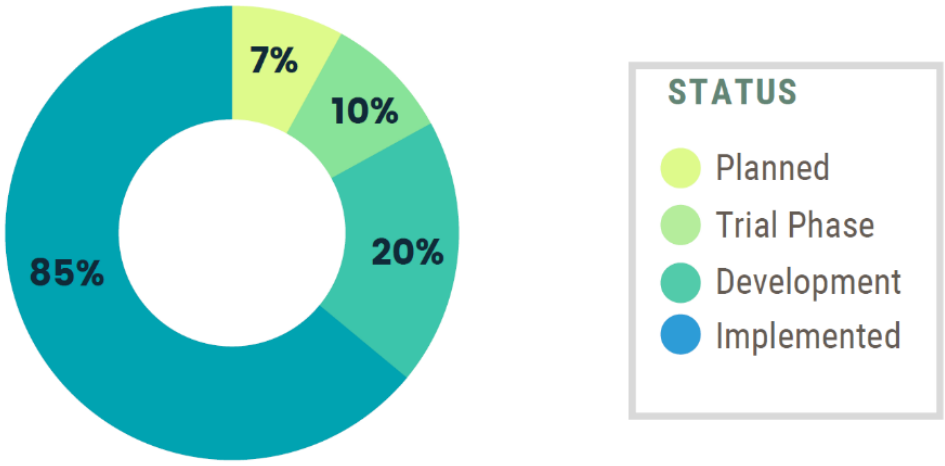


The data indicates that **105** of the **129** innovations are aimed towards the council Residents, as they can engage directly with and benefit from the technology. The second group that is largely benefited is the Councils. This is because these innovations facilitate technology to assist the councils in engaging in better decision-making practices. This data will allow the City of Marion to increase knowledge on fundamental topics and make viable and impactful actions. The third group benefited are Businesses. Businesses are assisted with their day-to-day activities and are utilised as a stimulant to attract entrepreneurs into the region. Finally, the innovations that are related to Visitors aim to create a positive, welcoming and enjoyable experience for individuals passing through the region and visiting the local attractions.

2. Status

The analysis of the innovation Status, as presented in ***Figure 9,*** shows that from the identified innovations: **85%** are already **Implemented**, **20%** are in **Development**, **10%** are in the **Trial Phase** and **7%** are **Planned**.

Figure 9: ***Status Percentage Chart***

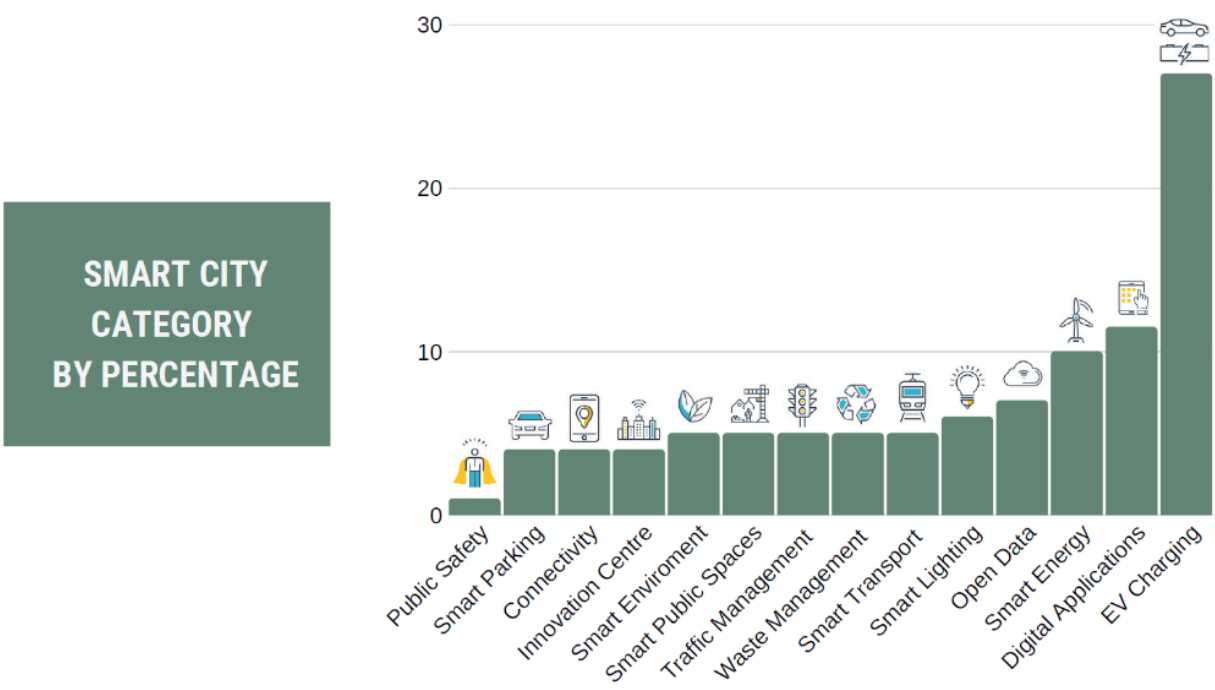


This analysis provides two significant and valuable insights. Firstly, it is important to note that several of the **Implemented** innovations were easily found through web-based research. Councils and businesses readily disclose those innovations that are functioning, but are more cautious to generate expectation on issues that are yet to be implemented. However, many innovations were found through primary research, and these councils and businesses will continue to develop Smart Cities solutions out of the public eye. This fact highlights how rapidly the Smart Cities environment changes, and how technology and innovation is moving forward at an unprecedented rhythm. Secondly, since this environment is evolving rapidly, this makes the continuous update of the Ecosystem Map paramount for the success and validity of the tool.

3. Smart City Category

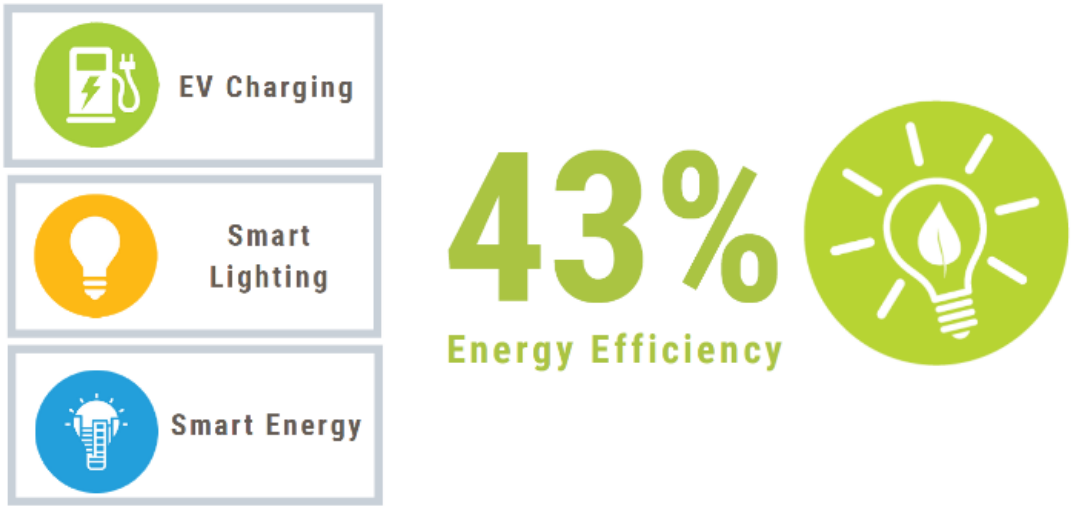
The Smart City initiatives category chart measures the occurrences of each type of initiative within the South Australian Smart City environment, including the 18 Adelaide Metropolitan councils and 4 Innovation Hubs, as illustrated in ***Figure 10***. Electric Vehicle charging occupies **26%** of these occurrences. This is interesting as it highlights the collective drive of councils and private businesses of this technology. The future of hybrid and fully electrical vehicles is promising, as more and more people adopt new technology to make more environmentally friendly decisions.

Figure 10: ***Smart City Category by Percentage***



In terms of the Smart City categories linked to environmental sustainability, the combined percentages of **Electric Vehicle Charging**, **Smart Energy** and **Smart Lighting** form **43%** of all findings; as shown in ***Figure 11***. This alludes to the transformation of energy consumption that cities are currently undergoing. Efficient and renewable fuel sources are being developed, and our South Australian findings highlight the importance to adopt these efficient energy sources.

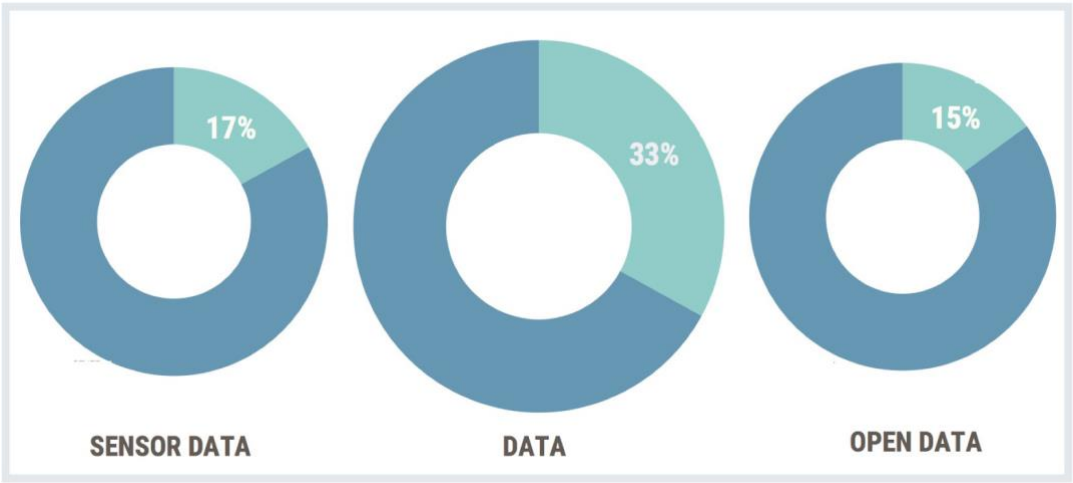
Figure 11: ***Energy Efficiency Focus***



4. ***Data-related Innovations***

The final level of analysis of the South Australian Smart Cities environment involved determining how many of the innovations were related to the collection and use of data, as outlined below in ***Figure 12***.

Figure 12: ***Data Percentage Chart***

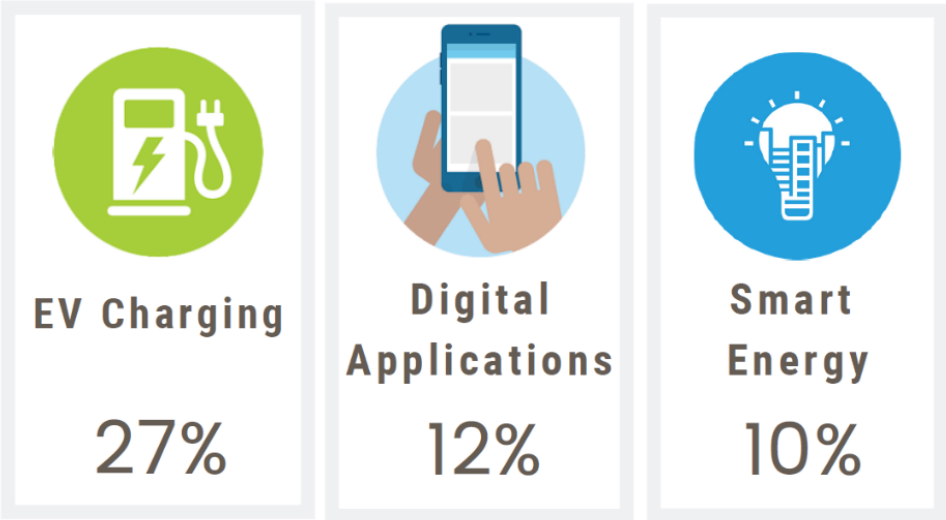


As shown in ***Figure 12***, **33%** of all identified Smart City initiatives involve the collection and use of a specific data set. **17%** of all innovations relate to **Sensor Data**, which involves the use of sensors and Internet of Things (IOT) devices to collect real-time data. Finally, **15%** of all innovations relate to **Open Data**. This highlights the importance of data within a Smart City in modern society, and presents a range of data-driven opportunities for enhancing urban services within the City of Marion. This analysis will be discussed further in subsequent sections of the report, as it primarily contributes to the second deliverable of Open Data.

5.2 Trends

The most represented innovations within the Ecosystem Map belong to three categories: **Electric Vehicle Charging**, **Digital Applications** and **Smart Energy** – as shown in ***Figure 13.*** These trends show the City of Marion which areas have been developed by other councils. However, it is important to take into consideration the following for each category:

Figure 13: ***South Australian Ecosystem Map Trends***



Electric Vehicle Charging: The major benefit for the City of Marion regarding this category is awareness. It is difficult to engage directly with infrastructure related to this technology, as Electric Vehicle charging points are derived demand of the electric car industry. This adoption is a cultural revolution that will advance in the foreseeable future. The latest data indicates that 20 out of 10 000 cars purchased are electric, and such a low proportion should prevent the council on thinking about moving forward with this category in the short-term.

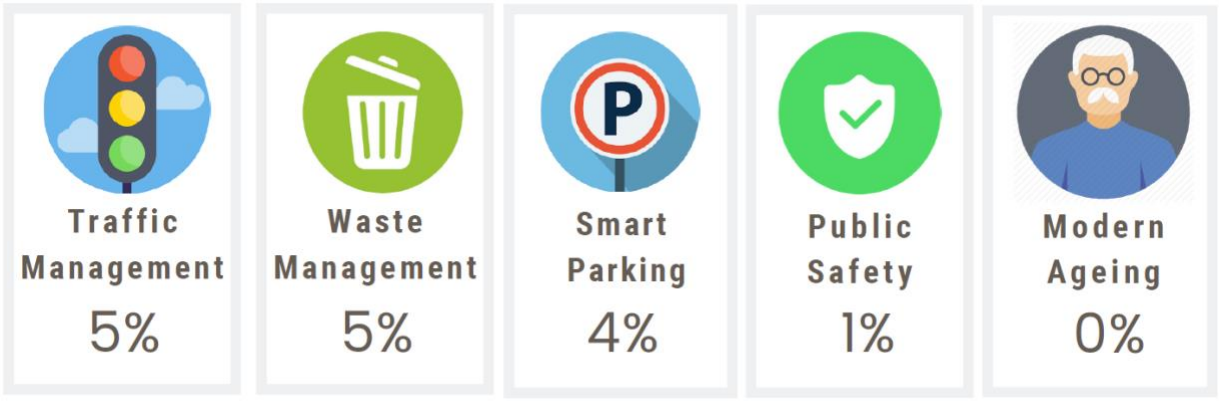
Digital Applications: Digital Applications are related to the digital solutions that are available to enhance the efficiency of current processes. They are meant to connect the council and users in a faster, more efficient way. Although the benefits are significant, and the council may look to engage with this technology, we find that most of the applications identified within the Ecosystem Map are not delivering high impact for their use. The City of Marion should consider linking the concepts of the Open Data Framework to engage with valuable digital solutions.

Smart Energy: Smart Energy is an evolving movement that has developed drastically over the past few years within South Australia. New and sustainable energy solutions, such as solar and wind energy, have already been implemented within the metropolitan area of the state.

5.3 Gaps

The least represented innovations within the Ecosystem Map belong to five categories: These can be identified as gaps within the Smart City innovation environment, as seen in ***Figure 14***. These gaps illustrate opportunities for the City of Marion to innovate and become trend setters within the Smart Cities Environment in South Australia.

Figure 14: ***South Australian Ecosystem Map Gaps***



Traffic Management: Traffic management is a major issue for both residents and visitors of Marion. Although the council cannot directly affect traffic, it is important for infrastructure to be put in place, and for open data is utilised. To alleviate this key pain-point within the community, the City of Marion could collaborate with the Department of Planning, Transport and Infrastructure (DPTI).

Waste Management: Waste Management costs have been pressuring the council. The City of Marion could deploy Smart infrastructure, in the short-term, to minimise the extent of this pressure. Further detail on a potential Waste Management solution is presented in the Strategic Recommendations section for this first deliverable.

Smart Parking: According to the EU Open Data Portal, a motorist spends an average of 2, 549 hours finding parking in their lifetime. This fact alone rationalises the idea that technology can be implemented to improve parking conditions and minimise this issue. Other councils have engaged with Digital Applications to tackle this issue; however, these implementations were not of high impact. Furthermore, the survey findings suggest that this is a major issue for visitors and residents. However, it is important to note that the survey responses regarding parking are directly linked to the Westfield Marion Shopping Centre. Further analysis of this parking issue within the region will allow the City of Marion to evaluate options to engage with Smart Parking.

Public Safety: One of the functions of the council is to ensure the protection of residents, visitors to their region, and organisations against threats to their well-being. The use of Smart Light poles that will be further detailed in the recommendation section of this report, can assist the council monitoring activities within points of interest and provide a more secure environment for all the community.

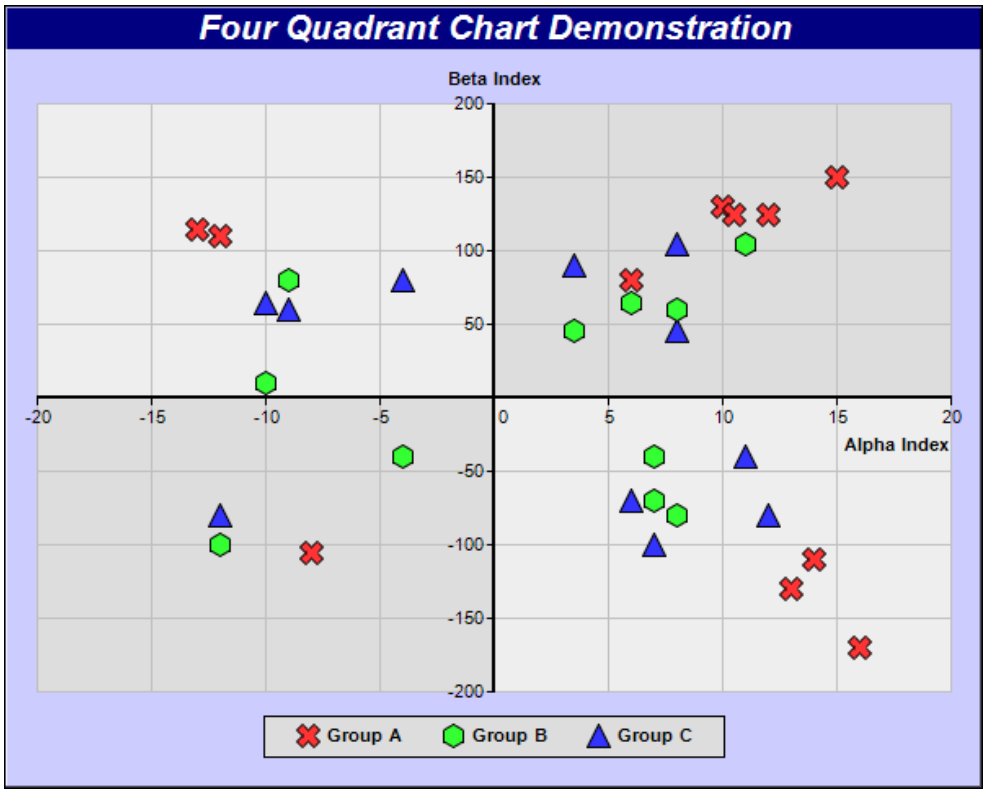
Modern Ageing: While the Tonsley Innovation Precinct is home to the Global Centre for Modern Ageing, which is categorised as an Innovation Centre within this research, not a single council was found to implement an innovation specifically for Modern Ageing purposes. **T**he main concern for people within this demographic is mobility and access to public transport. In the foreseeable future, people of this demographic will be more digitally aware. As of today, these people are unlikely to adapt to new innovations and would prefer to use what is currently in place, like the community bus to call the service directly, as opposed to using a more efficient and tech-driven method.

6.0 DELIVERABLE 1: STRATEGIC RECOMMENDATIONS

6.1 Develop a Framework to Prioritise the Value of Chosen Innovations

There are vast opportunities that can be pursed with various smart city innovations, and because of this, it can be difficult to prioritise a potential investment. Since the Ecosystem trends and gaps have been identified, the City of Marion are able choose the categories on which they wish to act upon. However, further analysis must be conducted to pick single innovations within those categories. We recommend using a four-quadrant chart that will combine two variables, which will assist with the analysis of value for each innovation.

Figure 15: ***Example of a Scatter Chart***



The variables must be selected by the council according to the goals in the Strategic Plan. The interaction between these two variables will allow the council to create valuable insights and to make a more informed decision on which innovation or group of innovations to focus on.

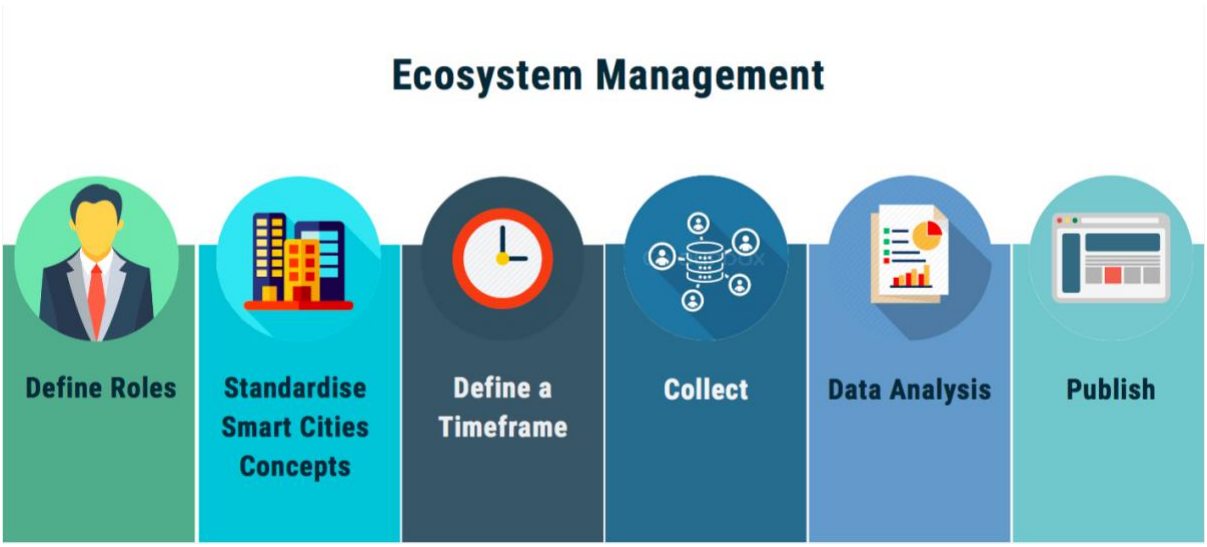
6.2 South Australian Ecosystem Map Management

The South Australia Ecosystem Map is a tool that, to be effective, must be updated continuously. A 6-Step process is suggested to manage the update of this tool.

The success of the Ecosystem Map tool depends on the council's ability to keep it updated. As the technological environment quickly changes as new technologies and innovations are developed, the City of Marion should be able to periodically input new information into the Ecosystem Map. To do so the following is needed:

1. Standardise Smart Cities concepts within the Ecosystem Map.
2. Define roles to manage the Ecosystem Map
3. Define a timeframe in which the environment must be scanned.
4. Conduct Data Collection.
5. Update the data analysis relevant to the construction of the Ecosystem Map.
6. Publish the updated tool.

Figure 16: ***Management of the South Australian Ecosystem Map***



6.3 Recommendation for Waste Management

As Marion moves forward in the Smart City venture, the City of Marion must consider new and improved ways to collect waste. There are numerous Smart Waste collection methods being implemented throughout Australia. One of the most effective methods of waste collection is the utilisation of Smart Bins, more specifically, 'The Bigbelly' - refer to ***Figure 17***.

The Bigbelly is customisable and can be used to service several council waste requirements, particularly in public spaces and parks. The Bigbelly's smart design includes sustainable and durable materials as well IoT sensors for monitoring waste levels; the Bigbelly can be loaded to **150%** of a regular capacity bin. These sensors are powered by highly durable solar panels, which can withstand temperatures as high as 85 degrees Celsius. The IoT sensors enable the level of each bin to be monitored through desktops and mobile applications, with councils reporting an **85% decrease** in the number of rubbish collections (Solar Bins Australia 2019). This is due to the compaction technology of the Bigbelly and the IoT sensors enabling for more efficient collections of rubbish and waste management. This ultimately suggests that these bins are cost effective for councils, promote environmental and social impact within the community, and would alleviate the stress of litter in public spaces.

We recommend that the City of Marion consider implementing these bins to assist with the council's Waste Management practices.

Figure 17: ***The Bigbelly Smart Bin***

Source: Solar Bins Australia 2019, *Bigbelly® Sustainable Waste & Recycling Management. Change your space*, viewed 16 May 2019, <https://www.solarbins.com.au>.

6.4 Recommendation for Smart Lighting

With the increase in the trend for energy efficiency, many Adelaide Metropolitan councils in are implementing Smart Lighting to reduce energy consumption within the community. This solution simply involves replacing the old mercury globes with more efficient LED lighting.

The City of Holdfast Bay is embarking on an extensive plan to replace 2,550 street lights with LED technology, and are recognising both the environmental and economic benefit. Holdfast Bay claim that the new LED lights are up to **82%** more energy efficient, and once carried out, estimate a reduction in greenhouse gas emissions of up to **517 tonnes per year**. The LED lighting upgrade will not only improve visibility in residential areas, it will also result in net annualised savings of approximately **$220,000 per annum** over the 20-year-life-span of these light fittings; ultimately reducing energy usage and lowering maintenance costs.

There is an opportunity for the City of Marion to take proactive action with the concept of Smart Lighting; developing a comprehensive network of street lighting that continuously feed data from various sources to a central facility. This would involve adapting the primary use of each street light post and additionally incorporate sensor technology for capturing data and monitoring Public Safety within the community. These advanced street lights could potentially collect data pertaining to vehicle movement, speed detection, congestion monitoring and monitoring pedestrian movement. It is possible that these Smart Street Lights be installed with automatic functions, whereby street lights dim and re-illuminate when movement is detected; this further reduces energy consumption within the region.

We recommend that the City of Marion consider collaborating with SA Power Networks to implement Smart Lighting, and potentially invest in sensor technology to monitor Public Safety within the community.

6.5 Visitors as an Opportunity for the City of Marion

Innovations directed toward visitors present a major opportunity for the City of Marion, with the potential of becoming a trendsetter in technology that fosters tourism.

Using the Ecosystem Map data, we have identified a large gap with innovations directly oriented towards the visitors. **9 out of the 129** innovations maintained an impact upon the visitors as they move between the council regions. Although these nine innovations allow for a more positive, welcoming and enjoyable experience for individuals passing through the region, none of these innovations were developed for the exclusive purpose of attracting tourism.

The “Triangle of Development”, incorporating the SA Aquatic and Leisure Centre, Westfield Marion Shopping Centre, and the Marion Cultural Centre, is a major driver of economic activity. These three spaces are oriented towards tourism and leisure, and the allocation of resources in this area can allow the council to become the leader of the state when it comes to smart city technology that directly fosters and incentivises tourism.

The City of Marion can serve as a link to connect both the private sector and official bodies such as the South Australian Tourism Commission to analyse, exchange knowledge and develop new ideas to cater the needs of the now hyper-connected population.

7.0 DELIVERABLE 2: RESEARCH OUTCOMES

7.1 What is Open Data?

As stated by Andrus Ansip, the Vice President of the Digital Single Market project of the European Commission, *"If I had to express my views about the digital future – that of Europe or indeed, of the whole world - I could do it with one word: **data**."*

Data has become a more prevalent resource in modern society, shifting the ways in which people and businesses make day-to-day decisions.

Open Data is information that is:

- **Available**, **Free** and **Accessible**
- **Re-useable** and **Redistributable**
- Driven by the **Participation of People**

Open Data represents information, embracing the potential for insight to be gathered and for value to be derived and created. It is important to understand that the purpose of open data is to serve the people. When data is open source, people and businesses can engage with information and extract value, ultimately enhancing their lives. The use of open data is what creates intrinsic value within a community, and this is the fundamental ambition of open data. For this very reason, governments are particularly interested in utilising Open Data as a strategy to better connect with residents and visitors. For the City of Marion, it is of high importance to grasp an understanding of Open Data and how to disclose this information appropriately and effectively.

There various considerations to be made when making data open. These considerations and requirements will be outlined through the subsequent sections of this report.

7.2 What Data is being made Open?

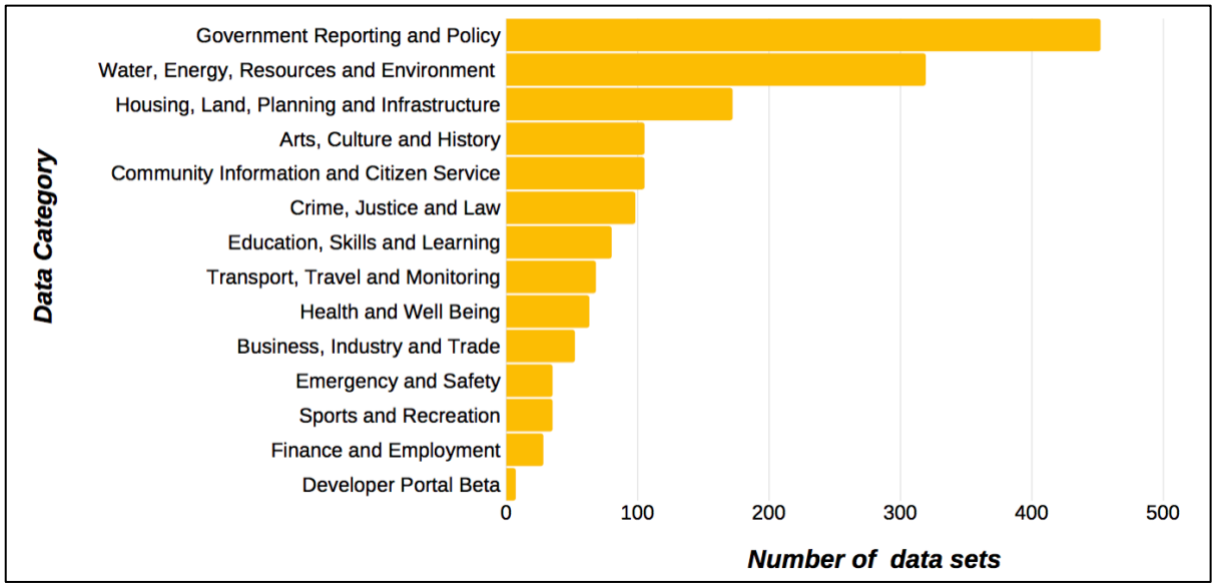
Data holds significant potential to stimulate engagement within the community and spark economic activity. The South Australian government has set the benchmark that government data be 'open by default', that it be published in accessible formats and available online.

7.2.1 Data.SA

Data.SA is the South Australian Government Open Data Directory. Data.SA is an open data portal that allows Australian Government agencies and local councils to publish openly licensed data. The platform actively assists people, businesses, entrepreneurs and industries in transforming data into ideas, applications and visualisations to benefit the community (Data.SA 2019). The Data.SA Directory contains a total of **1,577 datasets**, of which only **11 out of the 18 Adelaide Metropolitan** councils have uploaded data, with **162 datasets** released, and **3 regional councils** have contributed **6 datasets**.

Data.SA groups the datasets according to 15 broad categories, as displayed in ***Figure 18.*** It is seen that datasets pertaining to 'Government Reporting and Policy' are the most common, with **452 datasets** identified. 'Water, Energy and Resources' is second most populated category, with **324 datasets**. Finally, 'Housing, Land, Planning and Infrastructure' is populated with **172 available datasets**.

***Figure 18:* Data.SA Categories**



The uploaded datasets are dominated by location-driven information and include datasets like:

City of Port Adelaide Enfield

- Public Toilets
- Storm Water Network
- Land Parcels
- Community Bus Routes

City of Burnside

- Bike Racks
- Street Trees
- Public Toilets
- Walking Trails

City of Adelaide

- Parking Expiations
- Bridges and Culverts
- Traffic Intersection Volumes
- Park Land Sporting Facilities
- Torrens Lake Water Quality

Further analysis of this platform illustrates various trends pertaining to council-driven data. The most significant trends are as followed:

1. **Location-Driven:** A significant proportion of the datasets set out to identify the location of physical assets, whether that is for resident and visitor interaction, or to assist in council operations.

2. The **two most common** uploaded datasets include general information about **(1)** Domestic Dog and Cat Registration, including the location of dogs and dog friendly areas, and **(2)** Waste Management and kerb-side pickup times.

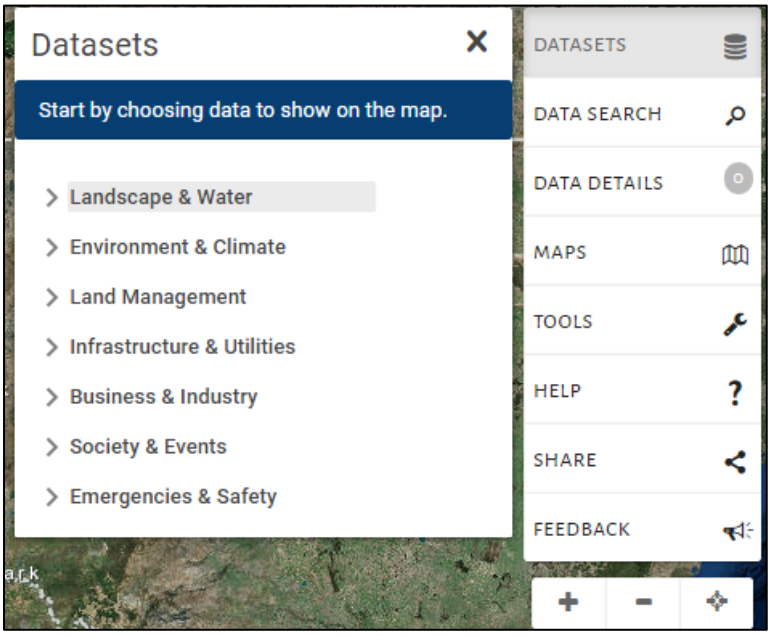
The identified trends represent the requirements for reporting and policy in the public sector. The sheer volume of location-driven data suggests that participating councils are currently in the experimental phase with releasing data to the public.

7.2.2 Location SA

Location SA is a geospatial mapping platform that supports data sharing through the government and to the wider community. The Location SA Map Viewer provides a visual representation of services that are used by the government and the public.

Figure 19 below identifies the datasets that are available through this map viewer function.

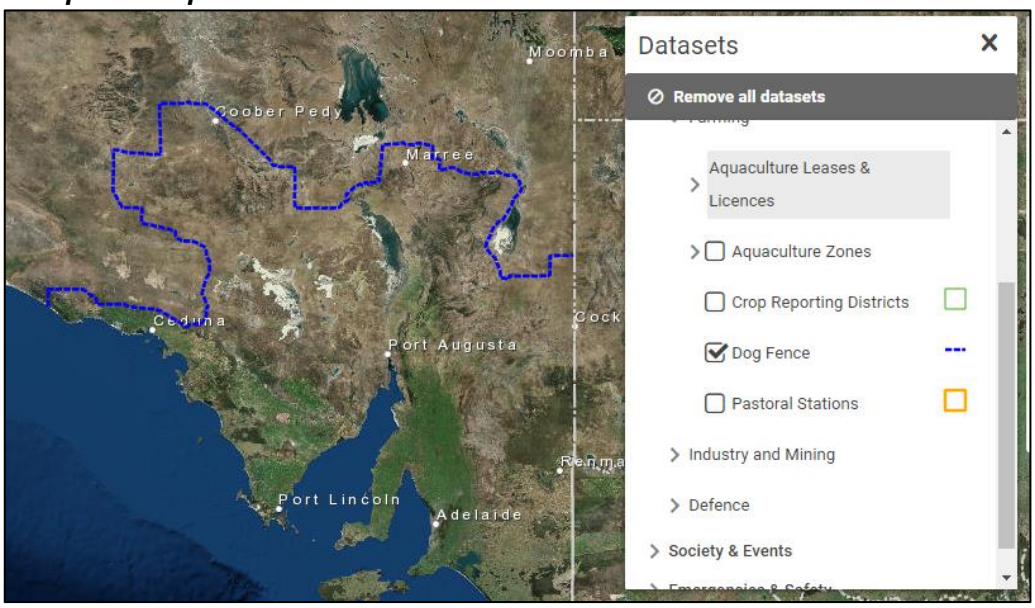
***Figure 19:* Location SA Map Viewer**



Source: Government of South Australia 2019*, Location SA Map Viewer,* South Australia, viewed 12 June 2019, <https://location.sa.gov.au/viewer/>.

By exploring one of these subcategories, users can view a spatial representation of the underlying information, as seen in ***Figure 20.***

***Figure 20:* Spatial Representation on Location SA**



Source: Government of South Australia 2019*, Location SA Map Viewer,* South Australia, viewed 12 June 2019, <https://location.sa.gov.au/viewer/>.

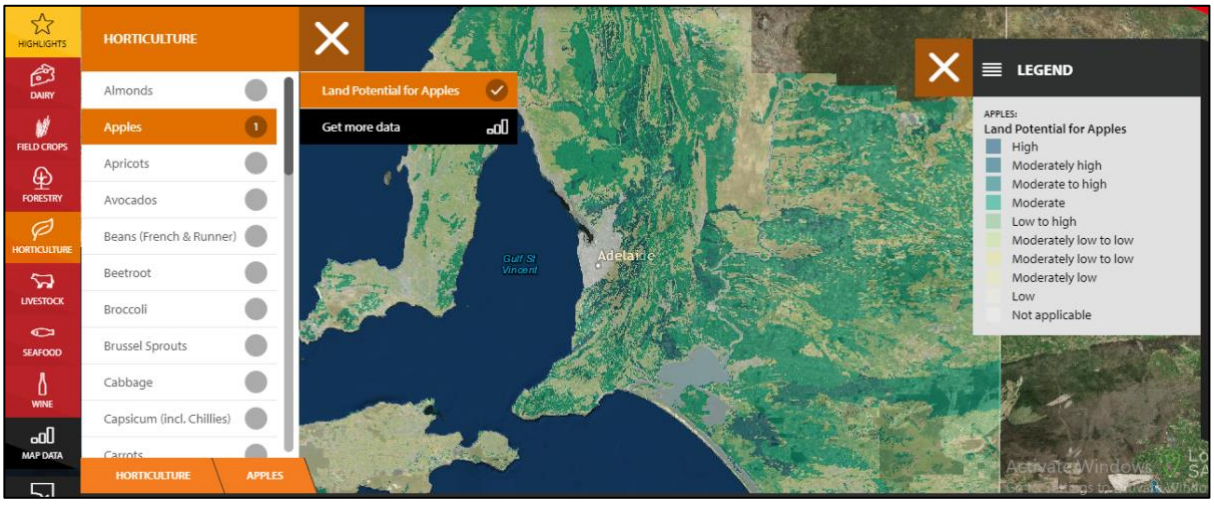
Location SA also provides services to assist with planning for daily activity. This provides support to businesses that require geospatial information, such as:

1. **Adelaide Metro:** Adelaide Metro Journey Planner helps commuters plan a journey.
2. **Cycle Instead:** Helps commuters plan cycling journeys along roads, trails and bikeways in Adelaide.
3. **Traffic SA:** Helps users identify roadworks, incidents and planned activities effecting traffic conditions in South Australia.
4. **Living in South Australia:** Helps users find points of interest and further information on living, visiting, working, studying and doing business in South Australia.

AgInsight is one of the functions on Location SA that targets the business environment as a resource for entrepreneurship, innovation and promotion. This tool allows users to explore the South Australian Agricultural environment according to the criteria of interest; such as dairy, field crops, horticulture, livestock and forestry.

Exploring the Horticulture criteria allows public entities, private business and sole investors to research areas suitable for the selected agricultural industry. As seen in ***Figure 21,*** research for suitable land to harvest apples is being conducted using AgInsight.

Figure 21: AgInsight Land for Potential Apple Harvest

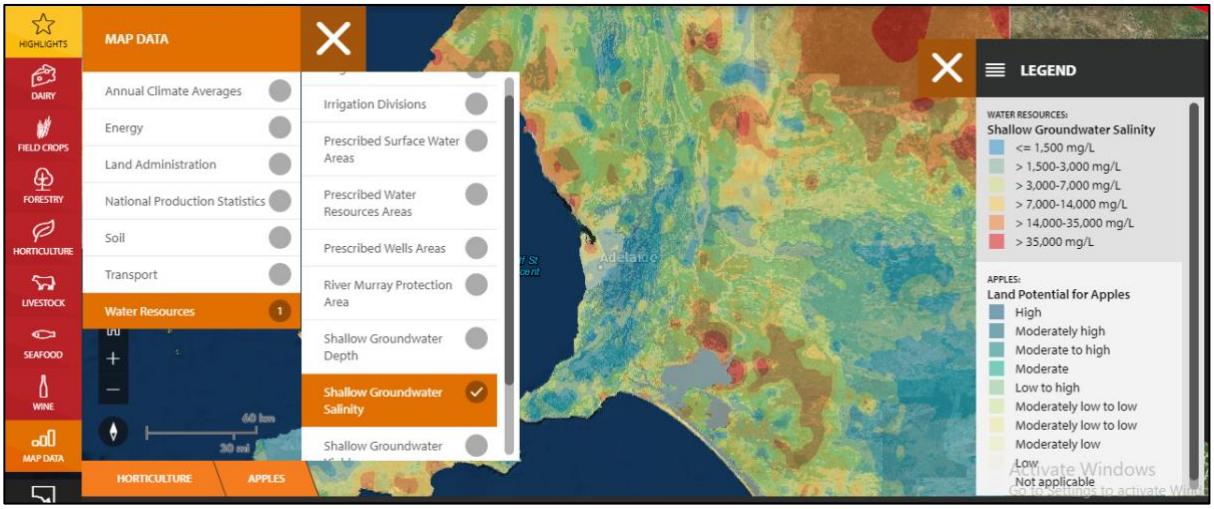


Source: Government of South Australia 2019*, Location SA Map Viewer,* South Australia, viewed 12 June 2019, <https://location.sa.gov.au/viewer/>.

The “Get more data” tab allows general information to be laid over the map, assist users in furthering their decision-making process. This can be seen in ***Figure 22*** where the

groundwater salinity statistics are being used to identify the “perfect spot” for relevant primary production for apples.

Figure 22: ***“Get more data” Groundwater Salinity Statistics for Apple Harvest***



Source: Government of South Australia 2019*, Location SA Map Viewer,* South Australia, viewed 12 June 2019, <https://location.sa.gov.au/viewer/>.

7.2.3 DataStart

DataStart is a nation-wide campaign to find, incubate and accelerate start-up ideas that leverage openly available data from the Australian Government (DataStart 2018). These discussions include cyber security, critical information for start-up success, tips to boost YouTube visibility, and simple ways to find appropriate investors. This site is directed towards business start-ups, particularly businesses that are leveraging the potential of open data from the government.

7.3 Data for People

When considering the kinds of open data to make available to the public, it is vital to understand the needs and requirements of Marion’s residents and visitors. The City of Marion has expressed that there is a great disconnect and absence of engagement between the council and the residents. By keeping data open for both residents and visitors, ambiguity can be alleviated, creating a heightened sense of community engagement and greater transparency.

Open data is a great source of information, but it must be considered, what kinds of information to the residents and visitors of Marion want to access? This comes back to the idea that the council must understand the needs of the public. Research has indicated that the following categories of information are of interest to residents and individuals visiting within council and community regions, and may therefore be included as open data sources for the City of Marion:

- ***Council Demographics and Economics:*** Open data on the residents themselves, including Gender, Age, Education, Ethnicity, Marital Status, Family Size, Social structure, Income and Employment Statistics.

- ***Community History:*** Information about the City of Marion – including establishment, past and current affairs and historic events, as well as information on community arts and culture. This kind of information this is particularly interesting for visitors passing through the region, as well as for residents who may find value in these regional chronicles.

- ***Local Government and Politics:*** Local government is about the people, and how they interact with their local government. By making information like this available, people can understand how the council operates, why council decisions are being made, and how the community can engage. This kind of open data creates transparency, openness and a sense of trust between the council, their residents and visitors.

- ***Local Services, Facilities, Institutions and Groups:*** People are interested in knowing about what services and facilities are accessible in the local community. By providing this information, people are assisted with ease of decision making; people are also given a sense of the sorts of activities available in the area.

While this information exists as open data, it is important to consider the implications and value of this data being open, for both residents and visitors. Councils who make this data available, and consistently update this data, better serve their residents. For example, some of the open datasets that the City of Adelaide have provided to the public include information on Traffic Restrictions, Park Land Sporting Facilities and local events in Adelaide. These open datasets allow residents and visitors to understand the nature of the council's environment, evoking the insight of the people, and stimulating interest around various elements of the community.

To provide perspective on open data for the community, the New York City Open Data Team has developed open data tools that connect New Yorkers with the New York City Government. In this initiative, there was the discussion that the utilisation of open data allows ordinary residents, and visitors, to gather insight into the operations of their local government, which ultimately provides transparency to engage with their government. By having data open to the public, in one case, residents saved millions of dollars in parking fines, ultimately improving the quality of life for residents, and sparking engagement within the council.

7.4 Data for Business

When opening data, it is also extremely important to consider the needs of businesses and how they can use Open Data to inform decision-making at an operational level. Research indicates that the following types of data and information are particularly valuable to business:

Policy Information: Industry, Infrastructure and Planning-Related Policy enables business to become aware of what they need to adhere to, and it also informs their decision-making when developing their own policies.

Business & Economics: Economic environment & industry characteristics within the council area enables businesses to become aware of potential suppliers, competitors and retailers, which will enable them to operate more confidently and efficiently in the environment.

Council Demographics & Population Densities: demographic characteristics including age distribution, income level, and residential unit types, will enable businesses to select target markets and become more informed about how to satisfy customer needs. Data that shows population density within a business' access radius will enable them to more effectively locate their customers.

Labour Market Characteristics: The availability of employment and labour for specific industries is a key piece of information for human resource management.

Real-Time Foot-Traffic Data: de-identified sensor-based data on pedestrian location and movement within a business' access radius, will enable businesses to locate their customers, and identify popular time periods to target for opening times and promotions.

Each of these information types will be extremely valuable to businesses moving forward. Research also shows that the public sector will gain more from opening data than any other sector, indicating that the City of Marion will be the first re-user of their own open data.

7.5 Data for Commercial Reuse

Businesses can benefit from open data in two key areas. Firstly, it provides insights for decision-making, and secondly, it enables businesses and entrepreneurs create new products through the reuse and commercialisation of open data.

Our research shows that businesses are shown to reuse and commercialise particular datasets more than others. The domain with the highest commercial value is recognised to be **Geographical (GIS) Information**. GIS data is extremely popular in data-driven products that are already commercially available around the globe, and it may be combined with all other data domains, to create location-based visualisations. Data domains with the highest commercial value are as follows:

1. **Geographical (GIS) Information**
2. **Meteorological & Environmental Information**
3. **Economic & Business Information**
4. **Social Information**
5. **Traffic & Transport Information**

While these types of data sets are typically reused more often, and are more likely to create an impact, it is important to remember that any one of the data domains could potentially be interesting for specific businesses.

A real-world example of commercial reuse is a Finnish, data-driven application called Blindsquare, that is targeted towards people who are blind or visually impaired. The application uses audio to describe the immediate environment that surrounds a user. It announces points of interest, such as facilities, intersections, bus stops, and favourite destinations as the user travels through them. This innovative product spurs economic activity, and drastically improves the quality of life of its users.

This company uses location-based on existing roads, facilities and popular destinations. This data was not collected by Blindsquare, it was accessed and reused from an open data source. A key point of interest within this case study is that the open data was used in an unexpected

and unpredictable manner. The data was not opened by a private or government agency because the agency knew that a company like Blindsquare would reuse it years later. This highlights that the potential value and usefulness of a particular dataset should never be prejudged, especially when it comes to commercial reuse.

7.6 How is Data Currently Published?

Through research, we identified that councils host datasets through varied mediums.

From our initial Ecosystem Map findings, we identified published open datasets from 9 councils. These councils most commonly release data through mobile applications, specifically through 'My Local Services App'. Although this application does not provide extensive datasets whereby rich value can be derived, the application still provides information to the community. For example, information released may include notifications of current council events, roadworks and road closures. Councils that use My Local Services App include Town of Walkerville, City of Charles Sturt, City of Mitcham, City of Mitcham, City of Norwood Payneham and St Peters.

Another medium includes interactive web applications, like geo spatial maps that are linked through council websites, communicating open data through interactive maps. City of Burnside, for example, hosts an interactive Urban Forest map on their website to communicate the benefits of the Urban Forest. This Urban Forest map utilises council-collected data on over 40,000 public street and park trees. The City of Mitcham similarly hosts a web-based interactive construction map on their website, through which residents can use to look at the local construction zones. There are currently 3 councils releasing data via this format, however, locating these applications and tools on council websites can be difficult; this lack of easy access hinders resident and business engagement with local council.

Data.SA is one of the leading open data portals assisting councils in releasing data to the public. As previously mentioned, **11 out of the 18** Adelaide Metropolitan councils have published a total of **162 datasets** and **3 regional councils** have published **6 datasets**. The City of Adelaide has published the greatest number of datasets, followed by the City Council of Port Adelaide Enfield; other councils have published very few datasets. Refer to **Appendix 5.0** for a snapshot summary of datasets**.**

7.6.1 Advantages of Publishing in Data.SA

- Data shows up through search engine optimization, making information easily discoverable in comparison to publishing data via council websites. The platform also has built in analytics to help the City of Marion monitor the web-traffic and usage of the published data, which would have presented additional costs if the data were to be hosted through the City of Marion website.

- Each agency or council is assigned a unique URL within Data.SA to promote datasets. This gives the council freedom to decide which datasets will be published, and the format in which the data will be displayed.

- Data is published using agreed open standards, “Creative Commons”, where the dataset is given a licensed logo and a web-link to license code, allowing councils to release data for commercial and other reuse.

7.6.2 Data Formats

Open data must be available for anyone to access, use and share. Therefore, the data must be formatted to maximise usability and accessibility; management plays a major role in information distribution. The most common formats for publishing data on council websites and open data portals are through SHP, CSV, XLXL and PDF formats.

***Figure 23:* Open Data Formats for Publishing**

Council	Number of Datasets	Followers	Format of Data	Licenses
City of Adelaide	70	9	XLS, XML, CSV, PDF ,ZIP, PDF, KMZ, RSS, EXCEL ,SHP	Creative Commons Attribution
Port Adelaide Enfield Council	23	2	various formats,XLSX,URL.,EXCEL,CSV,GEOJSON	Creative Commons Attribution
City of Playford	9	1	CSV, DOC, XLSX,KMZ	Creative Commons Attribution
City of burnside	7	2	SHP ,CSV ,KML ,GeoJSON, Doc	Creative Commons Attribution
City of Salisbury council	7	0	SHP	Creative Commons Attribution
City of Onkaparinga	7	1	CSV, JSP,PDF,HTML,XLSX,SHP	Creative Commons Attribution
City of Prospect	6	1	CSV	Creative Commons Attribution
City of Mitcham	4	0	Shp, geojson, kmz	Creative Commons Attribution
Mount barker district council	3	0	Mapinfo tab	
City of Campbell town	2	0	Xlsx, Csv	Creative Commons Attribution
City of mount gambier	2	1	various formats	Creative Commons Attribution
Naracoorte Lucindale Council	1	0	SHP	Creative Commons Attribution
City of west torrens	0	0		
City of Tea Tree Gully	0	0		

- **PDF**: Portable Document Format, the most common type of document used by councils to share information. The most common data represented through a PDF include reports, infographics and articles. Although PDFs can easily be shared between computers and devices, this form of data is the least effective because data is hard to edit and extract.

- **SHP and GEOJSON**: Both open standard formats are designed to represent geographical data and geographical features, along with their non-spatial attributes. This form of data illustration can be easily understood by various users, including those who are technology-driven, and by those who are not.

- **EXCEL**: This format supports tabular data, usually through a spreadsheet. Excel files can be easily interpreted by machines and individuals, allowing data to be easily manipulated and filtered. However, people need to own the proprietary software to download and use this format readily.

- **CSV**: Comma Separated Values is a more appropriate format in comparison to Excel. The most common data represented through CSV is tabular data, such as a spreadsheet or database. CSV includes the same functions as Excel, but with the positive of users not requiring a specific software to open the file. This suggests that the CSV format is more efficient, and more easily accessible for potential open data users.

Tim Berners-Lee, the inventor of the Web and Linked Data initiator, suggested a 5-Star Deployment Scheme for Open Data. As outlined in ***Figure 24*** (next page), the benefits and examples of each format in the distribution of information have been provided.

Figure 24: ***5-Star Deployment Scheme for Open Data***

Star	*Description of the level*	*Example*
1	Have data visible on the web, licensed for reuse.	This is generally in the form of PDFs, which would be excellent as a communication medium to display information to residents. However, the data is locked-up in a document, cannot be manoeuvred, deeming it unbeneficial for commercial reuse.
2	Make data machine readable, meaning that the data is visible, easy to reuse but not necessarily by all.	This is data in Excel sheets, which can be easily read by machines and individuals alike. However, people need to own the proprietary software to be able to read this data reliably.
3	Have data in a non-proprietary format, which means it is not restricted to specific software.	Everyone can use the data easily now. Users can easily manipulate the data without the need to own a specific software. e.g. CSV file, XML, ATOM; JSON, KML.
4 and 5	Create linked RDF Data: it is visible, easy to use, linked to other data and is more interactive.	The best form to display data in the web, linked to other data where both the end user and the council can benefit from the network effect. This format makes data more discoverable, increasing the value of data.

7.7 Engaging with Open Data – Education & Promotion

7.7.1 Findings Council Interaction

The second part of the survey was conducted to understand how residents interact with their local council, and how these individuals believe councils could further interact with them. The results found that very few people access information from their council **'Very Often'**, with only a single respondent selecting this option. **'Not Often'** was the most common response with **33.3%** of respondents, while **'Somewhat Often'** was close behind with **32%** of the respondents – refer to ***Figure 25***.

Figure 25: How often do you access information from your local council? - All Respondents

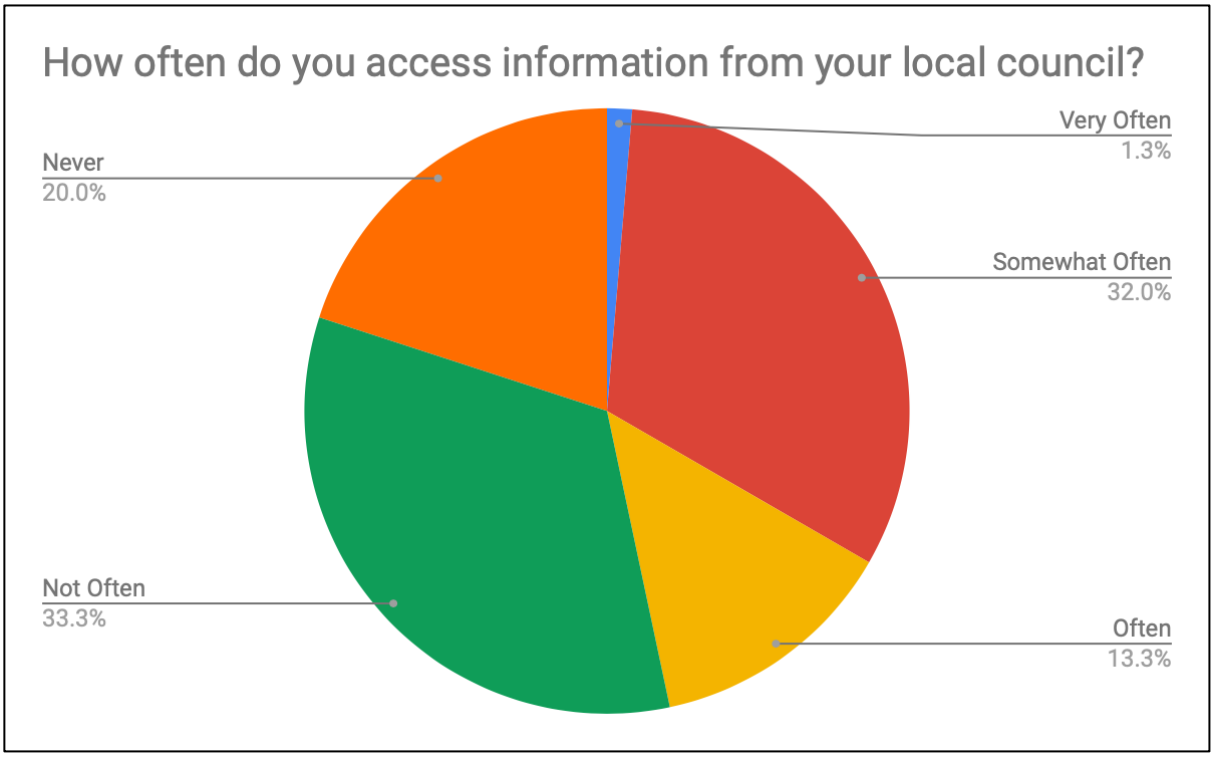
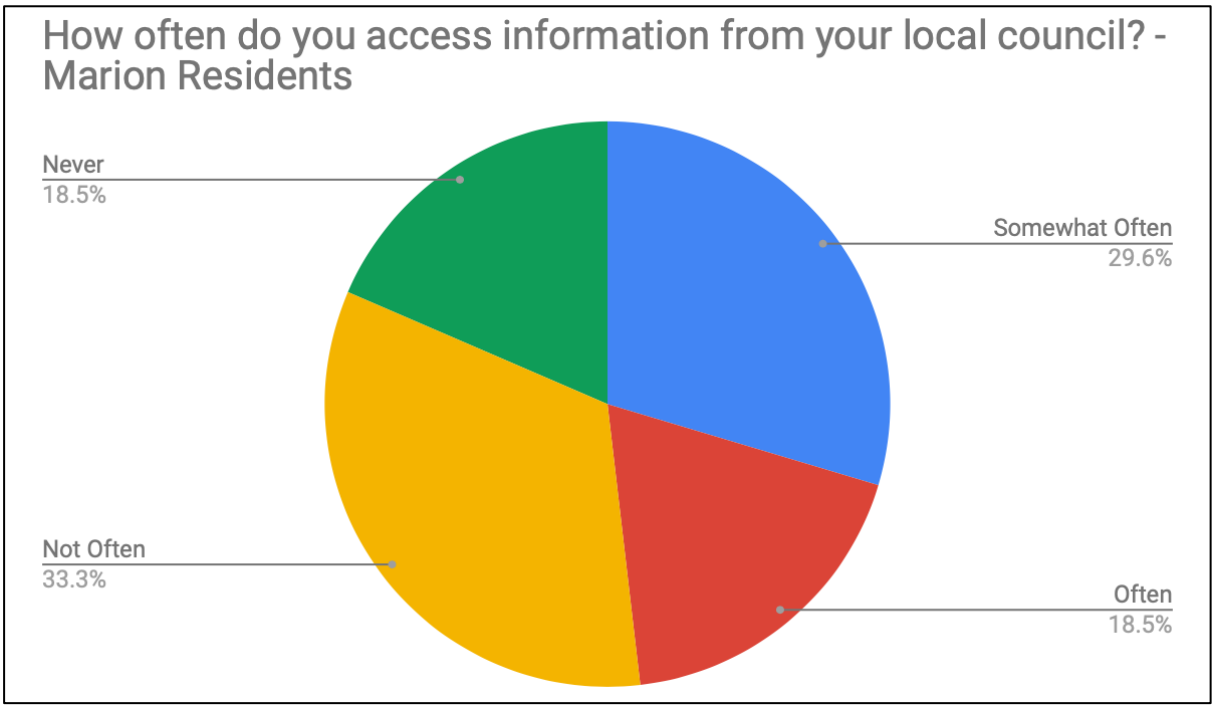


***Figure 26:* How often do you access information from your local council? - Marion Residents**



The residents of Marion showed similar trends to the overall results, with **'Not Often'** as the most selected answer with **33.3%** of respondents – seen in ***Figure 26*** above. The residents also provided interesting results when asked about how they get their information from council. **37%** of residents stated that the Local Messenger was their primary source for council information. However, over **11%** of residents stated that they did not access information regarding the council. These trends are illustrated in ***Figure 27***.

Figure 27: ***How do you get information from your council? - Marion Residents***

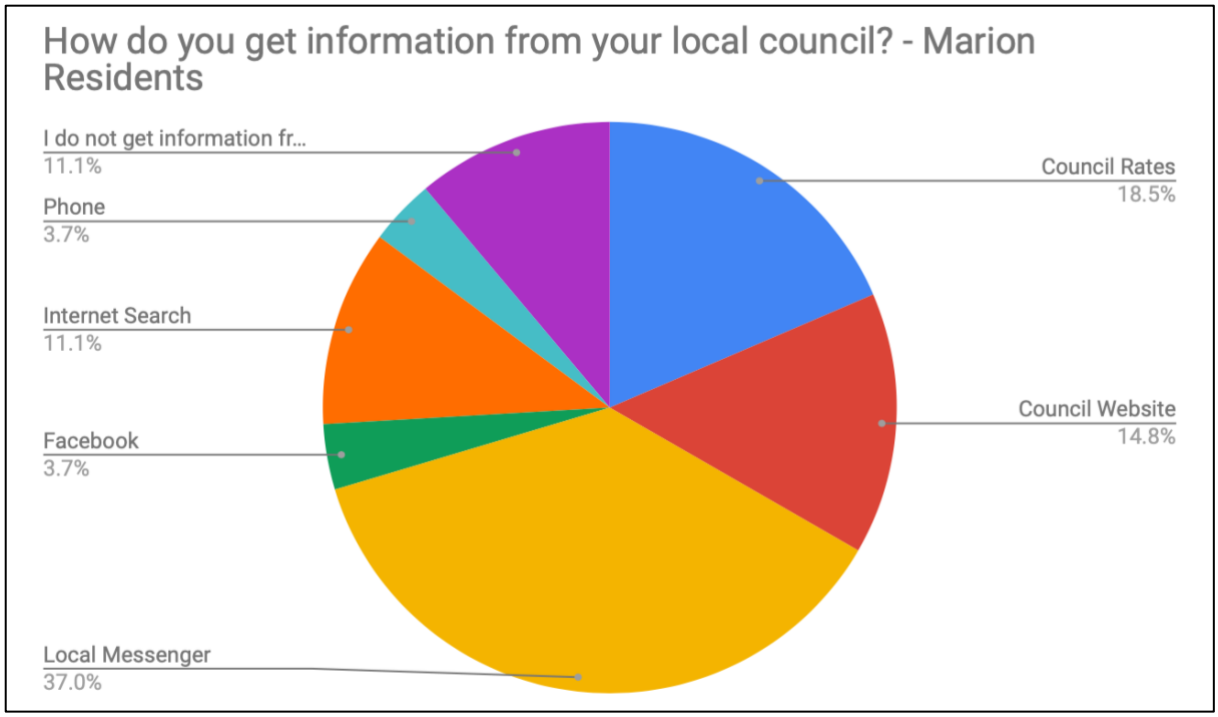
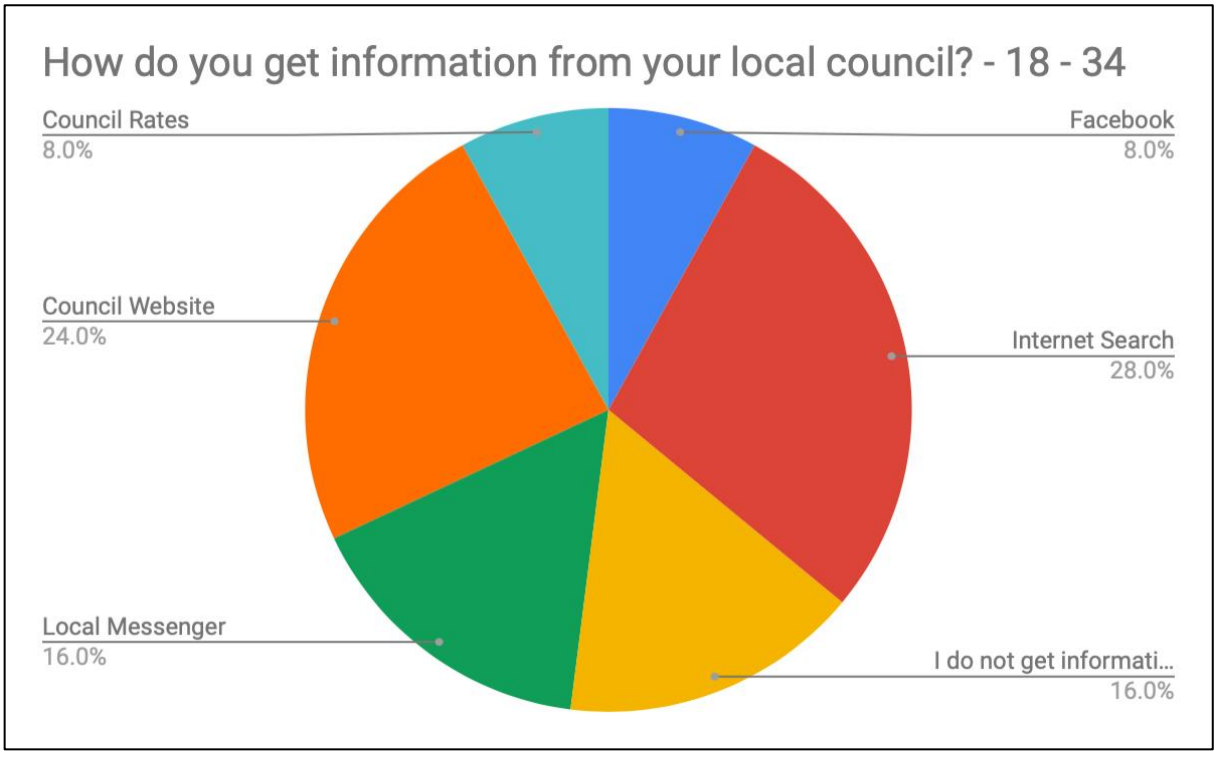


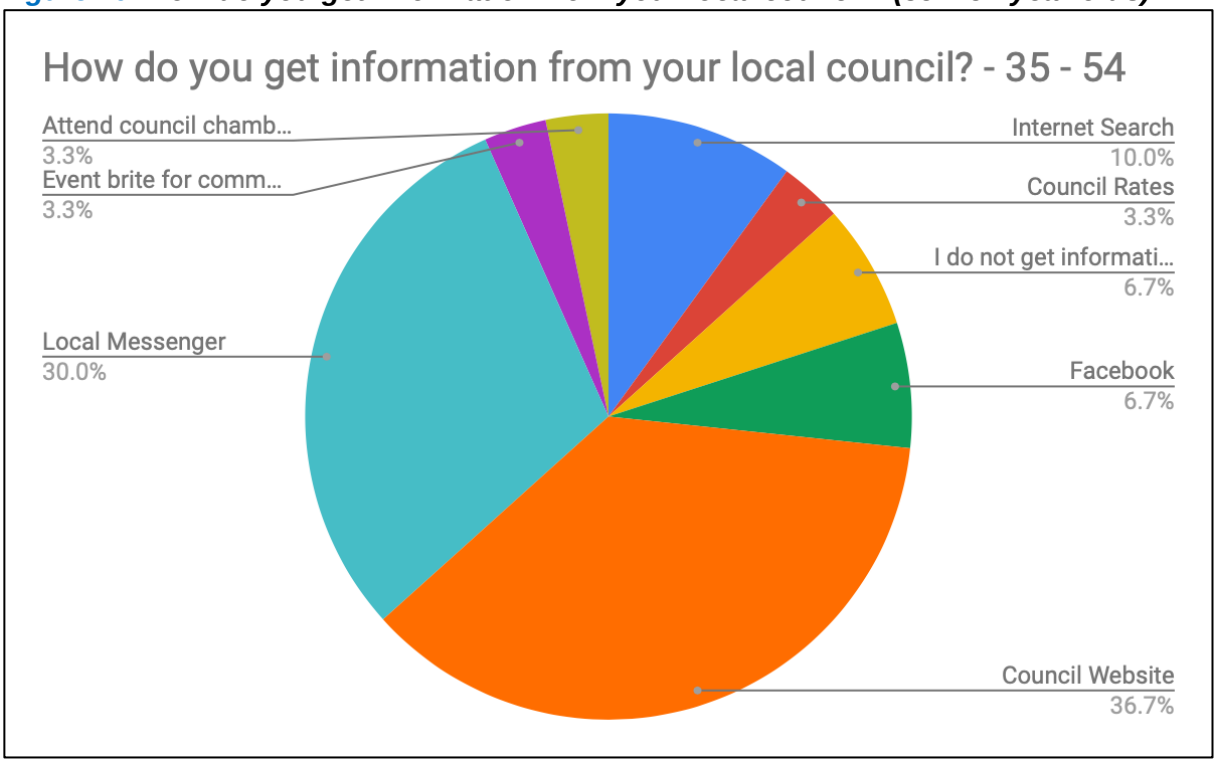
Figure 28: ***How do you get information from your local council? (18-34-year-olds)***



Our youngest respondents highlighted the importance of councils being 'Online', with **50%** of 18-34-year-olds using the internet and social media to access information – as shown in *Figure 28*. The 'Middle Age' group showed strong tendencies towards the major old and new

information sources. **30%** of 35-54-year-olds selected the Local Messenger as their predominant source of information, while nearly **37%** selected council website – seen in ***Figure 29***. Again, internet related platforms accounted for over **50%** of the responses, highlighting the importance of these platforms for modern community engagement.

Figure 29: ***How do you get information from your local council? (35 – 54-year-olds)***



Finally, the oldest residents showed predictable tendencies towards traditional mediums, such as the Local Messenger, with **42.1%** of respondents. The council website interestingly also accounted for **26.1%** of respondents as an information source, while a variety of other options made up the remainder of the results.

Figure 30: ***How do you get your information from local council? (55+ year-olds)***

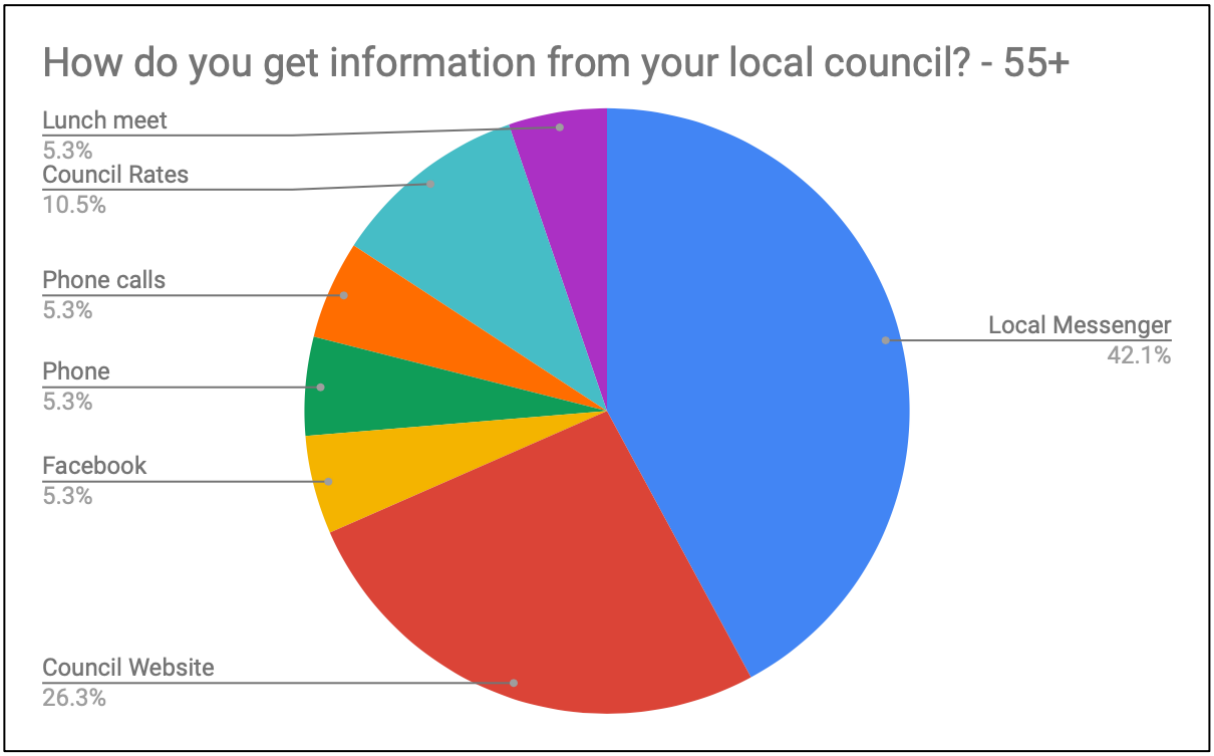
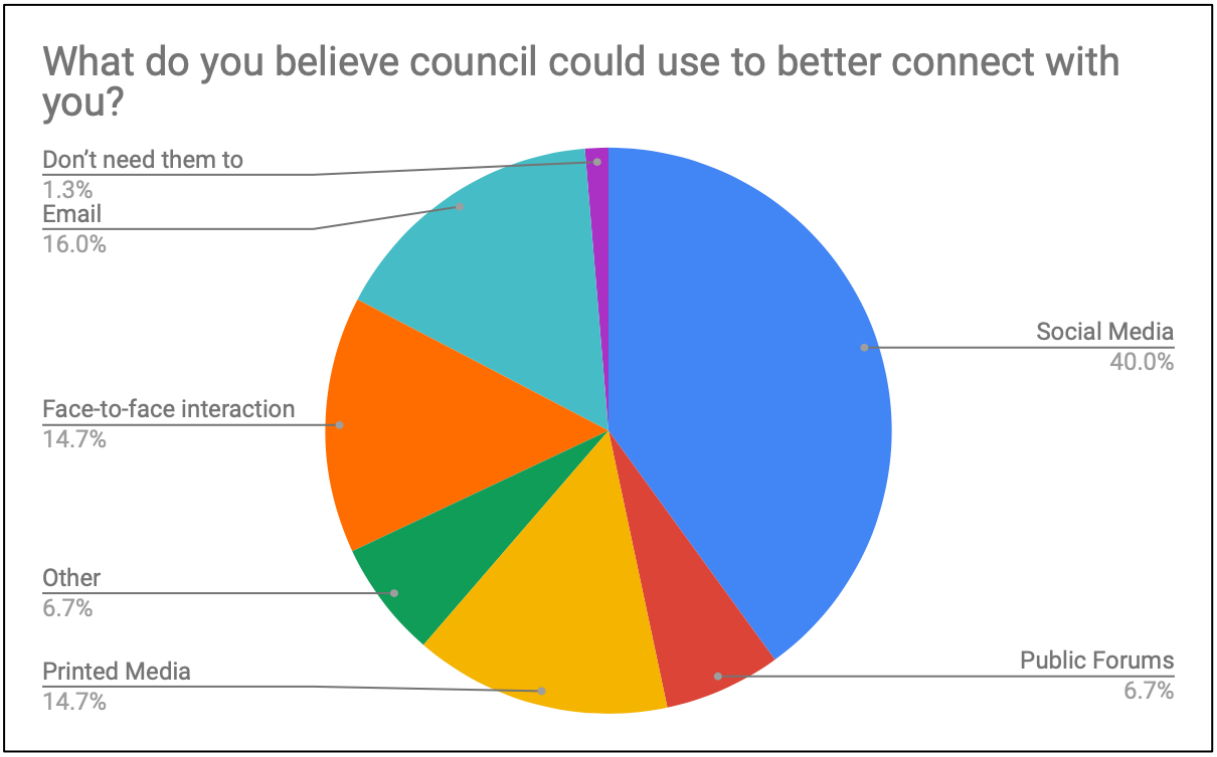
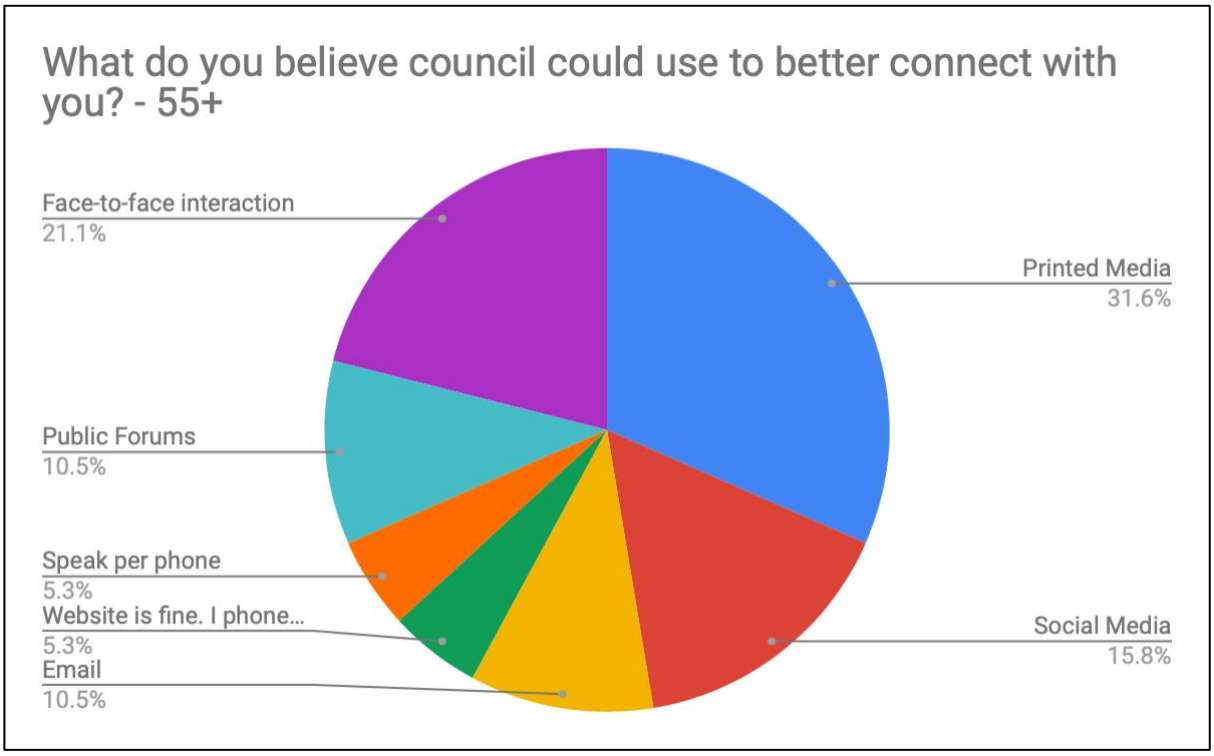


Figure 31: ***What do you believe council could use to better connect with you?***



To provide recommendations regarding engagement, the survey also asked residents and visitors about how they would like the council to interact with them. The results again highlight the importance of councils connecting with people through the internet, with **56%** of responses being internet-related – refer to ***Figure 31.*** Councils also need to make considerations for how to best interact with older residents with traditional mediums such as the Local Messenger, as well as face-to-face interactions and public forums making up a considerable number of responses from people aged 55-years and older; making up **63.2%** of respondents – as shown in ***Figure 32***.

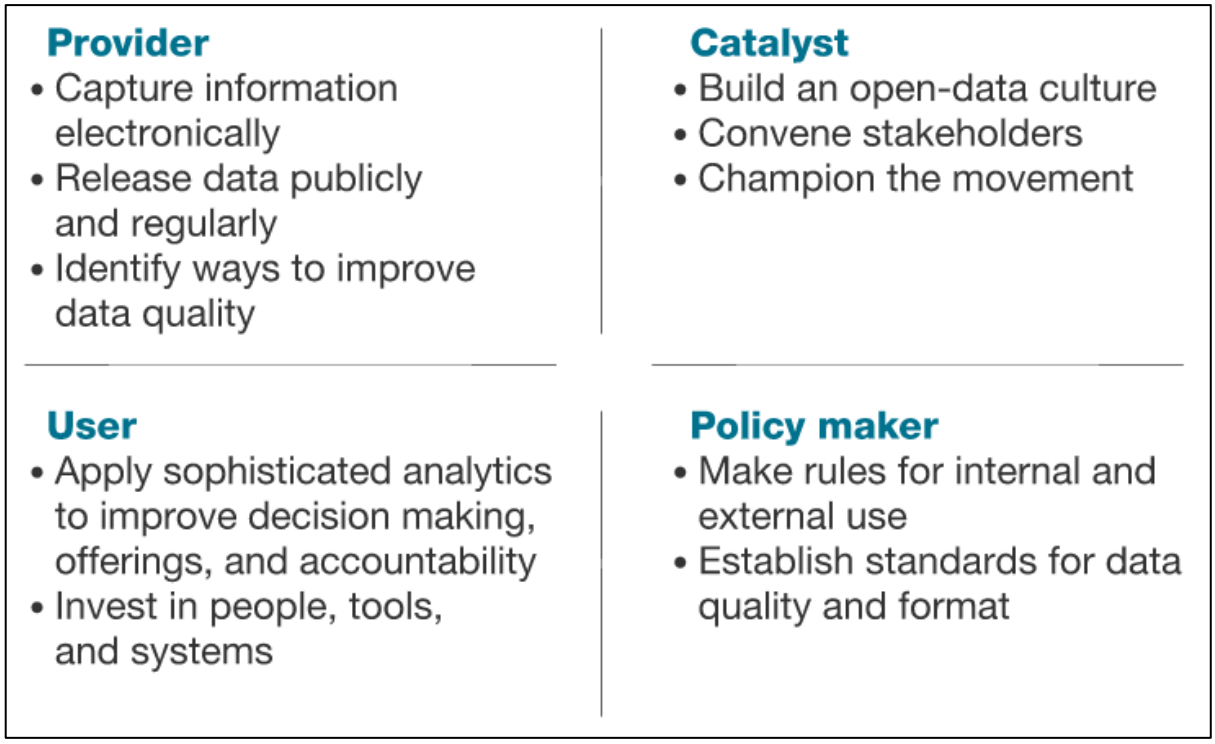
Figure 32: What do you believe council could use to better connect with you? (55+ year-olds)



7.7.2 Open Data Engagement

Governments now can revolutionise the lives of their residents through open data. It is estimated that globally open data has the potential to unleash more that $3 trillion in global economic annually (Chui et al. 2014). However, to be able to do so, it requires significant stakeholder engagement in the open data process. To be successful in open data ventures there are many roles local governments need to take, as summarised in ***Figure 33*** below.

Figure 33: ***Roles of Governments in Open Data***



Source: Chui, M., Farrell, D. & Jackson, K. 2014, *How government can promote open data,* viewed 18 June 2019, <https://www.mckinsey.com/industries/public-sector/our-insights/how-government-can-promote-open-data>.

Provider

To become one of the best Providers of open data, the council needs establish clear methods for electronic data collection and publishing. These are discussed in detail in **Section 7.6** with best practices outlined in the publishing of data. Releasing information, publically and in real-time is another important role of council as a provider and should be paramount in the City of Marion's open data strategy; this will better enable council to engage with residents and businesses. Furthermore, to become a truly great provider, the council needs to introduce methods to proactively notify interested parties that datasets are available.

Our survey found that many residents and visitors did not interact with the council because they were not aware of the services and information available within the region. Many survey respondents selected internet-related media as the best platform for engagement; however, there were variations in this response throughout age ranges. From conversations with residents, it was also gathered that they would be more likely to engage with datasets if they were accompanied by clear descriptions and advertised in the aforementioned mediums.

The use of open data published will not only drive economic activity and champion the improvement of the lives of residents, but it will also enable the council to seek external feedback and identify ways to improve data quality; a crucial part of council's role as a provider. To further enhance this movement, and to receive feedback, the platform CitizenLab is a highly considerable tool.

CitizenLab is an engagement platform for local governments, currently used by over 100 local governments around the world. The platform enables councils and people to connect and interact over various issues, from interactive budget setting, surveys, information on services and idea generation. Residents can track the development of local projects through the planning and development phases, providing feedback to council on the project development. Councils can manage all resident input and interaction in one place using the CitizenLab platform, and can use this to gain valuable insights for decision making through automated reports provided by the platform. Many cities utilising this program have maintained great success with survey response rates as high as **50%** of the population (CitizenLab 2019).

Catalyst

To attain the most from open data, council needs to serve as a Catalyst for the use of open data by creating a thriving environment of data users, coders and developers. To create this digital environment, council needs to advertise the availability of open data in the region. Our survey has illustrated that residents want to interact with and gather information from council using predominantly social media and the Local Messenger; email notifications were also suggested by survey respondents and could be used in particular to actively notify residents of newly available data sets.

However, creating this environment requires more than just advertising. The environment needs to be built on solid stakeholder engagement from all involved. Hackathons have been proven to help promote the use of data for innovative products and services. In addition, they enable many different stakeholders to convene together and create solutions to various issues. Council can also use the hackathons to test newly released data in a safe space before

making the data open, drawing on the expertise of participants to provide recommendations on integrity and safety.

Furthermore, to engage with stakeholders of all kinds, the council needs to actively notify interested parties when new datasets are available. In doing do, councils leverage the potential to attract engagement from residents and businesses with the data that is being released.

User

If the City of Marion wants to create an environment that thrives on open data, they must themselves be continuous Users of open data. Not only can council encourage businesses and residents to use open data, but it to can unlock the innovative capacity that open data presents. This requires a new, organisation-wide approach towards utilising open data.

There are two important factors for council to consider. **Firstly**, the council should optimise the use of open data within Marion. This includes investing in talent, tools and systems, training staff at all levels, from elected members to administration staff, about the benefits of open data and how to make better decisions using data. **Secondly**, the council needs to use specialised staff with the correct tools and systems to apply advanced analytics to improve decision making, create new services, increase accountability and drive innovation from within the council. For example, council could use open data to better analyse the local Community Bus to understand how it is currently being utilised, and whether they are ways to improve the Community Bus offering; as public transport and mobility options were two of the biggest concerns raised by residents of Marion and our oldest respondents in our survey.

Policy Maker

Finally, the council needs to act as a Policy Maker to ensure safety, privacy and accountability in the open data space. To ensure the integrity of all data council, in conjunction with other levels of government (local, state and federal), must realise the establishment of standards for data quality and format. This will enable users to collect data from different sources in the same format, ensuring the integrity and exceptionally increasing the value and uptake of open data.

Furthermore, council must push for stronger laws in this space and the deregulation of blockades to open data expansion. On behalf of businesses and residents, the City of Marion must take public action to support open data and foster an open data movement within the Southern and greater Adelaide. This starts with the realisation of internal and external rules

for open data within the council, using the open data frameworks available through Data.SA. With its own recognised and established rules, the council can leverage this to become a leader in an open data revolution, fostering business innovation and development and creating a truly great smart city.

8.0 DELIVERABLE 2: MAIN IMPLICATIONS OF THE RESEARCH OUTCOMES

8.1 Opportunities for Data Governance with Data.SA

Data.SA can not only be used as a portal to publish data, but can also provide the City of Marion with various tools that will prove useful when opening data, including:

- Open Data Process Guide
- Data Classification and Marking Decision Diagram
- Open Data Guide to Security Classification
- Privacy and Open Data Guideline
- Various worksheets to track the council work
- Dataset and Publisher Usage statistics.

These resources make Data.SA the first entry point for the City of Marion to engage with open data. Using this platform additionally gives maximum exposure to the published datasets as it is a major reference point of contact from data seekers and users. Furthermore, the platform is a powerful benchmarking tool that has been used through the course of this project to gather information on the current situation of open data across the state, giving insights on what data is available and what data could be made available.

8.2 Council-Driven Open Data Opportunities

Analysis of the current council-driven datasets on Data.SA has enabled an understanding of what drives the opening of data for the metropolitan councils that surround the City of Marion. While many datasets required high involvement to collect and release, the most commonly occurring open datasets relate to data that is already collected and made publicly available through council websites. This demonstrates the importance of opening low-risk and low-involvement data throughout the initial phase of council open data schemes.

These datasets will be extremely valuable for the City of Marion throughout their open data endeavours, as they demonstrate the types of data that are feasible to open, and they outline formats and variables through which the City of Marion can use to open their own data. This open data also presents an opportunity for the City of Marion to benchmark their own data, as well as create aggregate value.

Through linking the analysis of current open data on Data.SA with research into value creation and the data needs of people and business, datasets for the City of Marion to collect and release may be determined.

8.3 Creating Value with Data

Businesses and governments are aware of the importance of using data to make better decisions; the greater the data available, the broader the frame of understanding. A high percentage of data and depending on the source, around 80 - 90 % of all recorded data is currently not being used. Data without process is like gathering oil and not turning it into fuel.

Open Data is a great way to attend this phenomenon, as it multiplies the number of people and machines that can treat this data, more information for more people to see. Open data is made available so that it can be reused. The more people reuse it, the more likely it is to foster innovation, enhance efficiencies, and facilitate the development of new products and services. As data is seen and used by more and more people, the more value it produces.

Now that we understand how data creates more value, the City of Marion can take into consideration the following and try to prioritise the data it wants to share:

Figure 34: ***Focus Points to Create Value***

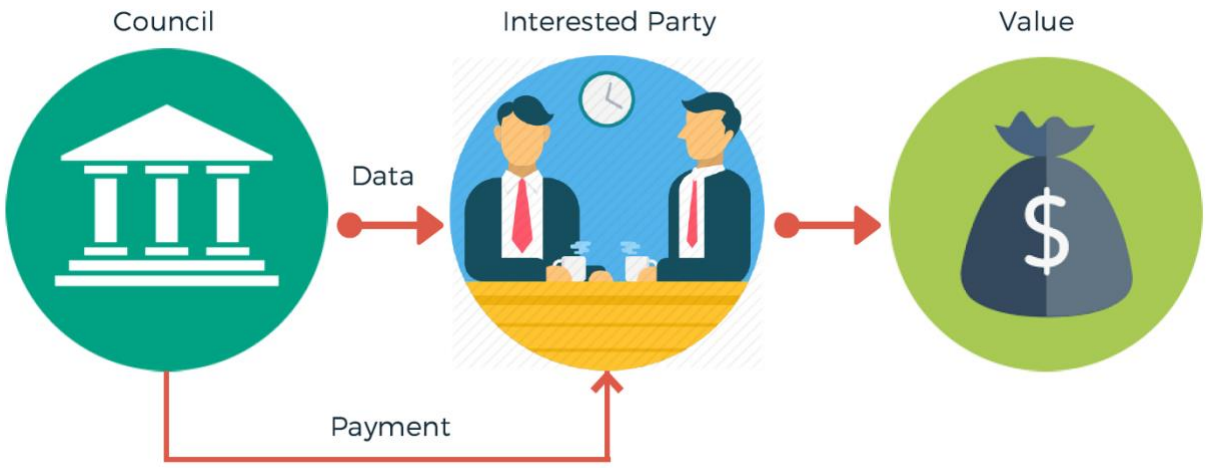
1. The datasets that will help them foster transparency and accountability with the public. This, in turn, increases trust and engagement from the community to the council.

2. The datasets and potential outcomes must be aligned with the council strategic goals; increase efficiency, benchmarking, collaboration.

3. Understanding what businesses and people need; grasping a sense of what the community will benefit from the most, and act as a catalyst to expose this interested parties to the data.

8.4 Commercialisation of Data

***Figure 35:** Traditional Commercialisation Model*



To monetise data, it is imperative to identify three relevant aspects of the data:

1. **The Use and Purpose of Data:** Raw data cannot be monetised, it must be refined in order to tell a story or serve a purpose. It must be analysed and prepared to be seen by the consumer.

2. **Technology:** It must use the correct technology to be seen and worked with. Use the correct format.

3. **Personalisation:** It must cater to the very market segment it intends to serve. A clear understanding of the client must exist in order to present the information accurately and precisely. Consumers will not buy information if it clearly influences or enhances their decisions.

Depending on the level of analysis and depth the data is subject to, different monetising schemes can occur.

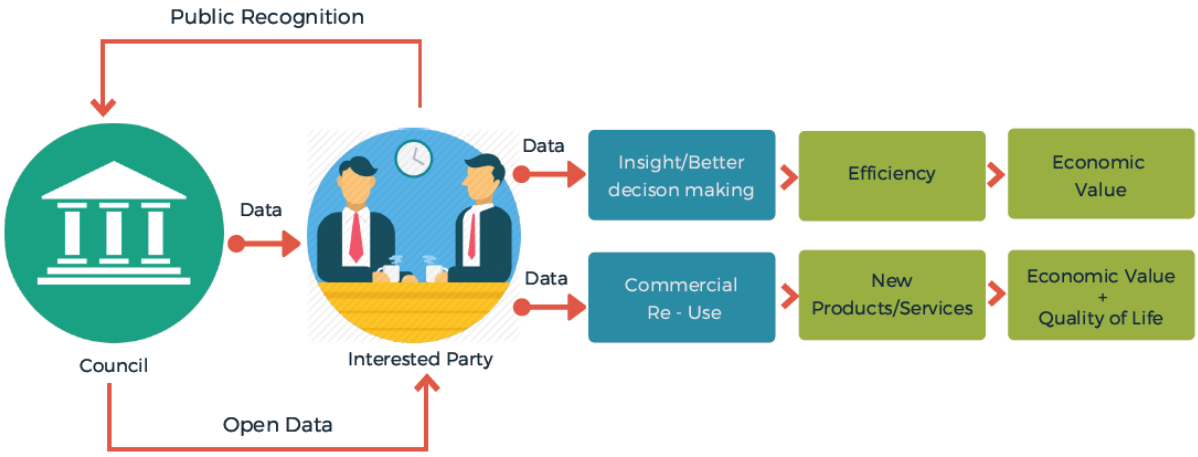
***Low-level of analysis*:** basic sorting of type of information, can be commercialised by putting the information behind a subscription-based paywall.

High level of analysis: personalisation takes place and specific products can be created. An example of these products are the industry reports that can be purchased from different consulting firms.

For this type of commercialisation to occur, resources of time, people and planning must be spent to be able to produce adequate levels of products that will be of interest to paying parties.

The possibility of analysis and the potential value creation of data is limited by using this approach. Therefore, it is of the interest City of Marion's to engage with open data. The main objective of the council is to better the life of their residents, and in such manner, maximise the potential value of their gathered data. If there is a shift of focus, a new commercialisation model can take place – seen in ***Figure 36.***

Figure 36: Open Data Commercialisation Model



This new model maximises the output of value creation with the council's data. Through open data, the potential interested party grows significantly and more machines and people encounter the data. Through the Commons Creative Licences, the council will be acknowledged as provider of the data and accountability and trust from the public will increase.

Two potential outcomes can occur:

1. Data is used by the community (businesses and people) to gain insights and enhance their decision-making. This will boost efficiencies and derive economic value.

2. Data is used for Commercial Reuse. Businesses will engage with the open data and innovate in mostly unpredictable ways. Entrepreneurs and innovation leaders will use the data to enhance or create new products and services. This will drive economic value, but also have a potential high impact on the quality of life of people.

8.5 The Importance of Servicing People & Business Needs

The data domains proven to be valuable for resident and visitor needs, business decision-making, and commercial reuse should inform the prioritisation of datasets to be opened by the City of Marion. There is no value in data that will not be used, thus open data needs to be both accessible and relevant to the parties it serves. It is important to note that people and business data needs will change over time, and certain information requirements may develop that are unique to the City of Marion's residents and businesses. Continuously engaging with and seeking feedback from residents and businesses will enable the City of Marion to stay in touch with these needs.

8.6 The Importance of Publishing & Engagement

The methods in which open data is published to the community, and the formats these data is communicated, play a major role in the dissemination of council information. Whilst many councils attempt to build community awareness of such information through mobile applications and council websites, the difficulty of navigating to find specific datasets was a limitation in data reuse.

Publishing data would not create any value to the community without a proper engagement strategy. The council needs to make any non-confidential information public and actively notify interested parties of the data that is available for potential reuse. The council should also act as a catalyst to promote an open data culture to attract an environment of data users, whilst also lobbying for changes to legislation in state and federal government to push open data.

9.0 DELIVERABLE 2: STRATEGIC RECOMMENDATIONS

9.1 Keeping Data Open

It vital that the City of Marion disregard a mindset for commercialisation for data. Instead, it is crucial that the City of Marion focus on the idea of keeping data open, and releasing as much data as possible; this concept stems directly from the considerations around non-commercialisation. Data, that is non-personal, must be kept open and must be freely accessible. In doing so, the City of Marion can create transparency within the community and stimulate engagement from people and businesses.

9.2 Use Data.SA

For data governance, we recommend that the City of Marion utilise Data.SA.

As well as being a portal to publish open data, Data.SA also maintains various resources for open data, including data frameworks, legislation and licensing components. Data.SA has all the components needed to appropriately and effectively disclose open data. Data.SA framework is an extension of the framework that the City of Marion already possesses.

Through utilising Data.SA, the City of Marion will also be appointed a Data Advocate to oversee open data activities and processes. Our extensive research leads us to additionally recommend that you involve a third-party entity to assist you with collecting data and preparing data to be released. Refer to **Appendix 6.0** for the Data.SA Framework.

9.3 Recommendation: What data should the City of Marion open?

To create the greatest potential for value creation, the City of Marion council should seek to open as much data as possible on Data.SA. The opening order of these datasets should be prioritised according to level of risk and involvement.

9.3.1 STEP 1: Gain Experience with Low Risk Data

It is important to start by opening information that is low risk, which will enable the City of Marion to gain experience and familiarise themselves with the process of opening data without compromising high value datasets. A list of recommended datasets to release within this first step is displayed in **Appendix 7.0.** Dog Registrations should be opened first, as this information is already made publicly available on Cats and Dogs Online, therefore the public

need has already been identified, and minimal effort is required for release on another platform. This should be followed by datasets relating to Waste Management, and the Mapping of Facilities by Location. This geographical mapping of facilities should also be prioritised due to its high commercial value.

Each of the recommended datasets are the most popular datasets currently opened by other metropolitan councils on Data.SA. It is valuable for the City of Marion to open corresponding datasets for three key reasons:

1. The **feasibility** of opening these data sets is confirmed
2. It enables the City of Marion to **benchmark** their results against other councils
3. **Aggregate value** is created which increases the overall value of the data.

9.3.2 STEP 2: Service the Needs of People & Business

Following the initial phase of low risk data release, the City of Marion should open data that services the identified needs of their residents, visitors, and businesses. Data that is shown to be valuable to both people and business should be prioritised, followed by data for people as residents are the council's primary concern, and finally data for business insights and decision making. A list of valuable datasets for each of these three areas is outlined in **Appendices 8.0, 9.0, and 10.0.** It is recommended that the City of Marion work through these lists and select the data they wish to open. Each of these datasets are currently opened by other Metropolitan Councils on Data.SA. It is assumed all listed data is currently collected by the City of Marion, however if it is not, then these datasets may be relocated to the third step.

9.3.3 STEP 3: High Involvement & High Value Data

Finally, it is recommended that the City of Marion allocate ongoing efforts to produce and open data that will produce high value for people, businesses, and the council itself. It is first important to address the management of two high involvement datasets that the City of Marion are already collecting.

Playground Usage Monitoring

Regarding the City of Marion's endeavour to monitor playground usage, it is suggested that the collected data should be utilised to make decisions surrounding management and further investment. The playground facilities that are found to be used the most should be targeted

for future spending, while the playgrounds that experience a rapid decline and minimal usage should be visited for inspection, potentially leading to the appropriate maintenance and repairing.

The key recommendation surrounding this project is that the City of Marion should open their playground usage data on Data.SA. This site monitoring will produce a highly valuable dataset, particularly for businesses who may use it to target popular playgrounds for events and promotions as well as locate potential markets. It will also constitute a highly unique piece of data on Data.SA, as no other councils are currently opening sensor-based real-time usage data on playgrounds. The City of Adelaide currently opens data on parkland usage total visitation, however these results are estimates, while the City of Marion's data would show true values. Adelaide's parkland usage dataset will be useful to the City of Marion in determining how usage data can feasibly be displayed and what variables to include.

Urban Activation Project

Through measuring foot-traffic at various precincts both before and after new infrastructure has been implemented, the City of Marion will ultimately be able to determine the impact and measure the success of the activation program. The facilities and amenities that are proven to increase foot-traffic should be used by council in future infrastructural programs in similar areas. While discussion of future action regarding this data has primarily surrounded providing the results of these projects to businesses within the precincts, it is predicted that these particular businesses will be limited in terms of the value they can create with this data. The primary benefit that businesses will experience through the Urban Activation Program is the infrastructure itself. It is likely that staff observation and total sales will be efficient for businesses, especially small businesses, to determine whether they are attracting more customers.

To create optimal value from this data, it is instead recommended that this data be made open for all to access on Data.SA. If the City of Marion is producing successful outcomes through engaging in projects with local businesses, then it should publicise these outcomes. Opening this data will create positive publicity for the council, which will attract other local businesses to engage in council programs in the future.

Cultural Centre Usage Monitoring

An interesting dataset related to site usage that is currently open on Data.SA is the City of Adelaide's City Library Usage. This information outlines daily door counts, number of visitors, borrowings, and facility bookings. It is recommended that the City of Marion conduct a similar

approach for the usage of their Cultural Centre in the Oaklands Precinct. As the Oaklands Precinct has been targeted as an area for development within the Council's Smart City endeavours, it will be highly beneficial to analyse and open data that is already collected on visitation to the Council's key facility in this area. Identifying number of visitors as well as popular days and time periods will enable future management and marketing decisions to be made. This recommendation also stems from the insight that the public sector will be the first user of its own open data, and it is suggested that the City of Marion use this usage monitoring to build capabilities around self-use of open data before promoting its benefits to business.

Thermal Imaging / Heat Mapping

Data that aligns with the strategic objectives of an organisation should be prioritised for opening. The City of Marion currently possesses a Tree Management Policy and Framework that recognises the environmental benefit of sustainable trees. It has also engaged in a Resilient South Urban Heat Mapping project with the Cities of Holdfast Bay, Mitcham, and Onkaparinga. This data should be used to identify urban heat islands and influence various tree planting and greening programs within the area. Again, it is recommended that the City of Marion open this data on Data.SA. Nine other Metropolitan Councils in the state have engaged in thermal imaging projects, and being the first council to release this data on Data.SA could spark other councils to do the same, making the process of aggregation for analysis much easier. Further value is identified in the opening of this dataset, as environmental and geographically displayed data is proven to have extremely high commercial value.

Traffic Intersection Volumes

Survey results indicate that traffic congestion is a huge issue for residents and visitors to the City of Marion. Councils remain limited in terms of creating solutions for this problem, as this area is primarily managed by State Government. However, what councils can do, is collect and open traffic-related data, that could potentially influence traffic-related decisions at a higher level. Currently, the City of Adelaide uses the Sydney Coordinated Adaptive Traffic System (SCATS) to measure hourly traffic volumes at several key identified intersections. This dataset has been released on Data.SA. It is recommended that the City of Marion also consider this data collection and release as a potential endeavour. Not only does it present opportunity for commercial reuse, but it could also lead to a solution by the Department of Planning, Transport and Infrastructure that will positively impact users of Marion Road.

9.4 Publishing Open Data

Open data needs to be published in a format that could easily be shared, read and manipulated to derive economic benefits for commercial reuse. The City of Marion will benefit from making data easily discoverable through search engine optimisation, use of Creative Commons Licensing for better third party data manipulation and built in data analytics. Therefore, while the council can use PDFs to share generic information to its community, more data should be published in formats such as CSV, EXCEL, and RDF to able easier data scraping and manipulation.

10.0 CONCLUSION

In summary, our research has provided several valuable insights into the South Australian Smart City Environment. The development of the Ecosystem Map and coinciding GIS Map will enable the City of Marion to understand and respond to the innovative trends occurring within this ecosystem, both today and into the future. While the Smart Waste Management and Smart Lighting recommendations provide immediate solutions for the City of Marion in their Smart City endeavours, the outlined visitor opportunities as well as the opening of traffic and environmental data present long term actions and considerations. These suggestions ultimately empower the City of Marion to shape a vision for their future that will enhance economic activity and quality of life factors for residents. Through the adoption of urban innovation and an open data mindset, the council will successfully meet these objectives.

11.0 REFERENCES

Aliga 2018, *What the heck is a Smart City?,* viewed 18 April 2019, <https://aliga.sk/en/what-the-heck-is-a-smart-city/>.

Chui, M., Farrell, D. & Jackson, K. 2014, *How government can promote open data,* viewed 18 June 2019, <https://www.mckinsey.com/industries/public-sector/our-insights/how-government-can-promote-open-data>.

CitizenLab 2019, *The citizen participation toolbox for governments,* viewed 18 June 2019, <https://www.citizenlab.co>.

City of Marion 2019, "Demographics of Marion", viewed 20 May 2019, <https://www.marion.sa.gov.au/about-council/demographics>.

Data.SA 2019, *Data.SA South Australian Government Data Directory,* Australia, viewed 1 June 2019, <https://data.sa.gov.au>.

DataStart 2018, *Data Start: About,* Australia, viewed 12 June 2019, <https://datastart.com.au/about/>.

Demsey, C 1999, *"Mapping and Geographic Information Systems (GIS) : What is GIS?*", Research Guides, Univeristy of Wisconsin –Madison Libraries , viewed 15 May 2019 <https://researchguides.library.wisc.edu/c.php?g=178144&p=1169699>.

Department of Planning, Energy and Infrastructure 2018, *Traffic Volumes,* viewed 15 May 2019, <https://dpti.sa.gov.au/traffic_volumes>.

Department of Planning, Transport and Infrastructure 2017, *Older Road Users Involved In Road Crashes In South Australia,* viewed 15 May 2019, <https://dpti.sa.gov.au/__data/assets/pdf_file/0019/247330/Older_Road_Users_-_Road_Crash_Fact_Sheet.pdf>.

Land Transport Authority 2013, *Press Room*, viewed 15 May 2019, <https://www.lta.gov.sg/apps/news/page.aspx?c=2&id=830c5cd6-f3cf-4624-b35b-f0f84dbb441d>.

Research Guides, *University of Wisconsin –Madison Libraries*, viewed 15 May 2019 <https://researchguides.library.wisc.edu/c.php?g=178144&p=1169699>.

Siebert, B 2018, *Electric vehicles on the rise in South Australia,* viewed 13 May 2019, <https://indaily.com.au/news/2018/06/21/electric-vehicle-sales-on-the-rise-in-south-australia/>.

Smart Cities World 2018, *SmartCitiesWorld City Profile – San Diego,* viewed 15 May 2019, <https://www.smartcitiesworld.net/opinions/smart-cities-reports/smartcitiesworld-city-profile--san-diego>.

Solar Bins Australia 2019, *Bigbelly® Sustainable Waste & Recycling Management. Change your space*, viewed 16 May 2019, <https://www.solarbins.com.au>.

Sunshine Coast Council 2019, *Automated Waste Collection System,* viewed 16 May 2019, <https://www.sunshinecoast.qld.gov.au/Council/Planning-and-Projects/Infrastructure-Projects/Automated-Waste-Collection-System>.

Trencher, G and Karvonen, A, 2018, "Innovating for an aging society: Insights from two Japanese smart cities", *ResearchGate,* viewed 15 May 2019, <https://www.researchgate.net/profile/Gregory_Trencher/publication/323545488_Innovating_for_an_aging_society_Insights_from_two_Japanese_smart_cities/links/5a9bb38e0f7e9be3796699ad/Innovating-for-an-aging-society-Insights-from-two-Japanese-smart-cities.pdf>.

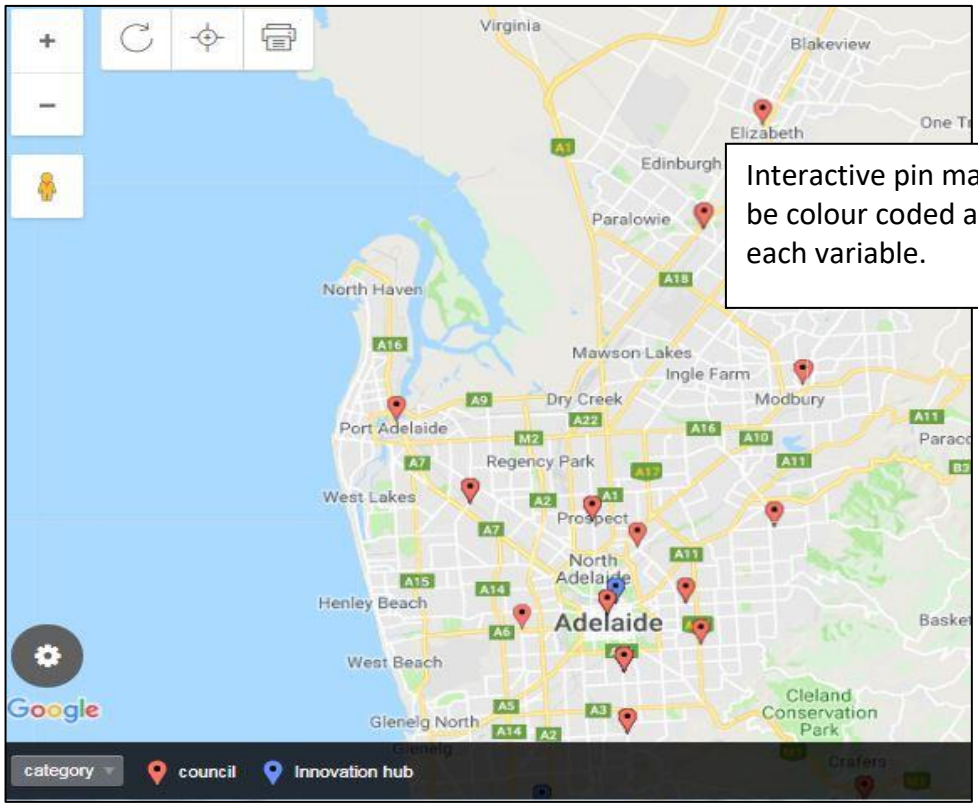
12.0 APPENDIX

1.0 Dataset of Smart City initiatives facilitated by 18 Metropolitan Councils and Innovation Hubs – section screenshot

Address	Locations	Driver	Innovation	Smart City Category	User	Sensors	Data	Open Data	Technology	Status
25 Pirie St	City of Adelaide	Council	Ten Gigabit	Connectivity	Residents - Business	No	No	No	High-Speed Internet	Implemented
571 Montague Rd, Modbury SA 5092	City of Teatree Gully	Council	NBN 4G Coverage	Connectivity	Residents - Business	No	No	No	High-Speed Internet	Implemented
181 Unley Rd	City of Unley	Council	NBN 4G Coverage	Connectivity	Residents - Business	No	No	No	High Speed Internet	Implemented
128 Prospect Rd, Prospect SA 5082	City of Prospect	Council	Fast Public Wi-Fi	Connectivity	Residents - Business	No	No	No	Wi-Fi	Implemented
6 MAB Eastern Promenade, Clovelly Park	Tonsley Innovation District	Business	Ten Gigabit	Connectivity	Residents - Business	No	No	No	High-Speed Internet	Implemented
53 Mawson Lakes Blvd, Mawson Lakes SA	Innovation House	Business	Wifi, Network Data and Communication Solutions	Connectivity	Council - Business	No	No	No	High-speed Internet	Implemented
62 Commercial Rd, Port Adelaide SA 5015	City of Port Adelaide Enfield	Council	Smart Wayfinding	Digital Applications	Residents-Visitors	No	Yes	Yes	Interactive Touchscreens & Wi-Fi ports	Development
13 James St, Salisbury SA 5108	City of Salisbury	Council	Dogs and Cats Online (DACO) system.	Digital Applications	Council - Residents	No	Yes	No		Implemented
181 Unley Rd	City of Unley	Council	Dogs and Cats Online (DACO) system.	Digital Applications	Council - Residents	No	Yes	No		Implemented
43 High St, Gawler East SA 5118	Town of Gawler	Council	Cemetary Record Digitisation	Digital Applications	Council - Residents	No	Yes	No		Implemented
43 High St, Gawler East SA 5118	Town of Gawler	Council	Cloud Solutions	Digital Applications	Council	No	Yes	No	Cloud-Based Organisational Management System	Implemented
North Terrace, Adelaide SA	Lot Fourteen	Business	Cloud Engineering	Digital Applications	Council	No	No	No	Cloud Engineering	
North Terrace, Adelaide SA	Lot Fourteen	Business	Cyber-security for Data	Digital Applications	Council	No	No	No	Cyber-Security for Data	
North Terrace, Adelaide SA	Lot Fourteen	Business	LAAMP - Learning and Assessment Management Plat	Digital Applications	Council - Business	No	No	No	Mobile Application	
North Terrace, Adelaide SA	Lot Fourteen	Business	Data Analytics	Digital Applications	Council - Business	No	No	No	Data Analytics	
72 Woodville Rd	City of Charles Sturt	Council	Low-Power networks	Digital Applications	Council	Yes	Yes	No	Sensors - ICT	Development
North Terrace, Adelaide SA	Lot Fourteen	Business	IOT Connectivity solutions	Digital Applications	Council	Yes	Yes	No	IOT	
51 Mawson Lakes Blvd, Mawson Lakes SA	Innovation House	Business	IOT and Connectivity Solutions	Digital Applications	Council - Business	No	No	No	High-speed Internet	Implemented
54 Mawson Lakes Blvd, Mawson Lakes SA	Innovation House	Business	Vehicle Telematics and Tracking Solutions	Digital Applications	Council - Business	No	Yes	No	3G and Satellite Tracking	Implemented
22 Henley Beach Rd, Mile End SA 5031	SA Innovation Hub	Business	Mobile X-Rays	Digital Applications	Residents - Business	No	Yes	No	Mobile X-Rays - Healthcare	Development
22 Henley Beach Rd, Mile End SA 5031	SA Innovation Hub	Business	Mobile PDA	Digital Applications	Residents - Business	No	Yes	No	Mobile Health Care Plan/ Schedule	Development
66 Walkerville Terrace	Town of Walkerville	Council	Recharge Scheme	Electric Vehicle Charging	Residents	No	No	No	Charging Stations - Motorised Mobility Devices	Planned
24 Pirie St	City of Adelaide	Council	Electric Vehicle Charging Points	Electric Vehicle Charging	Residents	No	No	No	Mobility Recharge Points	Implemented
181 Unley Rd	City of Unley	Council	Electric Vehicle Charging Points	Electric Vehicle Charging	Residents	No	No	No	Mobility Recharge Points	Implemented
175 The Parade Norwood	City of Norwood Payneham and St Pe	Council	Electric Vehicle Charging Points	Electric Vehicle Charging	Residents	No	No	No		Development
Brighton Civic Centre, 24 Jetty Road	City of Holdfast Bay	Business	Electric Vehicle Charging Point	Electric Vehicle Charging	Residents	No	No	No	2 Tesla Model S / Model Xs Port	Implemented
245 Sturt Rd, Sturt SA 5047	City of Marion	Business	Electric Vehicle Charging Point	Electric Vehicle Charging	Residents	No	No	No	CHAdeMO DCFC, 2 Tesla Model S / Model Xs Port	Implemented
131 Belair Rd, Lower Mitcham SA 5062	City of Mitcham	Business	Electric Vehicle Charging Point	Electric Vehicle Charging	Residents	No	No	No	Mennekes (Type 2), CCS DCFC Port	Implemented
72 Woodville Rd	City of Charles Sturt	Business	Electric Vehicle Charging Point	Electric Vehicle Charging	Residents	No	No	No	2 Tesla Model S / Model Xs Port	Implemented
165 Sir Donald Bradman Dr, Hilton SA 503	City of West Torrens	Business	Electric Vehicle Charging Point	Electric Vehicle Charging	Residents	No	No	No	Mennekes (Type 2) Port	Implemented
181 Unley Rd	City of Unley	Business	Electric Vehicle Charging Point	Electric Vehicle Charging	Residents	No	No	No	EV Plug (J1772) Port	Implemented
181 Unley Rd	City of Unley	Business	Electric Vehicle Charging Point	Electric Vehicle Charging	Residents	No	No	No	2 Tesla Model S / Model Xs Port	Implemented
401 Greenhill Rd	City of Burnside	Business	Electric Vehicle Charging Point	Electric Vehicle Charging	Residents	No	No	No	EV Plug (J1772), 2 Tesla Model S / Model Xs Port	Implemented
63 Mt Barker Road, Stirling	Adelaide Hills Council	Business	Electric Vehicle Charging Point	Electric Vehicle Charging	Residents	No	No	No	2 EV Plug (J1772)s, Tesla Model S / Model X Port	Implemented
63 Mt Barker Road, Stirling	Adelaide Hills Council	Business	Electric Vehicle Charging Point	Electric Vehicle Charging	Residents	No	No	No	EV Plug (J1772) Port	Implemented
571 Montague Rd, Modbury SA 5092	City of Teatree Gully	Business	Electric Vehicle Charging Point	Electric Vehicle Charging	Residents	No	No	No	2 EV Plug (J1772)s Port	Implemented
12 James St, Salisbury SA 5108	City of Salisbury	Business	Electric Vehicle Charging Point	Electric Vehicle Charging	Residents	No	No	No	2 Wall Outlet (3112)s Port	Implemented

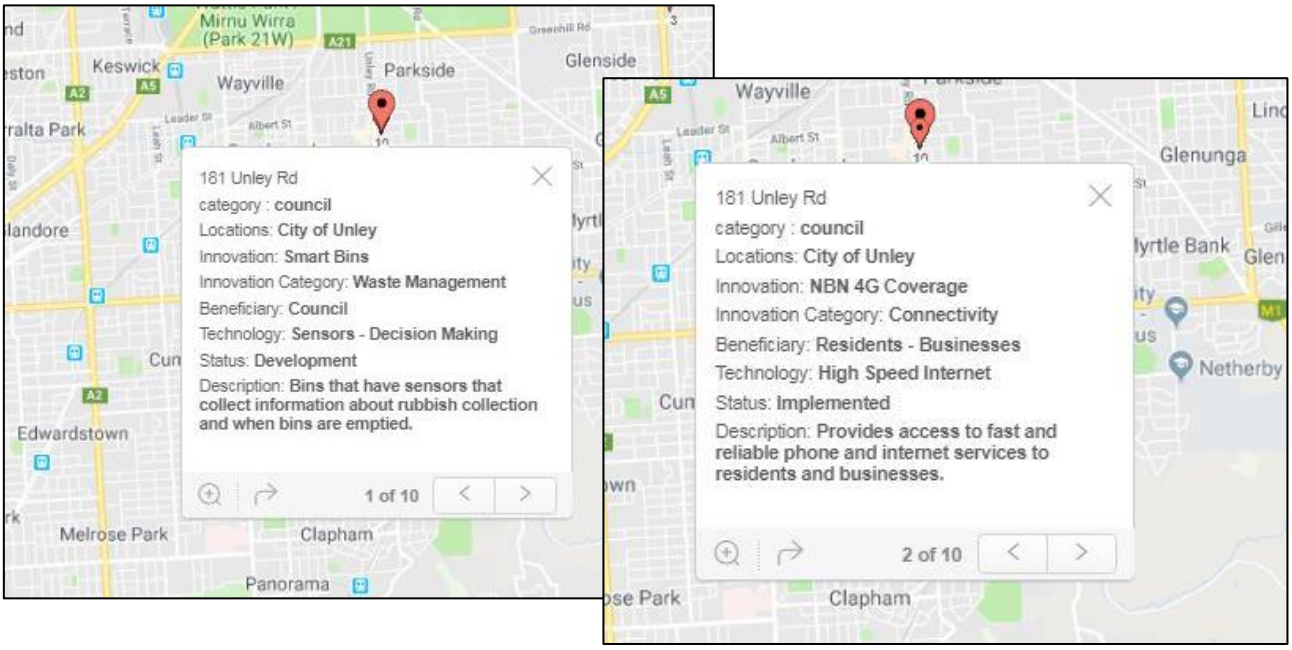
2.0 Interactive Geographical Information System (GIS) Map

This is the first layer of information on the GIS Map

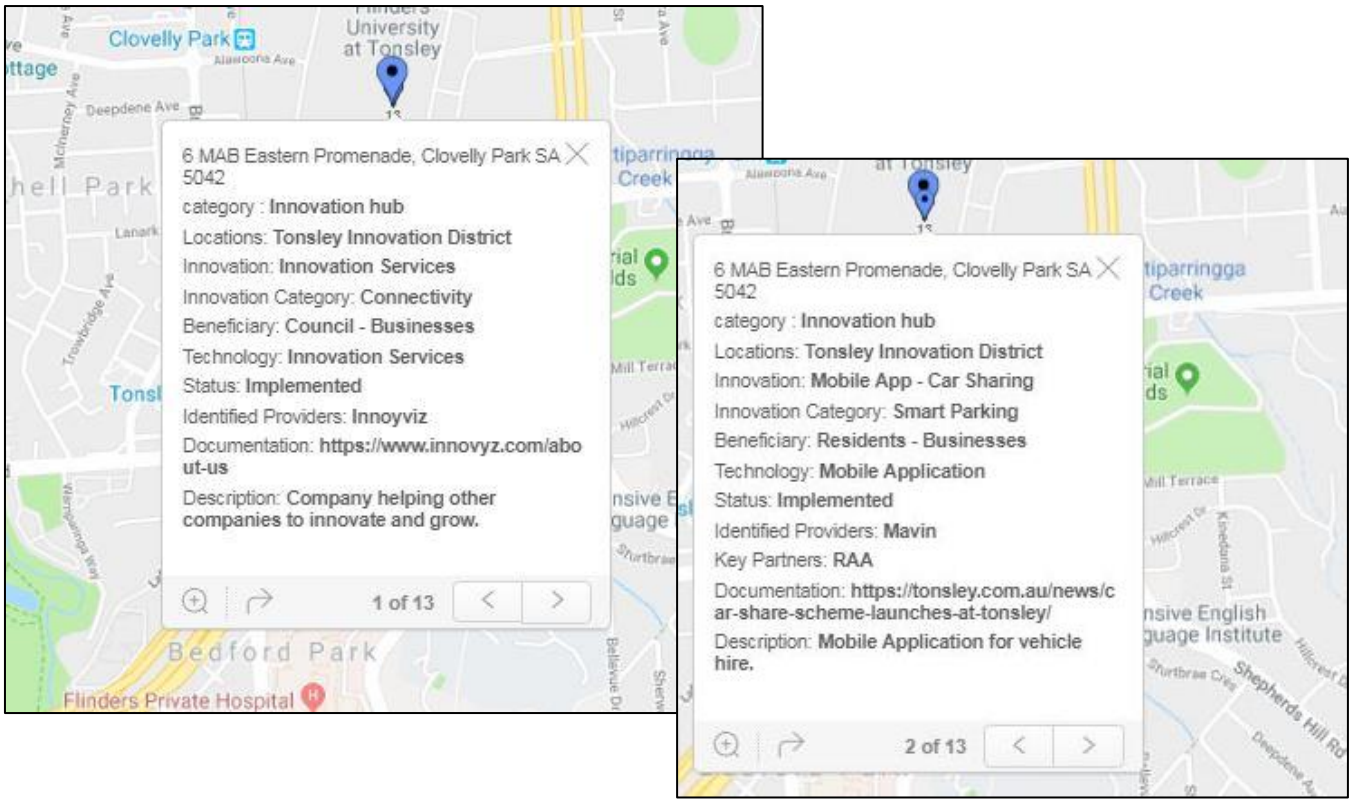


Interactive pin map which can be colour coded according to each variable.

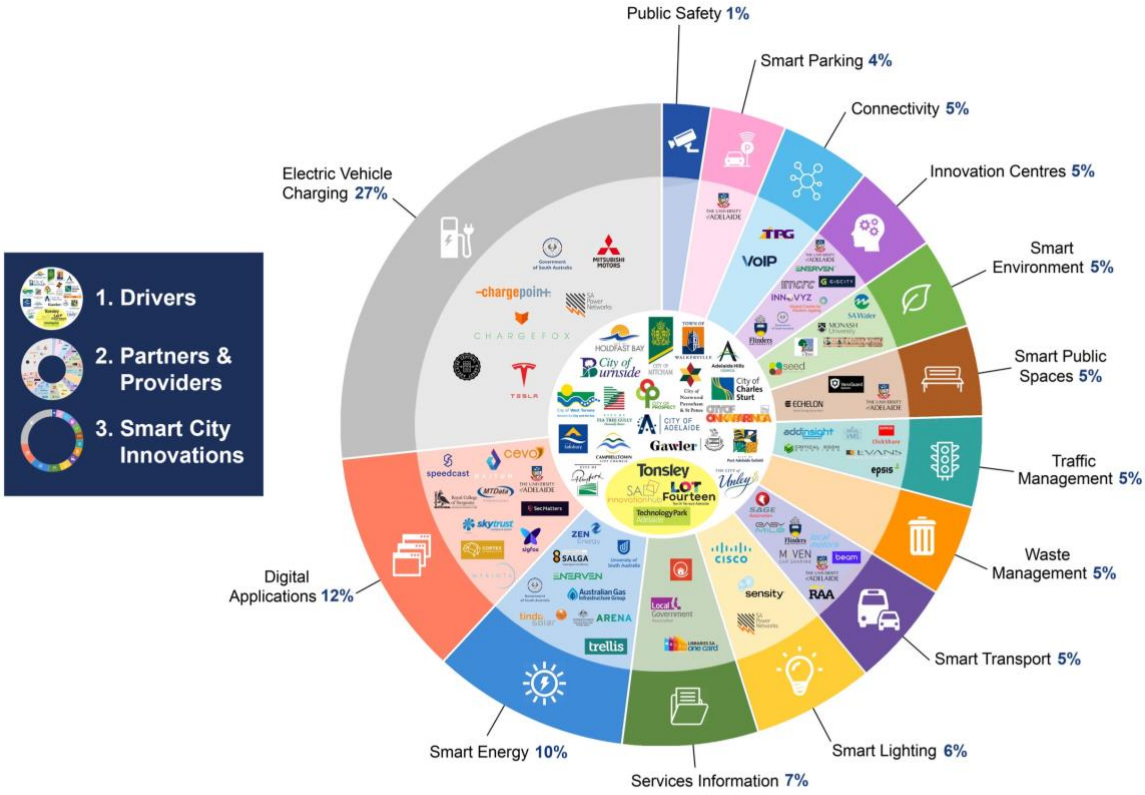
2.1 Innovations facilitated by Council



2.2 Innovations facilitated by Innovation Hubs



3.0 South Australian Ecosystem Map – Expanded Information



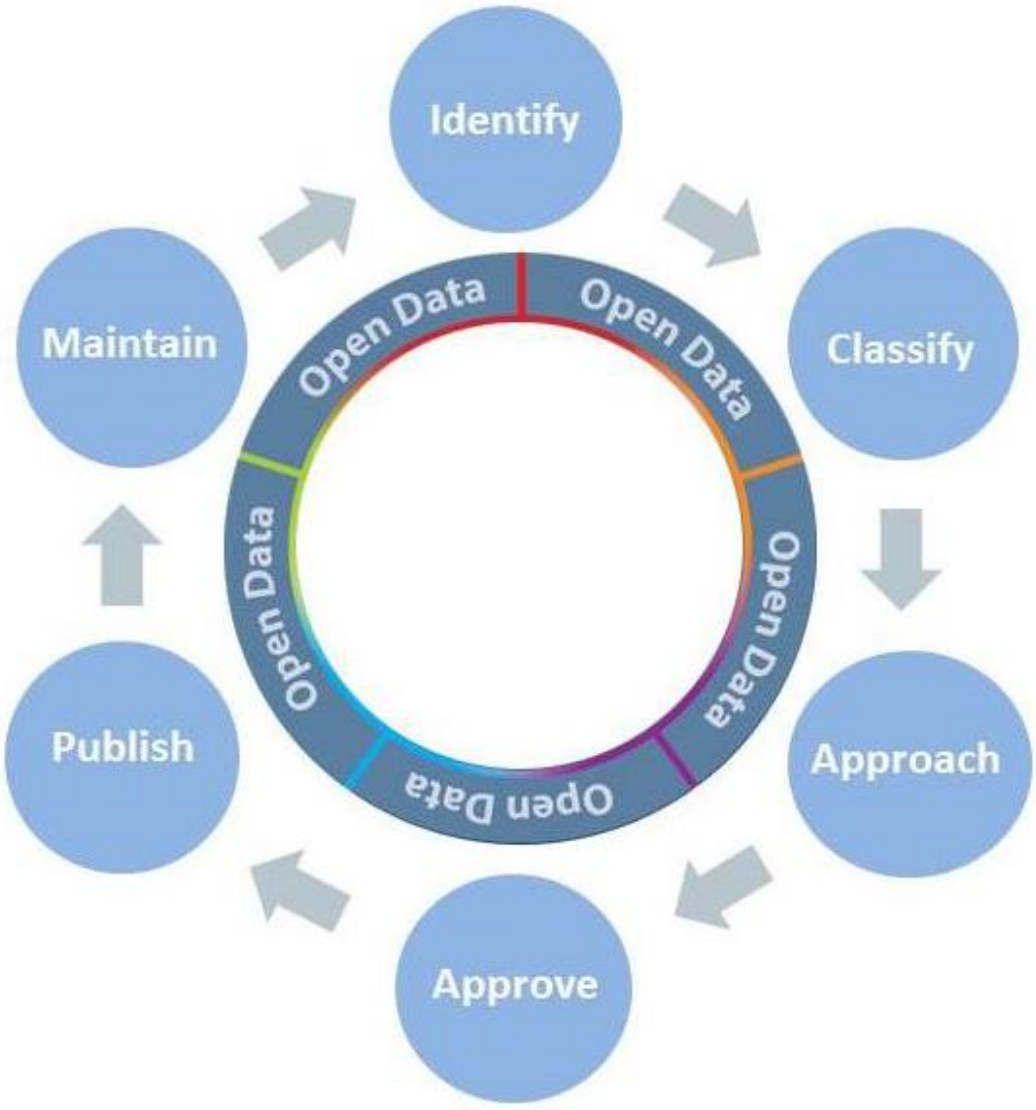
4.0 Description of South Australian Ecosystem Map Categories

Electric Vehicle Charging	Equipment that connects an electric vehicle to an electricity source to recharge electric cars, neighbourhood electric vehicles and plug-in hybrids.
Digital Applications	Computer programs and systems that perform a broad range of business and organisational processes.
Smart Energy	Renewable energy production as well as sustainable energy services, monitors, and enabling technologies
Services Information	Applications enabling residents and visitors to access information on public services
Smart Lighting	Energy efficient and sensor-based street lighting
Smart Transport	Alternative transportation solutions, including driverless vehicles, e-scooters, and car sharing applications
Waste Management	Public bins with internal compactors and sensors that monitor rubbish levels for collection
Traffic Management	Traffic systems including traffic and roadwork monitoring and variable message signage
Smart Public Places	New features for benches, playgrounds, libraries and other public facilities including automated amenities, Wi-Fi connectivity, energy ports, and sensors for usage monitoring
Smart Environment	Environmental monitoring and use of recycled materials
Innovation Centres	Institutes that provide research, technology development, and training for a range of technology areas, including the Australian Institute for Machine Learning and the Global Centre for Modern Ageing
Connectivity	High-speed and high-performance Internet services through wireless and data network technologies including NBN 4G Coverage and Ten Gigabit
Smart Parking	Sensors used in conjunction with mobile applications to enable drivers to find parking
Public Safety	Noise monitors, CCTV cameras, and emergency assist buttons to notify authorities of unsafe behaviour

5.0 Data.SA Open Datasets

Council	No. of Datasets	Followers	Types of Data	Categories
City of Campbell town	2	0	Open space areas Shapefile for city council pits	
City of mount gambier	2	1	Destitute Register Mount Gambier Main Street Traders	*Arts, culture and history *Business, industry and trade
Port Adelaide Enfield Council	23	2	Public Toilets in City of Port Adelaide Enfield Points of Interest in the City of Port Adelaide Enfield Council Managed Buildings Stormwater Network at City of Port Adelaide Enfield Streets in City of Port Adelaide Enfield Land Parcels in City of Port Adelaide Enfield Community Bus Routes Footpaths in the City of Port Adelaide Enfield Kerbs in City of Port Adelaide Enfield Playgrounds in the City of Port Adelaide Enfield Council Wards in City of Port Adelaide Enfield Movie and TV Series Filming Locations Dog Registrations - City of Port Adelaide Enfield Local History Photo Collection - Port Adelaide Enfield Census - Community Profile Reserves in the City of Port Adelaide Enfield Coast and River in City of Port Adelaide Enfield Recycling Collection Areas Waste Collection Areas Reserves for Hire Community Halls for Hire - Port Adelaide Enfield Skate Parks in City of Port Adelaide Enfield Dog Parks and On-Leash Conditions in City of Port Adelaide Enfield	*Community information and citizen service *Water, energy, resources, environment and sciences *Housing, land, planning and infrastructure *Government reporting and policy *Arts, culture and history *Health and well being *Sports and recreation *Transport, travel and monitoring *Education, skills and learning *Finance and employment
Mount barker district council	3	0	Mount Barker District Council Designated Dog Areas Mount Barker District Council Community Land Mount Barker District Council Roads	*Transport, travel and monitoring
City of burnside	7	2	Burnside Bike Racks Burnside Street Trees Burnside Public Toilets Burnside Parks and Reserves Burnside Walking Trails Burnside Proposed Projects 2015/16 Burnside Dog Registrations	*Community information and citizen service *Sports and recreation *Transport, travel and monitoring
City of Adelaide	70		Event Notification Residential Dwellings Torrens Lake Water Quality Traffic Intersection Volumes Traffic Restrictions Dog Registrations City of Adelaide Census of Land Use and Employment Park Land Sporting Facilities Traffic Intersection Volumes UPark Car Parks - Available Spaces On Street Parking Zones 3D Model of the City of Adelaide City Library Daily Door Count Stormwater Network Cafe and Restaurant Seating Outdoor Dining Permits Torrens River Water Quality - Upstream and Downstream from Lake 3D Model of the City of Adelaide Properties Land Use Torrens Lake Aerator Public Lighting Road Lane and Intersection Network Bridges and Culverts Kerb and Water Table Network Footpath Network Parking Expiations Issued by Adelaide City Council Customer Call Types Cafe and Restaurant Seating Bike Hire Locations Customer Interaction Volumes Adelaide City Council Greenhouse Gas Inventory Enterprise Adelaide services provided to city business owners Litter Bins BBQ's Park Land Toilets On Street Parking Ticket Machines Seats Building Height Restrictions Waste Management	Community information and citizen service Water, energy, resources, environment and sciences Housing, land, planning and infrastructure Government reporting and policy Arts, culture and history Business, industry and trade Health and well being Sports and recreation Transport, travel and monitoring Education, skills and learning Finance and employment

6.0 Data.SA Framework



Source: Data.SA 2019, *Data.SA South Australian Government Data Directory,* Australia, viewed 1 June 2019, <https://data.sa.gov.au>.

1. Identify

Data providers need to consider what datasets are available for release. Agencies create, collect, process, preserve, maintain and disseminate all sorts of data while doing business. There are several activities that need to occur through the identify step of the open data process. Including identified data, confirm who is the Data Authority; establishing if there are third party rights; and considering the value and quality of the data identified.

2. Classify

Data can only be considered for release under open data after being assessed in terms of information confidentiality, integrity and availability classifications and applicable markings have been applied. Where data meets the requirements of open data, a licence classification using the AusGOAL licence framework is also required to ensure users know how they can use the data.

The Creative Commons Licences: The Creative Commons Licences will help the with the acknowledgement of data providers and determine the attribution levels the published data will have.

	**Attribution** CC BY This license lets others distribute, remix, tweak, and build upon your work, even commercially, as long as they credit you for the original creation. This is the most accommodating of licenses offered. Recommended for maximum dissemination and use of licensed materials. View License Deed | View Legal Code
	**Attribution-ShareAlike** CC BY-SA This license lets others remix, tweak, and build upon your work even for commercial purposes, as long as they credit you and license their new creations under the identical terms. This license is often compared to "copy left" free and open source software licenses. All new works based on yours will carry the same license, so any derivatives will also allow commercial use. This is the license used by Wikipedia, and is recommended for materials that would benefit from incorporating content from Wikipedia and similarly licensed projects. View License Deed | View Legal Code
	**Attribution-NoDerivs** CC BY-ND This license allows for redistribution, commercial and non-commercial, as long as it is passed along unchanged and in whole, with credit to you. View License Deed | View Legal Code
	**Attribution-NonCommercial** CC BY-NC This license lets others remix, tweak, and build upon your work non-commercially, and although their new works must acknowledge you and be non-commercial, they do not have to license their derivative works on the same terms. View License Deed | View Legal Code
	**Attribution-NonCommercial-ShareAlike** CC BY-NC-SA This license lets others remix, tweak, and build upon your work non-commercially, as long as they credit you and license their new creations under the identical terms. View License Deed | View Legal Code
	**Attribution-NonCommercial-NoDerivs** CC BY-NC-ND This license is the most restrictive of our six main licenses, only allowing others to download your works and share them with others as long as they credit you, but they cannot change them in any way or use them commercially. View License Deed | View Legal Code

Source: Data.SA 2019, *Data.SA South Australian Government Data Directory,* Australia, viewed 1 June 2019, <https://data.sa.gov.au>.

3. Approach

Data needs to be in a format that makes it easy to use, transform and reuse. It is important for the community to have confidence that the data they are accessing is current, reliable and well managed. Approaches that securely automate the release of regular or live open data services directly from Data SA will be favoured, in order to generate sustainable value. Format and Frequency of release must be considered.

4. Approve

The approval process for open data is necessary to protect both the government and the people of South Australia. The approval process covers all aspects of the open data process from identifying data, third party rights, classification, marking, and ongoing commitment to the approach for release of the data.

5. Publish

Once data is approved, a Data Authority will need to ensure the data is prepared and published in accordance with approved open data decisions. The approved Open Data Process Worksheet will guide the preparation and publishing steps required.

Once datasets are prepared for release, they can be published by the data provider on Data.SA. The Data.SA publisher will require:

- Data.SA Publishing Content Summary
- Data file or URL of Linked dataset
- Interpretation metadata – separate open format file
- Other resources such web-links, reports, images.

6. Maintain

The approval of open data commits the data provider to maintain the data. Ensuring users of data have confidence in the supply and maintenance of the data is a critical element that affects the value of the data.

It is the Data Advocate's responsibility for ensuring data is maintained. It is recommended that the Data Advocate have oversight to ensure that the maintain process is implemented across the agency. An open data register may assist this process. Four elements are of importance to appropriately maintain data.

- Maturity
- Data Maintenance
- Data Amendments
- Community Feedback.

7.0 What Data to Open Recommendation (Step 1)

Step 1: Open Low Risk Data						
Data Area:	**Data Set:**	**Description:**	**Example Published By:**	**Potential Value:**		
DOG REGISTRATIONS	**Dog Registrations**	List of dogs registered in City of Marion Council area for a particular period.	City of Adelaide	✓	✓	
WASTE MANAGEMENT	**Waste Management**	Amount of waste collected in tonnes and by number of bins.	City of Adelaide	✓	✓	
	Waste Collection Zones	Waste collection areas in City of Marion and general waste collection for each day of the week.	City of Port Adelaide Enfield	✓	✓	✓
FACILITIES BY LOCATION	**Parks and Reserves**	List of facilities by location within the City of Marion.	City of Onkaparinga	✓	✓	✓
	Public Libraries	List of facilities by location within the City of Marion.	City of Onkaparinga	✓	✓	✓
	Sports & Leisure Facilities	List of facilities by location within the City of Marion.	City of Adelaide	✓	✓	✓
	Playgrounds	List of facilities by location within the City of Marion.	City of Adelaide	✓	✓	✓
	Other Facility Options: Bookable Reserves / Litter Bins / Public Art / Monuments / BBQ's / Park Land Toilets / Picnic Tables / Seats / Drinking Fountains / Bike Racks / Bus Shelters / Bollards / Public Lighting / Storm water Network / Kerb and Water / Table Network / Major and Minor Roads / Road Lane and Intersection Network / Footpath Network / Bike Routes / Bike and Pedestrian Paths / On Street Parking Zones / Street Trees / Water Catchments / Council-Owned Properties		City of Adelaide and/or City of Onkaparinga	✓	✓	✓

High Potential Value for: People / Business / Commercial Reuse

8.0 What Data to Open Recommendation (Step 2A)

Step 2A: Service Needs of People & Business						
Data Area:	**Data Set:**	**Description:**	**Example Published By:**	**Potential Value:**		
DEMOGRAPHICS & POPULATION DENSITIES	City of Marion People	Statistical information about Marion's population with demographics.	City of Onkaparinga	✓	✓	✓
	Residential Dwellings	Number of residential dwellings categorised by type and by survey block location.	City of Adelaide	✓	✓	✓
	Properties Land Use	List of all properties within Marion with their attributed Land Use Code.	City of Adelaide	✓	✓	✓
BUSINESS & ECONOMIC INFORMATION	City of Marion Economy	Statistical information showing the number of businesses in Marion by major industry groups, employment size and turnover ranges.	City of Onkaparinga	✓	✓	✓
	Corporate Statistics	Key corporate statistics about the City of Marion.	City of Onkaparinga	✓	✓	✓
	Outdoor Dining Permits	List of all businesses with an outdoor dining permit.	City of Adelaide	✓	✓	✓
RESIDENT ENGAGEMENT WITH COUNCIL	Freedom Of Information Requests	Freedom Of Information requests received by City of Marion Council.	City of Adelaide	✓	✓	
	Customer Call Types	Number of each type of interaction/enquiry per month.	City of Adelaide	✓	✓	
	Volunteers	Number of active volunteers and hours worked per month.	City of Adelaide	✓	✓	

High Potential Value for: People / Business / Commercial Reuse

9.0 What Data to Open Recommendation (Step 2B)

Step 2B: Service People Needs						
Data Area:	**Data Set:**	**Description:**	**Example Published By:**	**Potential Value:**		
LOCAL SERVICES	Fees & Charges	List of fees and charges that exist within the City of Marion	City of Adelaide	✓		
	Events	Details of events that are planned in the City of Marion Council area.	City of Adelaide	✓		
COMMUNITY HISTORY	Historic Photos of Marion	Historic photographs of Marion including buildings, parklands and other significant sites.	City of Adelaide	✓		
	Marion Key Historical Events	Significant dates & events in the history of Marion.	City of Adelaide	✓		
LOCAL GOVERNMENT & POLITICS	Election Statistics	Number of voters and outcomes.	City of Adelaide	✓		
	Lord Mayors	Lists all Mayors throughout the City of Marion's history.	City of Adelaide	✓		

High Potential Value for: People / Business / Commercial Reuse

10.0 What Data to Open Recommendation (Step 2C)

Step 2C: Service Business Needs						
Data Area:	**Data Set:**	**Description:**	**Example Published By:**	**Potential Value:**		
POLICY INFORMATION	**Property Boundaries**	Locations and land boundaries of each property within the City of Marion.	City of Adelaide		✓	✓
	Building Height Restrictions	Maximum allowable building height limits per defined area in the City of Marion.	City of Adelaide		✓	
	Planning Zones & Policy Areas	Locations and details of planning zones and policy areas of the City of Marion area	City of Adelaide		✓	
LABOUR MARKET CHARACTERISTICS	**City of Marion Census of Land Use & Employment**	Statistical snapshot of the City's employment by industry and location.	City of Adelaide		✓	✓
BUSINESS ENGAGEMENT WITH COUNCIL	**Services Provided to City Business Owners**	List of services provided to business owners within the City of Marion area.	City of Adelaide		✓	
	Grants & Sponsorship	List of sponsorship and grant opportunities offered by the City of Marion Council.	City of Adelaide		✓	

High Potential Value for: People / Business / Commercial Reuse