Ironbark Sustainability

# Council Fleet Review


**March 2019**

**Prepared for**
Strathbogie Shire Council

| Version | Author | Date | Description of changes |
|---|---|---|---|
| V0a-h | Ronald Lee/Stuart Nesbitt/Paul Brown | 1/3/2019 | First internal draft |
| V1a | Ronald Lee/Stuart Nesbitt/Paul Brown | 14/3/2019 | First release copy |
| V2a | Carole Hammond | 20/3/2019 | Review |
| V2d | Ronald Lee/Stuart Nesbitt | 5/4/2019 | Second release copy |

**Prepared by**
Ironbark Sustainability
Suite 8, 70-80 Wellington St, Collingwood 3066
ABN: 51 127 566 090
Ph: 1300 288 262 | info@realaction.com.au | www.realaction.com.au



**About Ironbark Sustainability**
Ironbark Sustainability is a specialist consultancy that works with government and business around Australia by assisting them to reduce energy and water usage through sustainable asset and data management and on-the-ground implementation.

Ironbark has been operating since 2005 and brings together a wealth of technical and financial analysis, maintenance and implementation experience in the areas of building energy and water efficiency, public lighting and data management. We pride ourselves on supporting our clients to achieve real action regarding the sustainable management of their operations.

**Our Mission**
The Ironbark mission is to achieve real action on sustainability for councils and their communities.

# Contents

## Tables



## Figures

# Executive Summary

Underpinning Council's aim to be carbon neutral in its corporate operations by 2025, this review aims to identify opportunities to reduce Council's overall fleet greenhouse gas (GHG) emissions.

This review is part of a wider body of work to support the development of Strathbogie Shire Council's Sustainable Strathbogie 2030 strategy. The full scope of current investigations includes the following research components:

1. Council Fleet Review (this report)
2. Community Emissions Profile
3. Urban and Rural Green Infrastructure Review

In order to ensure that Council is on track to reaching its 2025 target, good fleet management together with good fleet data is essential to monitor progress and support robust identification of GHG emissions reduction opportunities and decision making. Therefore, this report reviews both specific options for fleet and addresses broader fleet management practice. Opportunities to reduce operational costs were also a focus given the current rate-capping environment.

While legacy landfill accounts for a majority of Strathbogie Shire Council's total corporate GHG emissions, Council's fleet make up a sizable portion - contributing around 17%[1]. Strathbogie Shire Council currently operates 97 vehicles in its fleet. 6% of these GHG emissions are from passenger vehicles and the rest are from plant equipment and heavy vehicles (e.g. rollers, graders, trucks, hoes, etc).

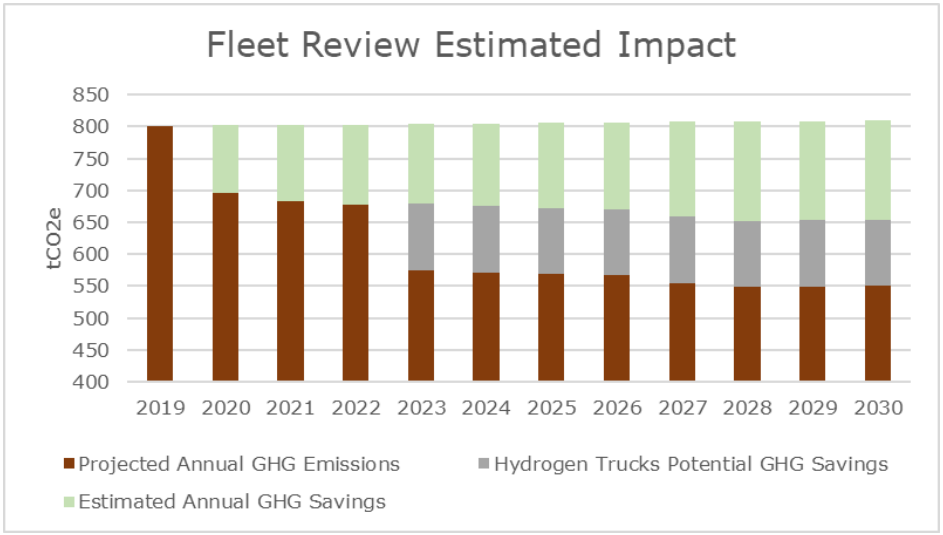



**Figure 1: Fleet review estimated GHG emissions reduction**

[1] Based on FY16/17 corporate GHG emissions

Figure 1 provides an estimate of GHG emissions reduction (green bar) from the recommendations in this report. Council's fleet emissions in FY18/19 are around 800 $tCO_2$-e (brown bar). If all recommendations are implemented, it is expected that Council can reduce fleet emissions by 15% per annum based on FY18/19 levels by 2021. In addition, it is estimated that a further 10% to 13% of GHG savings can be achieved if Council's trucks were replaced to a more fuel-efficient source like hydrogen fuel cell technology.

**Fleet Management**

Council currently has no fleet manager and different aspects of fleet management is distributed across Council. This has resulted in informal decision-making and a need for standard processes to be established. Given that there are no in-house mechanics and servicing facilities, it is recommended that Council outsources fleet management to a third-party provider. This was supported by a comparison of an estimate of existing cost; assigning some of the current Assets Manager's time to fleet management; employing a part time fleet manager; and an outsourced fleet management solution (see Figure 2).

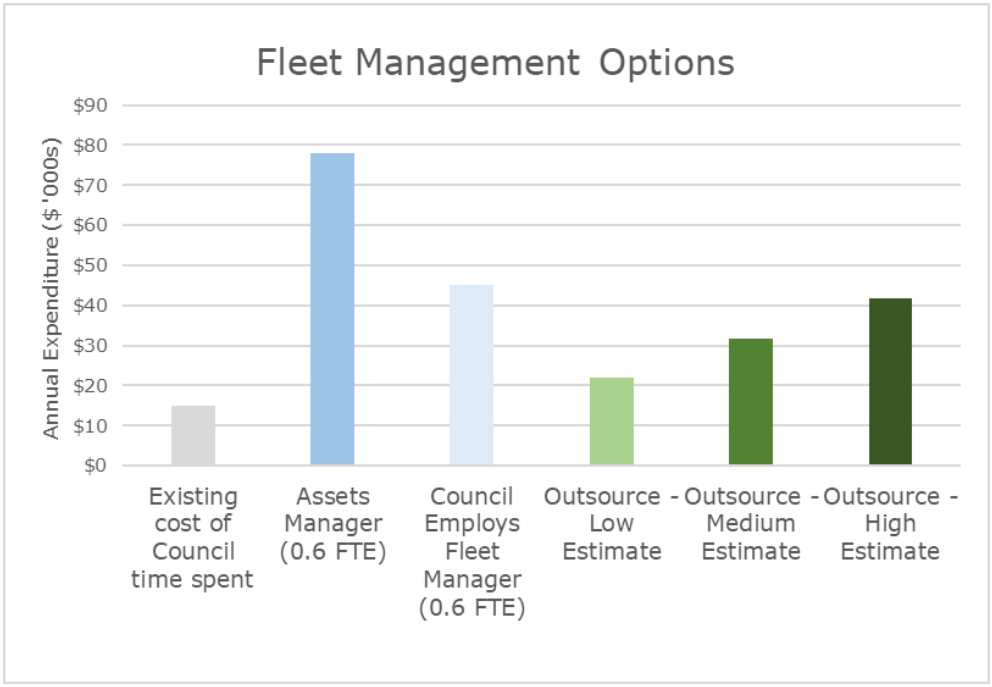



**Figure 2: Comparison of fleet management options**

It is expected that the future scenarios will all result in higher costs than Council's current expenditure as fleet management is currently absent. The outsource fleet management options (in green) resulted in lower annual expenditure than the options for inhouse fleet management (in blue). There are also added benefits to the outsource option which include industry expertise, data management, ease of reporting and tighter control of fleet related matters.

**Operating Lease versus Council Ownership of Fleet**

As part of this review, options to purchase or lease were also considered. Figure 3 compares the discounted cash flow for Council over 5 years (discount rate 4.5%), comparing the

ownership versus operating lease scenarios for typical passenger vehicles[2] (Holden Equinox and Holden Arcadia), electric passenger vehicles (Hyundai Kona electric vehicle and Outlander plug-in hybrid electric vehicles), a light commercial vehicle (Holden Colorado) and a truck (Hino 500 series) in Council's fleet.

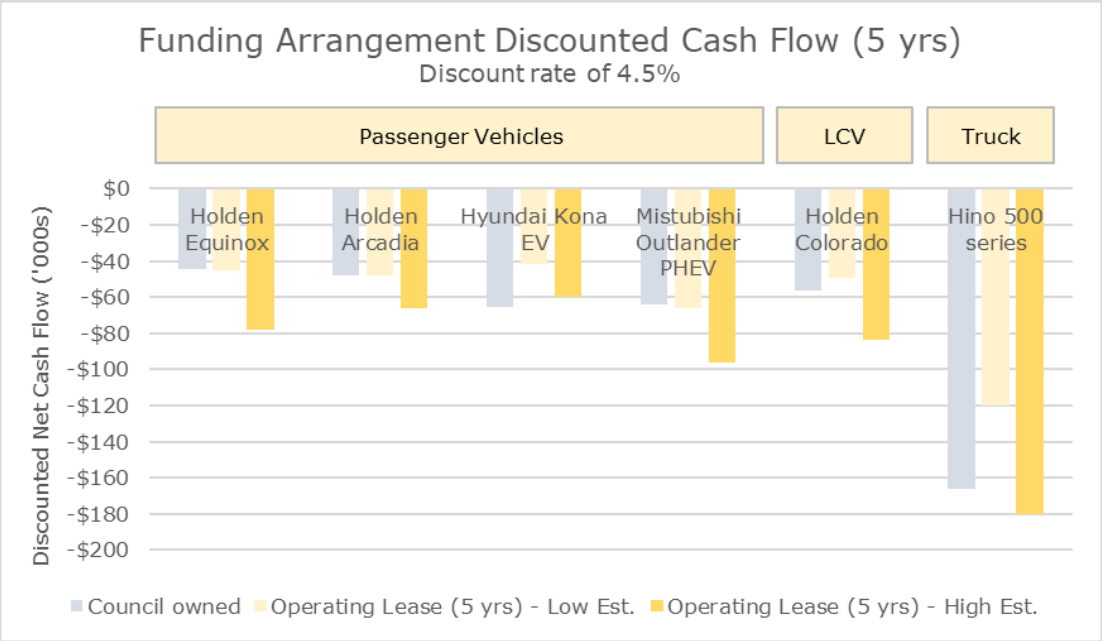



**Figure 3: Discounted cash flow of Council owned versus operating lease scenarios**

As seen in Figure 3, an operating lease can result in a better financial cash flow for Council if negotiated. This together with the absence of internal servicing capabilities within Council and, ancillary benefits that come with an operating lease, indicates that Council should follow up with third party providers for a detailed quote.

**Other Opportunities**

The review has also identified other opportunities (see Section 6 for all recommendations):

- Leverage regional alliances to implement a regional EV charging network and investigate opportunities for collaboration
- Send out an EOI to Goulburn Broken Greenhouse Alliance (GBGA) and Goulburn Valley Regional Collaborative Alliance councils (GVRCA) to gauge interest in a regional approach to developing a fleet policy; procuring fleet management services; and scoping out opportunities for shared services
- Develop a best practice fleet management policy for Council which is weighted to the selection of low GHG emissions options (example attached in Appendix 1)
- Replace specific vehicles in the current passenger fleet with electric vehicles and plug-in hybrid vehicles

[2] Currently the most common passenger vehicle in Council's fleet is the Holden Captiva. Since this model has been discontinued, the Equinox and Arcadia are the most suitable replacements and have therefore been selected in this analysis.

- Council should continue monitoring trials of alternative fuel sources for trucks and heavy plant equipment, given this presents a significant emissions reduction opportunity

## 1.1 Next Steps

Within the 2019/20 year the following is recommended:

1. Send out an EOI to GBGA and GVRCA councils to gauge interest in a regional approach to developing a fleet policy; procuring fleet management services; and scoping out opportunities for shared services
2. Update Council's fleet guidelines to a best practice fleet policy that is aligned with Council's sustainability targets and develop vehicle procurement criteria including:
    - prioritisation of low emissions vehicles and general environmental requirements;
    - replacement and disposal guidelines; and
    - roles and responsibilities
3. Scope and procure a fleet management service provider
4. Integrate data collection into the scope
5. Prioritise and plan for the remaining actions within this Strategy by 2022

# 2. Introduction

To support the development of Strathbogie Shire Council's Sustainable Strathbogie 2030 strategy, Council is developing the following research components:

1. Council Fleet Review
2. Community Emissions Profile
3. Urban and Rural Green Infrastructure Review


This report is specifically concerned with a review of Council's fleet. Underpinning Council's aim to be zero net emissions in its corporate operations by 2025, the primary focus of this report is on opportunities to reduce Council's overall fleet greenhouse gas (GHG) emissions. In addition, the report reviews specific options for fleet and fleet management practices.

This report is structured as follows:

- Section 2: Introduction - Introduction to this report and background
- Section 3: Strategic Context – summarising how this fleet review fits into the broader Council sustainability strategy
- Section 4: Council Fleet Summary – a review of Council's current fleet practices and an overview of Council's fleet mix
- Section 5: Fleet Management & Greenhouse Gas Review – this section identifies the opportunities to reduce fleet GHG emissions and improve fleet management practices
- Section 6: Recommendations – a summary of recommendations from Section 5
- Section 7: Next Steps – Recommended steps in the coming year

## 2.1 Council Background

Strathbogie Shire is in the north-east part of Victoria covers over 3,300 square kilometres. It encompasses a wide variety of landscapes and is bordered by the granite summits of the Strathbogie Ranges to the east and the Nagambie Lakes District to the west.


Of the twenty industries that support over 10,000 residents, the Shire of Strathbogie is known for its agricultural sector and supporting businesses which produced $277 million annually in income and over 1,000 jobs. Tourism is also a significant contributor, with over $56 million in income each year.

Strathbogie is predominantly a rural area with major transport thoroughfares in the Goulburn Valley Freeway, Hume Freeway and Goulburn Valley Highway. The main townships are Avenel, Euroa, Nagambie and Violet Town which are all located in close proximity to these major highways. The smaller townships at Graytown, Longwood, Ruffy and Strathbogie are accessed by single carriageway rural roads.

While landfill accounts for a majority of Strathbogie Shire Council's total corporate GHG emissions, vehicles make up a sizable portion - contributing 17% of (See Figure 4). Strathbogie Shire Council currently operates 97 vehicles in its fleet. 6% of these GHG emissions are from passenger vehicles and the rest are from larger plant equipment (e.g. rollers, graders, trucks, hoes, etc).

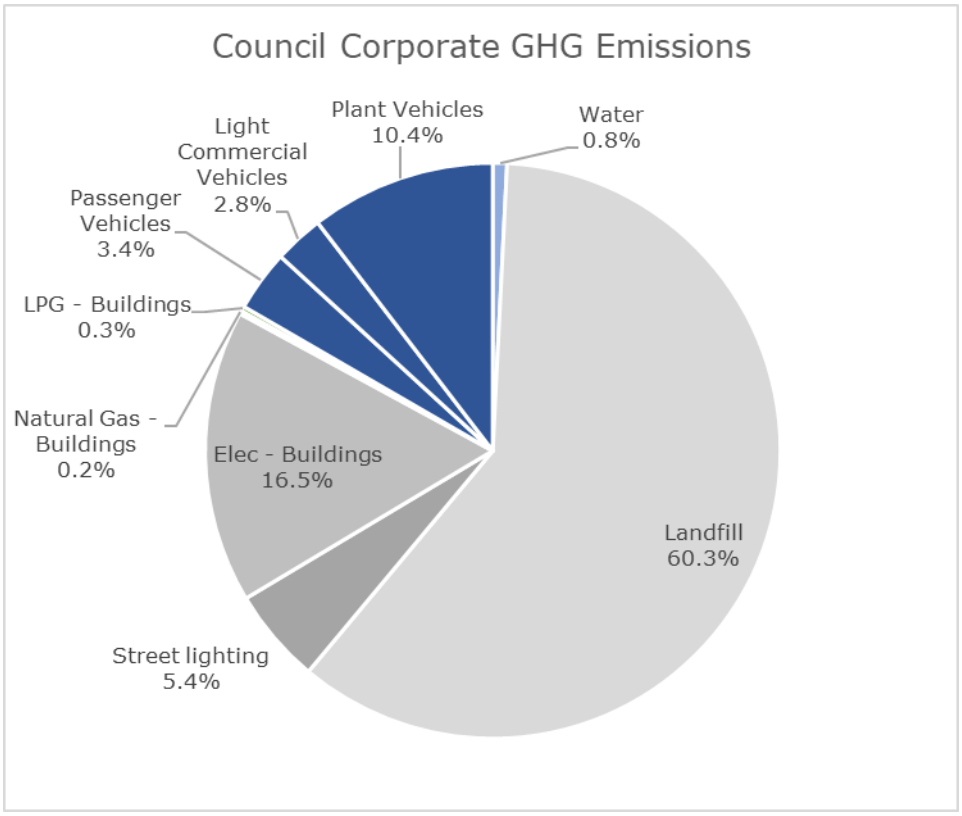



**Figure 4: Councils corporate GHG emissions profile by sector in FY2016/17**

# 3. Strategic Context

Council is currently developing Sustainable Strathbogie 2030. The strategy addresses greenhouse gas emissions and sets out targets for both Council's own operations and more broadly community emissions across the shire. The blueprint for the Sustainable Strathbogie 2030 strategy is drawn from:

- Strathbogie Shire Council Plan 2017-2021
- Protecting Victoria's Environment: Biodiversity 2037 (Victorian State Government)
- Goulburn Broken Catchment Biodiversity Strategy 2016-2021 (GBCMA)
- Victoria's Renewable Energy Roadmap 2015 (Victorian State Government)
- Victoria's Climate Change Adaptation Plan 2017–2020
- United Nations Sustainable Development Goals 2015–2030


This report is concerned with reviewing Council's fleet to identify opportunities for emissions reductions and provide recommendations to improve current fleet practices.

## 3.1 Drivers for this Fleet Review

This section outlines the drivers behind this Council fleet review.

### 3.1.1 Primary Driver

The primary driver and context for this fleet review is to reduce GHG emissions in line with the target to be carbon neutral by 2025 as laid out in Sustainable Strathbogie 2030.


To this end, Council has already completed a study along with 20 other regional councils to develop a corporate GHG inventory and identify GHG emissions reduction opportunities as part of Sustainability Victoria's Local Government Energy Savers Program. Council was also a partner council in the Golden Broken Greenhouse Alliance (GBGA) Electric Vehicle study that looked at the business case and feasibility study of Electric Vehicle (EV) adoption for the Goulburn Broken region.

### 3.1.2 Other Drivers

This fleet review is underpinned by the following secondary drivers:

- **Improvement of Fleet Management** - During the development of this review, it became clear that there is consensus across Council that fleet practices, including the collection and analysis of data, needs to be improved.
- **Community Resilience** - For a rural setting, having a reliable source of fuel for transport is critical for emergency response. For instance, fuel is required to deliver water to bushfire areas and vulnerable sections of the community. An independent source of fuel can assist Council in building resilience to petrol price shocks and improve operational efficiency.
- **Community Leadership** - Council will provide community leadership to lead by example in reducing its operational emissions by adopting and trialling new technologies that make financial sense to reduce operational greenhouse gas emissions.
- **Financial Benefits through Operational Efficiency** - By improving the management of Council's fleet, operating more efficiently and adopting cleaner technologies, Council can not only reduce its carbon emissions but realise financial savings.

# 4. Fleet Summary

## 4.1 Overview of Council's Fleet

Council currently operates close to 100 vehicles in its fleet. These range from passenger cars, light commercial vehicles and, plant equipment and heavy vehicles. Plant equipment and heavy vehicles include trucks, loaders, graders, rollers, tractors and mowers. Council's fleet composition is summarised below in Table 1.

**Table 1: Summary of all Council vehicles**

| Group | Vehicle Type | Fuel Type | Vehicle No. |
|---|---|---|---|
| Light Commercial Vehicles | Passenger | Diesel | 16 |
| | | Unleaded | 4 |
| | | Unspecified* | 6 |
| | Utility Vehicles | Diesel | 23 |
| Van | Van | Diesel | 1 |
| Plant Equipment & Heavy Vehicles | Backhoe | Diesel | 4 |
| | Cherry Picker | Diesel | 1 |
| | Footpath Sweeper | Diesel | 1 |
| | Grader | Diesel | 4 |
| | Loader | Diesel | 2 |
| | Tipping Truck | Diesel | 5 |
| | Tipping Truck with Hoist | Diesel | 2 |
| | Tractor | Diesel | 3 |
| | Truck | Diesel | 5 |
| | Waste Truck with Compactor | Diesel | 1 |
| | Rollers | Diesel | 7 |
| | Mower | Diesel | 12 |
| Grand Total | | | 97 |

*Data was not available at the time of this review

## 4.2 Summary of Vehicle Groups

Council's fleet makes up a significant portion of total GHG emissions at 17% (Table 2). The breakdown of emissions by vehicle "group" shows that in in FY 2016/17 this was largely made up of GHG emissions from plant equipment. Passenger vehicles make up 21% of fleet emissions and light commercial vehicles make up 17%.

**Table 2: Fuel usage & GHG Emissions by vehicle group in FY 2016/17[3]**

| Source | Diesel (Litres) | Petrol (Litres) | GHG Emissions (tCO2-e) | % of fleet emissions |
|---|---|---|---|---|
| Passenger Vehicles | 40,582 | 11042 | 165.2 | 21% |
| Light Commercial Vehicles | 54,544 | - | 133.5 | 17% |
| Plant Equipment/ Heavy Vehicles | 174,924 | - | 500.7 | 63% |
| **Total** | **270,050** | **11,042** | **799.4** | **100%** |

## Passenger Vehicles

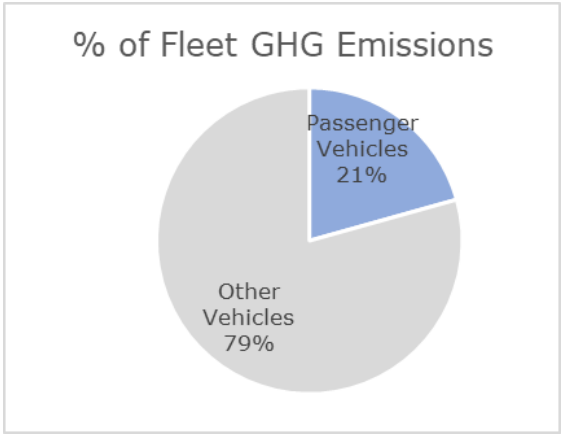



**Figure 5: Percentage of fleet GHG emissions - passenger vehicles**

Passenger vehicles consists of pool cars and salary sacrifice package passenger cars. There are 26 vehicles in this category – 16 of these use diesel fuel, 4 on unleaded and the remaining are to be confirmed. Based on the data provided, all the vehicles were purchased between 2012 and 2018. There are currently no vehicles being leased within this group.

Salary sacrifice package vehicles are provided to managers and executive management. There are 16 recorded salary sacrifice package passenger vehicles that were provided at the time of this review. 9 passenger vehicles are used as pool vehicles and 1 is unspecified.

## Light Commercial Vehicles

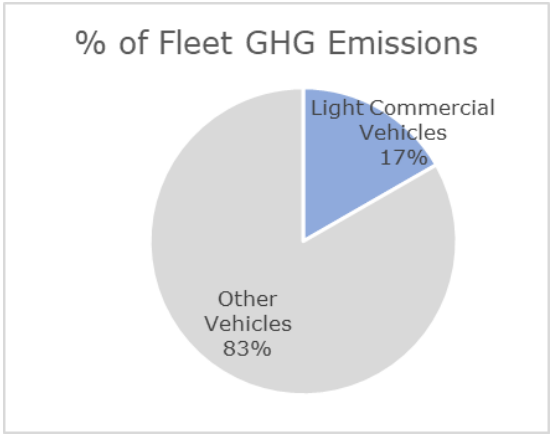



**Figure 6: Percentage of fleet GHG emissions – light commercial vehicles**

There are 23 Utility Vehicles and 1 Van in this category. 22 of the Utility Vehicles are purchased with one being leased for short-term use. 5 of the utility vehicles are salary sacrifice package vehicles.

All vehicles in this group run on diesel.

This group of vehicles make up around 17% of fleet emissions.

[3] This is based on an earlier study developed by Ironbark Sustainability for Sustainability Victoria.

## Plant Equipment & Heavy Vehicles

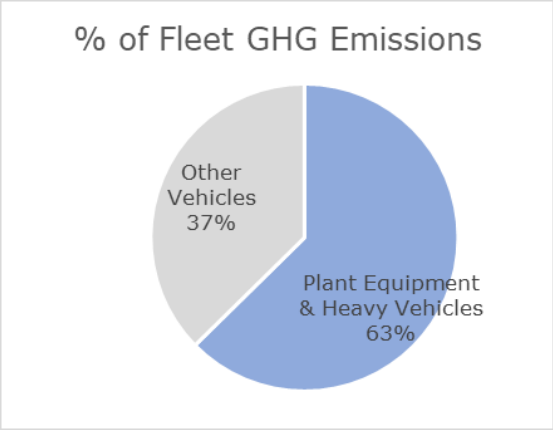



**Figure 7: Percentage of fleet GHG emissions - plant equipment & heavy vehicles**

Plant equipment and heavy vehicles consist of backhoes, cherry pickers, graders, loader, trucks, tractors, rollers and mowers.

Most of these have been purchased, apart for two graders that are being leased as part of the "Graders Without Borders" program. This program is part of the Goulburn Valley Regional Collaborative Alliance (GVRCA) established in 2014 as a service-sharing partnership between Strathbogie Shire Council and Greater Shepparton City Council to achieve operational efficiencies and savings by sharing services and resources where there are opportunities. Moira Shire Council has since joined.

All plant equipment runs on diesel and constitute the majority of fleet emissions at 63%.

## 4.3 Current Fleet Management Practices

Council has three depots which are predominantly for the storage of light commercial vehicles, and plant equipment and heavy vehicles. The depots are located in Euroa, Nagambie and Violet Town. Additionally, Council stores some plant equipment within the Strathbogie Ranges due to difficult access. Vehicles that are parked or stored at the Civic Centre consist largely of pool and salary sacrifice package passenger vehicles. The five locations are summarised in Table 3.

**Table 3: Summary of vehicle locations**

| Description | Address |
|---|---|
| Euroa Council Civic Centre | 109A Binney St, Euroa |
| Euroa Saleyards Depot | 48-50 Sutherland Street, Euroa |
| Nagambie Depot | Lot 28, 2 Ballantynes Road, Nagambie |
| Violet Town Work Depot | 190 McDiarmids Road, Violet Town |
| Strathbogie Ranges | Some vehicles are stored up in the ranges as it is difficult to access |

The different aspects of Council's fleet practices are described below:

**1. Fleet Management**

Council currently has no fleet manager. Fleet information is stored in various locations and there is no formal process to review and update data. Information is consolidated on an informal basis.

**2. Vehicle Procurement Policy**

In the past Council has purchased vehicles based on a Motor Vehicle Acquisition Checklist. However, this has not been recently updated and is not currently in use. Instead, the Group Manager for Corporate and Community makes decisions on vehicle acquisition based on purchase cost and use. All vehicles are purchased except for two graders which are leased through the "Graders without Borders" program. As required, additional vehicles are leased for the duration.

For salary sacrifice vehicles, staff are offered a vehicle of a certain value and make/model depending on their salary level. Office Managers have generally been offered Holden Captiva 5, and Executive's Jeeps (all Diesel) under salary sacrifice. Other 'depot' or outdoor/service Managers will have a utility vehicle.

**3. Fuel management**

This involves monitoring fuel consumption and distance travelled and benchmarking against best practice fleets of similar make up to track performance. This is not currently undertaken by Council.

**4. Vehicle maintenance**

Council does not have mechanics under its payroll to service vehicles – the maintenance and servicing of vehicles are outsourced to third party contractors. Vehicles are maintained by the

dealership until the warranty expires. Subsequently, vehicles are serviced by local third-party mechanics.

**5. Claims management (accident reporting procedures and process)**

There are no formal internal procedures and processes. Accidents are addressed by insurance companies.

**6. Fleet optimisation (options to decrease fuel usage and increase utilisation)**

No monitoring is currently being done.

**7. Data management and reporting**

The operational data that is available are as follows:

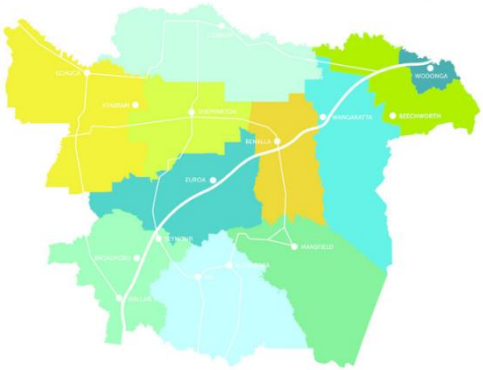
- Passenger vehicles (private use) – annual kilometres travelled.
- Passenger vehicles (pool vehicle) – annual kilometres travelled, and litres of fuel usage can be obtained through fuel cards.
- Utility vehicles (utilities) – annual kilometres travelled, and litres of fuel usage can be obtained through fuel cards.
- Heavy vehicles (backhoe, cherry picker, loader, tractor, truck) – hours of operation are logged to timesheets manually. Fuel consumption is recorded monthly through an online system and each large asset has a diesel ID tag.

# 5. Fleet Management and Greenhouse Gas Review

This section discusses the outcomes of this fleet review. Specifically, this section investigates opportunities for partnering with other councils; recommendations have been made in relation to Council's current fleet management practices; and GHG emissions reduction opportunities within Council's fleet have been identified. The opportunities cover specific actions to broader actions and are addressed under the following subsections:

- Section 5.1– Regional Approach
- Section 5.2 – Fleet Management
- Section 5.2 – GHG Emissions Reduction Opportunities

## 5.1 Regional Approach



Across the Hume region in north east Victoria surrounding Strathbogie Shire, councils collectively provide and manage similar services, and as the region expands this is only set to increase. Working with other councils to procure joint services and/or infrastructure is not only an effective and proven approach, but allows for potential cost savings, better services and environmental benefits. In some instances, if procurement of fleet management services is already underway, there is opportunity to expand or leverage these activities. More specifically, the advantages of participating in regional level projects can include:

- Achieving economies of scale for project impacts
- Reduced costs through collaborative procurement
- Greater access to knowledge and experience
- More efficient use of existing resources
- Reduced administrative overheads
- Improved relationships between councils

Importantly this regional collaboration could assist Council to implement its Sustainable Strathbogie 2030 strategy but also, support councils in the region implement other relevant local strategies. The above "procurement and delivery" related opportunities would be seen as a minimum opportunity level, but future activities can expand as needed by the councils.

Council is currently a partner in two notable regional initiatives:

- **Goulburn Broken Greenhouse Alliance (GBGA) –** Council is a member of GBGA which was established to promote and support regional action on climate change. An EV study that looked at the business case and feasibility study of Electric Vehicle (EV) adoption for the Goulburn Broken region was completed in 2017.

- **Goulburn Valley Regional Collaborative Alliance (GVRCA)** – Strathbogie Shire Council and the City of Greater Shepparton are the founding councils of the GVRCA. This is a shared-service partnership resulting in significant savings to both councils. Recently Moira Shire Council has joined the alliance. To date, some of the GVRCA collaborations include "Graders without Borders", joint legal services procurement, organisation development and working together to establish a bridge asset management plan.

Strathbogie Shire is currently leasing two out of four graders it operates as part of the "Graders without Borders" program. This has saved Council the upfront capital cost which can be up to $200,000 for a grader. There are also savings on ongoing maintenance costs compared to where Council were to own a grader.

In the context of this fleet review, there is opportunity for Council to investigate a regional approach to:

- Developing a fleet policy and procuring fleet management services – there are many councils that have very similar fleet composition, issues and resource constrains as Strathbogie. Council can not only gauge interest in a regional approach but also identify opportunities to leverage work that is currently being done (or completed). Examples include modifying existing best practice fleet policies to suit Council's requirements; accessing third party suppliers (of EVs and charging stations) through other councils' procurement panels or regionally (GBGA); leveraging knowledge gained from other councils' trials and studies.
- Participating in EV trials and studies – Council can participate through the GBGA and advocate for partner councils to install charging stations to improve the network of charging infrastructure in the region.
- Expand the scope of GVRCA shared services – investigate further opportunties for shared services such as the successful "Graders without Borders" program.

### 5.1.1 Regional Approach Recommendations

| ID | Recommendation |
|---|---|
| RA.1 | Send out an EOI to GBGA and GVRCA councils to gauge interest in a regional approach to developing a fleet policy; procuring fleet management services; and scoping out opportunities for shared services. This process could be through a formal letter or calling partner councils to gauge interest. |
| RA.2 | Advocate for partner GBGA councils to install charging stations to improve the network of charging stations in the region, enabling council EVs to conveniently travel across municipalities. This is expected to accelerate the uptake of EVs in the region. A regional approach through GBGA to approach EV infrastructure suppliers is recommended. |
| RA.3 | Approach GVRCA partner councils to investigate expanding the "Graders without Borders" program to include other heavy plant equipment |

## 5.2 Fleet Management

This section discusses the development of a fleet management policy and options for fleet management. **Refer to Appendix 1 for information supporting Section 5.2.**

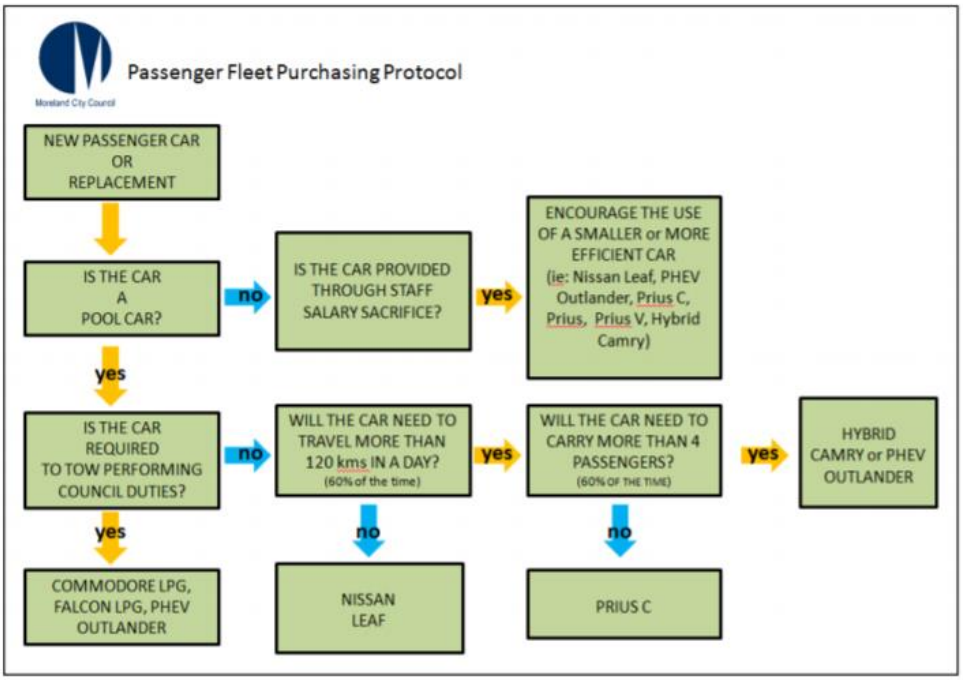
### 5.2.1 Fleet Management Policy

Council has an existing fleet acquisition checklist, but this is outdated and needs to be reviewed. Currently, procurement decisions on vehicles are not well documented.

A formal fleet or vehicle policy should be adopted. This should include purchasing criteria weighted heavily towards purchasing lower emissions vehicles to ensure fleet decisions are aligned with Council's broader sustainability targets. Having a documented policy for vehicle acquisition and disposal is in line with best practice fleet management. Refer to Appendix 1 for an example of a best practice fleet management policy.

There are many publicly available examples of council fleet management policies to guide vehicle replacement and disposal decisions and more broadly fleet management[4]. For instance, Moreland City Council has developed a passenger fleet purchasing protocol as shown in Figure 8. This is a good template as a base which can be edited to suit Council's specific requirements.

**Figure 8: Moreland City Council Passenger Fleet Purchasing Protocol[5]**




[4] For example, see Indigo Shire Council (https://goo.gl/AYpX53) and see Upper Hunter Shire Council (https://goo.gl/5cPRcF)

[5] Source: pitt&sherry, Electric Vehicle Fleet Feasibility Study: prepared for Moreland City Council, (2014), p. 20.

### 5.2.2 Fleet Management

Council currently has no fleet manager - fleet management is currently fragmented and not centrally managed. This has resulted in informal decision making and a lack of data to support robust decisions. Staff are supportive of fleet management improvement actions that will lead to staff and audit efficiencies, saving many hours of collation, search and justification time taken from finance roles.

Good data is essential in running Council's fleet. Some of the main benefits are:

- Monitoring and tracking operational costs and fuel usage over time
- Data to support fleet optimisation and decision making. For instance, around what type of vehicle to procure, or if a vehicle can be downsized, or if the fleet size can be reduced
- Ensuring regular routine maintenance to vehicles that can result in significant long-term savings
- Ease of reporting – of relevance to one of the main drivers of this review is to have periodic data tracking of fleet emissions
- Implementing GPS monitoring and fleet tracking (telematics) can allow for significant savings in emissions and operating costs through better resource management, optimisation of routes, and improvements to driver practices

These benefits will all result in both financial and emissions savings.

There are many options in the market for fleet management solutions and the range of costs will differ based on the level of service provided. Most of the large reputable fleet management companies can custom make a package based on unique requirements.

As part of this review three fleet management providers were contacted to provide preliminary information and indicative quotes, noting that the costs provided are based on the limited information that the suppliers have at the time of this report and these can be negotiated based on the package Council chooses (Refer to Appendix 1 for responses from fleet management providers).

From the responses, fleet management services offered include:

- Fleet management such as, acquisition and disposals; registration and renewals; Insurance; roadside assistance; fuel management; accident and claims management; infringement management
- Periodic reporting - on relevant fleet metrics like GHG emissions.
- Telematics and fleet optimisation – fleet managers can easily view real-time data that is sent from vehicles being monitored to the cloud or a remote computer. This can provide useful

information such as driving durations, trip purpose, vehicle usage and filter by customisable parameters such as cost centre, vehicle pool, type at broad fleet to an individual vehicle level

- Pool car sharing platform (booking system)
- Surveys at the driver level – for instance sending SMS notifications to remind drivers if servicing is overdue.

Based on the suppliers contacted for this review, the range of annual unit costs are shown below. Note that these quotes are high level and preliminary but will provide an indication of the overall management costs for Council's fleet.

**Table 4: Indicative fleet management per unit costs as quoted**

| | **Passenger Vehicles** | **Light Commercial Vehicles** | **Trucks** | **Plant Equipment** |
|---|---|---|---|---|
| Management fee* (per vehicle per annum) | $200 to $300 | $200 to $300 | $300 to $480 | $60 to $480 |
| Telematics fee** (per vehicle per annum) | $228 to $480 | $228 to $480 | $228 to $480 | $228 to $480 |
| Booking system fee for pool cars | $0*** to $2400 | | | |

*Management fee includes acquisition and disposals; registration and renewals; Insurance; roadside assistance; fuel management; accident and claims management; infringement management.
**Telematics refers to the capability for fleet managers to view real-time data that is sent from vehicles being monitored to the cloud or a remote computer.
***Included in the management fee

Based on the unit costs in Table 4 above, Council is looking at a basic fleet management costs of around $17,000 to $38,000 per annum. Adding telematics and implementing an online booking system, will bring the annual cost to $28,000 to $62,000 per annum.

**Table 5: Indicative fleet management costs for Council's fleet**

| | **Passenger Vehicles** | **Light Commercial Vehicles** | **Trucks** | **Plant Equipment** | **Total** |
|---|---|---|---|---|---|
| No. of vehicles in fleet | 26 | 24 | 14 | 33 | 97 |
| Management fee* | $6,000 to $8,000 | $5,000 to $7,000 | $4,000 to $7,000 | $2,000 to $16,000 | $17,000 to $38,000 |
| Telematics fee** | $2,000 to $4,000 | $2,000 to $3,000 | $3,000 to $7,000 | $4,000 to $8,000 | $11,000 to $22,000 |
| Booking system fee for pool cars | $0 to $2,400 | | | | $0 to $2,400 |
| **Total** | **$8,000 to $15,000** | **$7,000 to $13,000** | **$7,000 to $16,000** | **$6,000 to $26,000** | **$28,000 to $62,000** |

*Management fee includes acquisition and disposals; registration and renewals; Insurance; roadside assistance; fuel management; accident and claims management; infringement management.
**Telematics only applied to 9 pool vehicles for passenger vehicles, 30% of light commercial vehicles, all trucks and 50% of plant equipment.

Depending on the solution implemented above, there may be differing levels of expertise required in-house. Council will have to appoint a staff member for data entry and liaising with the fleet management provider. This role is suited for current staff that sit within the Finance area as it deals with data and costs. Council can also choose to appoint an inhouse fleet manager instead of outsourcing this function.

Figure 9 compares three fleet management scenarios and shows the estimated annual expenditure. The scenarios are:

- **existing costs** - estimation of Council time spent of managing Council's fleet (estimated at 31 days of Council staff time)
- **inhouse fleet management**
  - Council appoints current Assets Manager to take on fleet management at 0.6 FTE
  - Council appoints a fleet manager at 0.6 FTE at a lower band
- **outsourced** (low to high) fleet management to a third-party provider. The outsource estimated only considers the management fee (does not include telematics and booking system charges) and includes 10 days of Council staff per annum for data entry and liaising with the fleet management provider

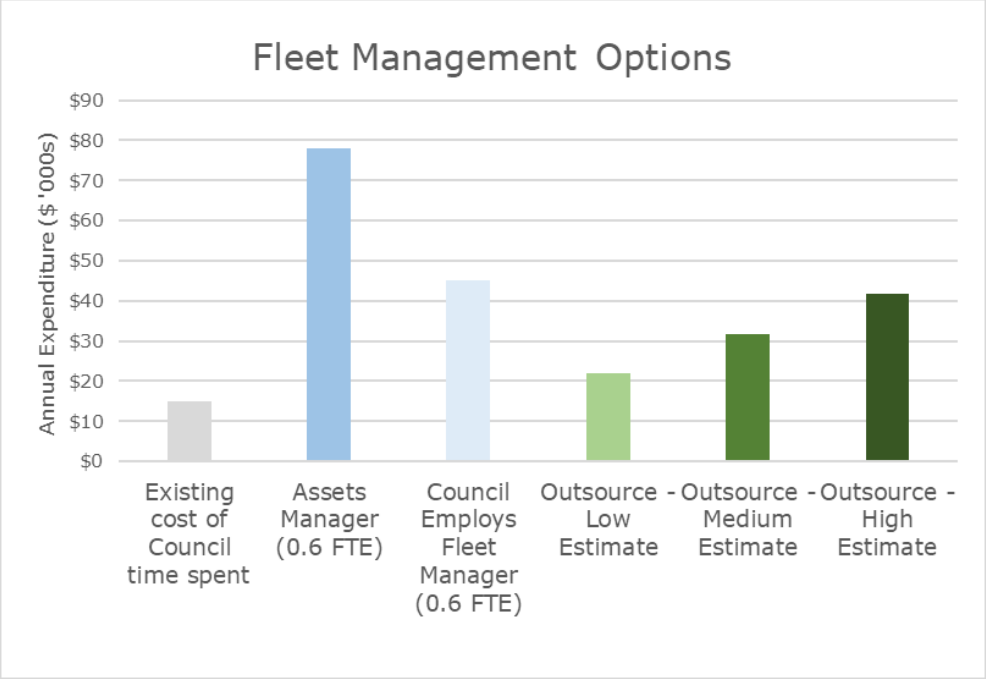



**Figure 9: Comparison of fleet management options**

It is expected that the future scenarios in Figure 9 all result in higher costs than Council's current expenditure as fleet management is currently absent and Council will have to pay for a

higher level of service/capability. The inhouse option resulted in higher annual expenditure than the range of market quotes sourced. There are also added benefits of outsourcing which include industry expertise, data management, ease of reporting and tighter control of fleet related matters.

## Leasing versus Purchasing

All the fleet management service providers contacted can provide leasing of vehicles in the packages offered. Leasing of vehicles can also be done on an individual car level but it is recommended that Council requests a quote for leasing and fleet management services from the same provider to access better deals.

As a rule of thumb, if Council already has a maintenance facility with in-house mechanics and fleet expertise, then it would be easier and in most cases more cost effective to own, operate and maintain its own fleet. **On this basis, Council should explore leasing all or part of its fleet.**

With an operating lease, no capital expenditure budgeting is required. This has all the benefits of usage without any ownership and disposal costs and risks. An operating lease removes future sales risk (i.e. Council has no residual value risk), there is a known payment stream (monthly rentals are fixed for the term of the lease) and payments can be expensed (as an operating expense). Table 6 provides a detailed comparison of both options.

**Table 6: Fleet ownership versus operating lease**

| Area | Council Owned Fleet | Fully Maintained Operating Lease |
|---|---|---|
| Capital expenditure | Required and must be budgeted | Not needed – operating expense |
| Cash flow | Upfront and ongoing operational costs (fuel, maintenance, registration, etc.) | Fixed monthly payments over the useful life |
| Service and maintenance | Risk and cost with Council – needs to be budgeted | Risk with lessor and cost is included in monthly payment |
| Administration and vehicle management | Unbudgeted costs and requires internal Council staff time | Included in monthly fee and reduces internal administration time |
| Performance and cost monitoring | Difficult and time consuming without a fleet reporting system | Most vendors provide an online access to fleet data and analysis. Quarterly exception reporting |
| Driver behaviour improvement | To identify opportunities for improvement, data has to be collected by Council staff | Fleet data is collected and software can identify problems and improvement initiatives can be rapidly implemented to lower risks and costs |
| Industry and market trends and best value for money vehicle options | Council staff time and expertise required to conduct research and make decisions | Fleet management can provide industry expertise to alleviate the burden of making decisions |
| Disposal | Risk is with Council | Risk is with lessor |
| Balance sheet | On balance sheet | Off balance sheet – some organisations prefer assets to be off-balance sheet for accounting purposes* |

*This may change with the proposed IASB changes to on and off-balance sheet asset treatment.

The main considerations when deciding whether to purchase or lease are represented in Figure 10. The example cash flow graphs show the predictability of cash flow and the reduction in risk.

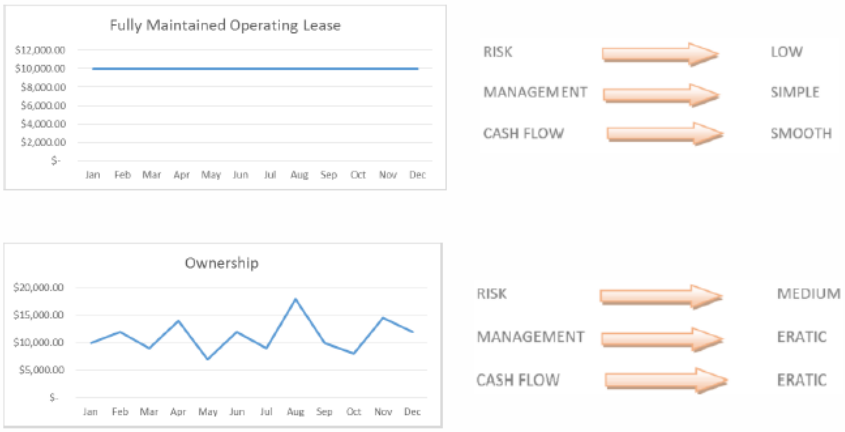



**Figure 10: Ownership versus operating lease**

Figure 11 compares the discounted net cash flow for Council over 5 years (discount rate 4.5%), comparing the ownership versus operating lease scenarios for typical passenger vehicles[6], a light commercial vehicle and a truck in Council's fleet. The monthly operating lease fee is based on indicative quotes from contractors and the lowest and highest quotes are shown. See Appendix 2 for the full range of preliminary market quotes.

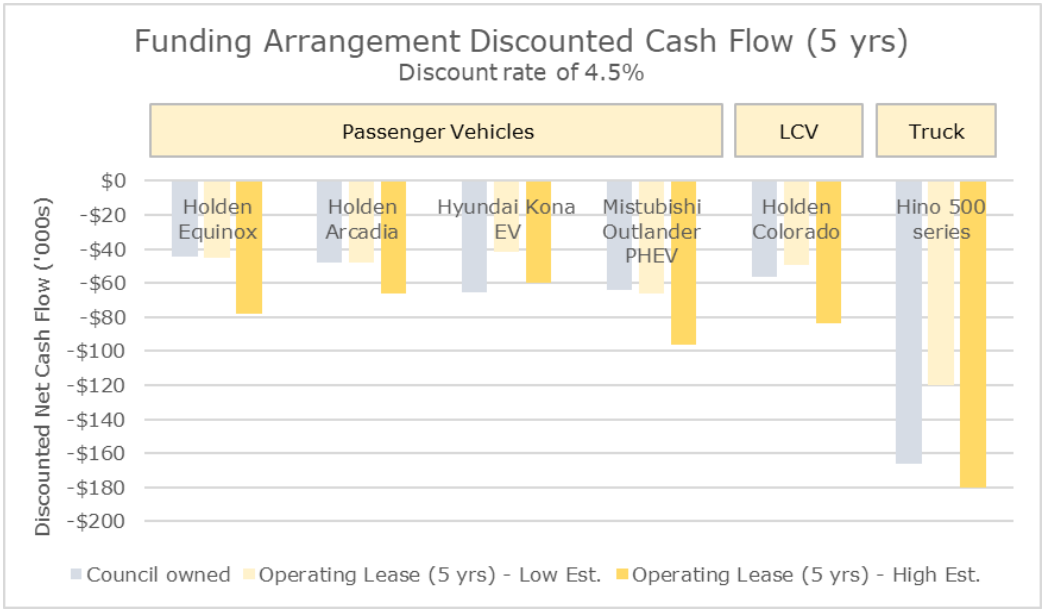



**Figure 11: Discounted net cash flow of Council owned versus operating lease scenarios**

[6] Currently the most common passenger vehicle in Council's fleet is the Holden Captiva. Since this model has been discontinued, the Equinox and Arcadia are the most suitable replacements and have therefore been selected in this analysis.

The monthly fee for an operating lease is based on a comparison of acquiring brand new vehicles and is affected by the lease term, estimated kilometres travelled per annum and the overall package (see Appendix 2 for assumptions).

Figure 11 indicates that for a conventional car (Equinox or Arcadia), it is likely that the operating lease will cost Council more over 5 years than if Council were to purchase the vehicles outright. In contrast, for the Hyundai Kona EV, the cash flow for operating lease outperforms the option to purchase.


**Figure 12: 2019 Holden Equinox (left) & Arcadia (right)**

**This comparison suggests that an operating lease can result in a better financial cash flow for Council if negotiated – leasing an EV has the potential to result in a better financial position than buying a new conventional vehicle over 5 years. This together with the absence of internal servicing capabilities and ancillary benefits that come with an operating lease, indicates that Council should follow up with third party providers for a detailed quote.**

Once this is done, Council can also explore an additional funding option that is offered – sale and leaseback. Fleet management providers can refinance Council's existing fleet based on a mutually agreed fleet program. Essentially existing vehicles will be purchased from Council and leased back. Council will free up some capital from this process and the benefit is that all aspects of the vehicle will be managed by the fleet management provider.

As this involves valuation of Council's current fleet, this will require direct liaison with the operating lease providers and provision of detailed data on the current fleet including purchase price, date of purchase, current mileage, and any other information that affects the value of the vehicle.

### 5.2.3 Fleet Management Recommendations

| ID | Recommendation |
|---|---|
| FM.1 | Update Council's fleet guidelines to a best practice fleet policy that is aligned with Council's sustainability targets and develop vehicle procurement criteria. The fleet policy will inform fleet management decisions and should ideally be completed before progressing further with fleet management providers. |
| FM.2 | Consider the establishment of a 'Business Use Incentive' for salary sacrifice package vehicles. This would be ideally underpinned by a Council fleet policy and is established to incentivise the use of lower emissions vehicles and linked to the amount of cash contribution in an employee's remuneration package. |
| FM.3 | It is recommended that Council liaises with the fleet management providers and invite them to:<br>• provide face to face presentations<br>• provides the requisite data for the service providers to provide a detailed quote<br>With this information, Council will be able to develop a detailed project specification. |

## 5.3 GHG Emissions Reduction Opportunities

This section discusses the GHG emissions reduction opportunities identified within each vehicle group (passenger vehicles, light commercial vehicles and plant equipment).

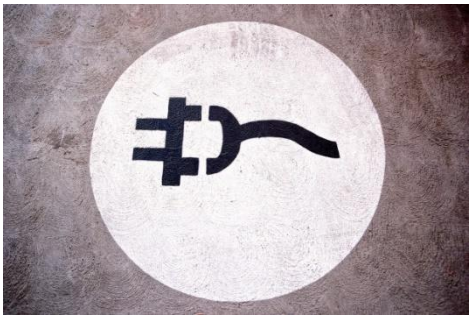
### 5.3.1 Passenger Vehicles Opportunities

Energy efficient passenger vehicle options that are available include EVs, plug-in hybrid EVs (PHEVs) and hybrid vehicles. Perhaps the largest impediment to EV adoption in the past is that models did not have the battery capacity to travel long distances. The next best energy efficient option for long distance passenger vehicles were hybrids and smaller cylinder vehicles. However, the latest EVs and PHEVs have closed this gap and also have significantly lower GHG emissions than hybrid vehicles. Therefore, hybrids can be substituted with EVs or PHEVs.

The following sections identify specific opportunities within Council's passenger fleet to replace current options to a more energy efficient alternative.

#### 5.3.1.1 Electric Passenger Vehicles

There has been significant progress in the Australian EV market over the past few years with a number of state and industry trials taking place, a more evident network of recharge stations being established and the release of electric vehicle standards.



The economic, environmental and social benefits of EVs are widely documented, some of the main benefits are:

**1. Economic Benefits**

- EVs in Victoria receive a $100 discount in annual registration fees
- EVs are cheaper to run than conventional fossil fuel vehicles - the electricity to charge an EV works out to around a third per kilometre compared to a conventional vehicle. If a charging station is situated at a facility with a renewable generation resource, this is an excellent opportunity to significantly reduce ongoing operating charges and GHG emissions.
- EVs are cheaper to maintain as a result of a simpler engine than fossil fuel vehicles

**2. Environmental Benefits**

- EVs can be charged on local renewable resources to be carbon neutral
- EVs are much cleaner to run and have no exhaust emissions i.e. no 'local' emissions at the point of use
- To meet market expectations, EV manufacturers are trending towards environmentally friendly production. For instance, using recyclable and bio-based materials

**3. Social Benefits**

- The pairing of EVs and renewable generation will greatly improve Council's resilience to external fossil fuel market shocks and periods of low supply. This can ensure Council is able to respond to the community during times of crisis.

- Cleaner air and healthier communities
- Decrease in noise pollution

A recent study[7] completed by the GBGA looked at the business case and feasibility study of EV adoption for the Goulburn Broken region. This was a comprehensive study looking at all aspects of the transition to EV for the region. Council was one of the 11 partner councils involved in this study. This study draws on the findings from this report and provides specific recommendations in the context of Council's fleet.

The affordable EV options for Council passenger vehicles in Australia are currently limited. Apart from a few (e.g. Hyundai Kona, Hyundai Ioniq, Nissan Leaf) the rest of the available options fall into the luxury range and are priced anywhere from $80,000 to over $300,000. The Hyundai Kona EV is expected to be priced below $60,000 (to be released in Australia Q2 2019) with a range of around 428 km on a fully charged 64kWh battery.


**Figure 13: Hyundai Kona EV**

Generally, cars that travel less than 150 km a day can be easily replaced by an EV. There are six pool cars parked at the Civic Centre that can be replaced to a Hyundai Kona EV. Table 7

[7] https://goo.gl/B8AMiQ

summarises the estimated benefits for Council for both a council owned and operating lease scenario. Refer to Appendix 3 for the list of specific vehicles selected.

**Table 7: Summary of EV opportunities**

| Opportunity | Estimated $CO_2$-e savings (tonnes p.a.) | Estimated use & maintenance savings ($ p.a.) | Estimated cost differential ($)* | Simple payback period (years) |
|---|---|---|---|---|
| Replace 6 passenger cars to the Hyundai Kona (Council owned) | 10.42 | $16,000 | $190,000*** | 11.4^ |
| Replace 6 passenger cars to the Hyundai Kona (operating lease)^^ | 10.42** | $21,000 to $50,000 | $6,000 | $6,000 |

*The difference between the cost of the replacing the existing vehicle with a newer fossil fuel option and an EV (i.e. cost of new fossil fuel replacement – cost of EV)

**The emissions savings for the operating lease scenario is assumed to be the same as the council owned scenario

***Ground mounted charging station and installation cost estimated at $6,000. This can vary between $6,000 to $8,000

^Note that the payback period is more than 10 years as there are two vehicles that clock less than 15,000 km per annum. Excluding these vehicles will increase the payback period. This might also indicate that these vehicles might not be needed as utilisation is low. A general rule of thumb in commercial fleets is that full time vehicles need to record a 70% plus utilisation to be justified

^^ This scenario compares an operating lease for a conventional fossil fuel vehicle versus the Hyundai Kona EV

Table 7 indicates that an operating lease of an EV will produce $21,000 to $50,000 of savings per annum compared to leasing a conventional fossil fuel vehicle.

#### 5.3.1.2 EV Charging Infrastructure

Within the Shire there are the following EV charging stations (refer to Appendix 4 for levels of EV charging) that are available to the public:

**Level 3 chargers**

- 6 Tesla superchargers (Level 1) at 46 Kirkland Avenue in Euroa – this can only be used by Teslas
- 2 ultra-fast DC fast chargers with two DC fast Chargers at Euroa Service Centre – this can be used by other EVs, including the EVs recommended in this report
- Most electric cars can be charged to 80% in 30 minutes

**Level 2 chargers**

- 2 Tesla chargers up to 22 kW at Cast Creek Motor Inn (only available for customers) – this can be used by non-Tesla EVs with a special adapter but is not recommended by Tesla or other vehicle manufactures
- Most electric cars can be fully recharged in 4 to 5 hours


Establishing a network of charging stations in the region is vital in accelerating the uptake of EVs and changing the perception of EVs. Currently there are a network of Tesla chargers in the Northeast of Victoria – these are only suitable for Tesla vehicles. The network of charging infrastructure available for other makes of EV is lacking, particularly in the region surrounding the Shire. The journey to metropolitan Melbourne is also currently not very convenient given the lack of charging stations along this route. These are current impediments (both perceived and physical) to regional councils transitioning to EVs.

In the short term, if council were to phase in EVs into its fleet, it would require the installation of at least a level 2 station to allow faster and overnight charging of the pool vehicles identified in Table 7 above. Council is part of the broader GBGA region that is considering supporting EV adoption with the expansion of the EV charging network. Whilst it is important to be aligned to this, Council can demonstrate leadership by leading with the installation of a charging station in Euroa to charge the two EVs that have been recommended as part of this study.

## Home Charging for Salary Sacrifice Package Vehicles

Most EV users typically charge their vehicles at home over night using a Level 1 charger by plugging directly into a wall socket. The EVs and plug-in hybrid vehicles recommended in this report all come standard with a Level 1 charger in the vehicle so there are no additional costs associated with this. A level 1 charger is the slowest of the 3 EV charging levels (see Appendix 4) – it takes anywhere between 15 to 25 hours to fully charge an EV. Since home charging generally occurs overnight and 10 hours of charging gives approximately 100 to 130 kms of range, additionally, given that most people typically do not travel more than that in a day, Level 1 home charging is very viable.

As more salary sacrifice package vehicles are replaced to EVs, initially home charging via a wall socket (level 1) will suffice. In the medium term (3 to 5 years), Council can consider fully or partially subsidising the installation of Level 2 chargers at staffs' residences as a part of the salary sacrifice package. This will greatly increase the viability and attractiveness of owning an EV. There are a few matters to be considered closely for the Council to provide domestic charging:

- What are the criteria for staff eligibility? For instance, assessing staff eligibility for a home charging station can be made based on daily commuting distance (from home to work) or vehicle function (e.g. 80% for work).
- Currently salary sacrifice package vehicles include a fuel card as part of the package. How will Council address electricity costs for home charging?
- Is there a legal liability issue relating to Council partially or wholly subsidising the installation of a Level 2 charger on a private property?
- What if the staff member resigns making the charging infrastructure redundant for Council purposes? How would these costs be justified? There would need to be for instance, a declaration of responsibility established on both the staff members and Council's behalf.

These need to be addressed internally before implementation to reduce any down-stream risks for Council. The cost of installing a Level 2 charging station at a residence typically includes a site inspection, cabling from the switch board to the garage and the charger. This can range from $1,500 to $4,000.

#### 5.3.1.3 Plug-in Hybrid Electric Passenger Vehicles

PHEVs are now only slightly more expensive than conventional internal combustion engine vehicles. PHEVs have batteries that can be recharged both through an external power source and, the onboard engine and generator. These are a viable replacement option that is available right now. On a longer-term basis transition to fully electric vehicles should be Council's goal.

**Figure 14: Mitsubishi Outlander PHEV**

This study has identified two Council pool vehicles and two salary sacrifice package 4x4 vehicles that can be replaced with a Mitsubishi Outlander PHEV All-Wheel Drive (AWD) Sports Utility Vehicles. The Mitsubishi Outlander is an AWD PHEV Sports Utility Vehicle. The battery in the Outlander can offset up to 50 km of travel that would otherwise be running off fossil fuels. This makes it an excellent low emissions replacement option for current four-wheel drives, particularly for Council vehicles that are required to travel long distances.

**Table 8: Summary of PHEV opportunities**

| Opportunity | Estimated $CO_2$-e savings (tonnes p.a.) | Estimated use & maintenance savings ($ p.a.) | Estimated cost differential ($)* | Simple payback (years) |
|---|---|---|---|---|
| Replace 4 passenger 4x4 cars to the Outlander PHEV (Council owned) | 14.96 | $7,000 | $27,000 | 4 |
| Replace 4 passenger 4x4 cars to the Outlander PHEV (operating lease)** | 14.96*** | -$32,000 to $6,800 | No upfront cost | N/A |

*The difference between the cost of the replacing the existing vehicle with a newer fossil fuel option and a PHEV (i.e. cost of new fossil fuel replacement – cost of PHEV)

**This scenario compares an operating lease for a conventional fossil fuel vehicle versus the Mitsubishi Outlander PHEV

***The emissions savings for the operating lease scenario is assumed to be the same as the council owned scenario

Table 8 summarises the estimated benefits for Council for both a council owned and operating lease scenario. Refer to Appendix 3 for the list of specific vehicles. The outcomes indicate that an operating lease of the Outlander will produce a loss of $3,000 to savings of $19,000 per annum compared to purchasing a conventional fossil fuel vehicle. The payback period for the Council owned case is only 4 years. In this case, Council is better off purchasing these vehicles.

#### 5.3.1.4 Electrification of Remaining Passenger Vehicles

Electric vehicles will be the most significant technology change in personal vehicles over the next five to ten years. Electric vehicles are not intrinsically less emissions intensive than conventional fuel cars, however because it becomes possible to supply their required electricity from renewable energy sources, EVs can be made compatible with a zero emissions future.

Although EVs are available in the Australian market at present, there are multiple issues that are inhibiting their broader adoption, specifically:

- Lack of model range
- High price of vehicles relative to conventional options
- Lack of infrastructure (or perception of the lack of infrastructure)
- Issues with performance characteristics such as range

Over the next 5 years, it is expected that most of these issues will be addressed, with the price of EVs expecting to drop below their conventional counterparts by around 2025 as indicated in Figure 15 which shows the share of battery cost in a EVs price. It is forecast that by around 2025 falling battery costs will push EVs to price parity with internal combustion engines (ICE).

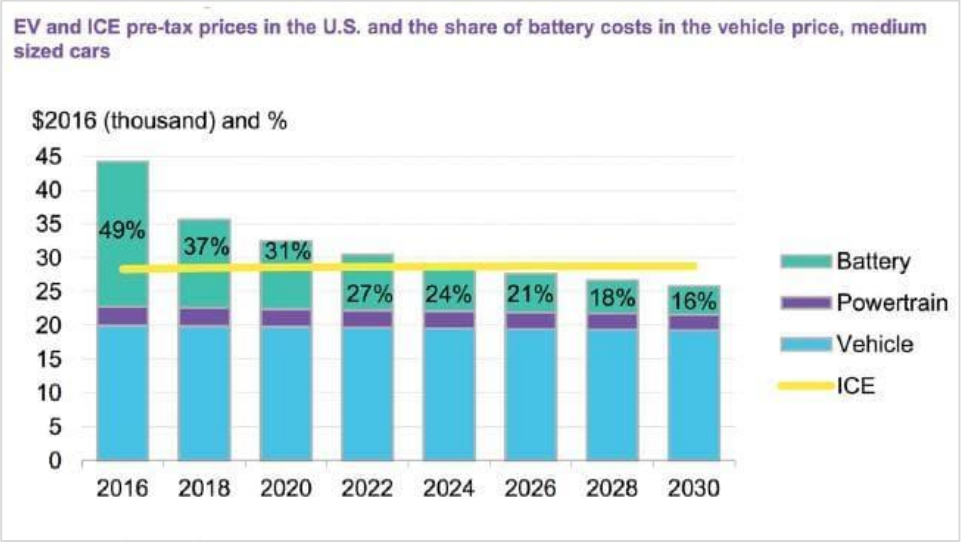



**Figure 15: U.S. medium segment vehicle price breakdown estimates[8]**

For Council this means that the business case for EVs will improve every year as prices decline. On this basis, Council should aspire to replace all passenger vehicles to EV or PHEV (for 4x4

[8] Bloomberg New Energy Finance. Note: Estimated pre-tax retail prices

vehicles that travel long distances) by 2025 and look to replace all passenger vehicles to EVs by 2030.

Figure 16 shows the projected emissions of the optimistic case (to replace all passenger vehicles to EV by 2030) versus the pessimistic case (which only includes the recommendations in Table 7 and Table 8)[9]. The optimistic estimate indicates that Council can reduce its passenger fleet emissions by close to 40% by 2028.

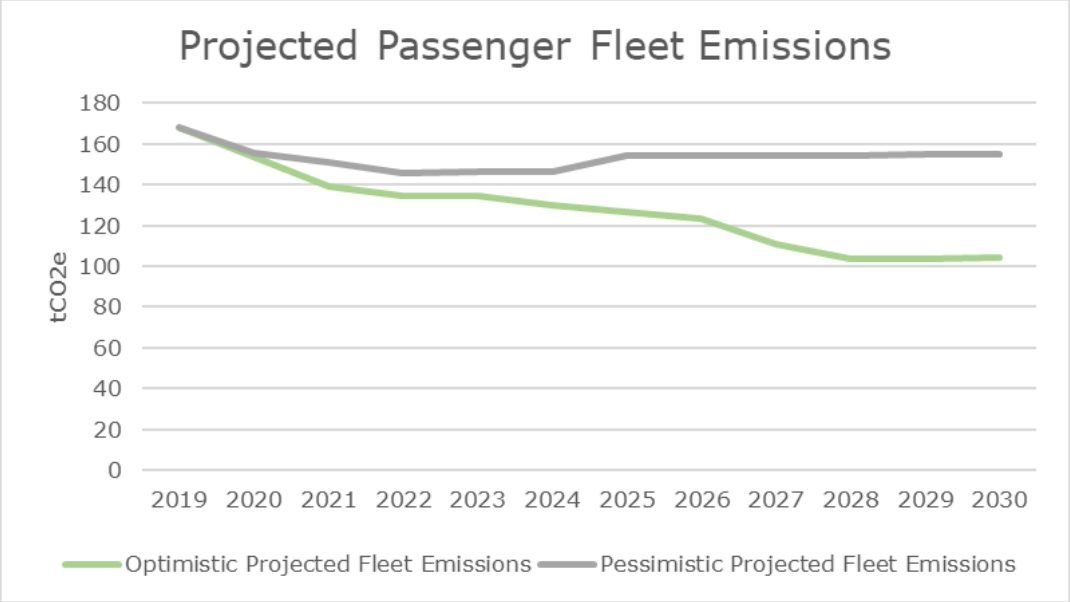



**Figure 16: Projected passenger fleet emissions**

It should be noted that there are around 14 other salary sacrifice vehicles listed in Table 9 that could potentially be replaced to energy efficient alternatives (i.e. either an EV or PHEV) – these should be reviewed after the new fleet policy providing vehicle selection criteria (For example, see Figure 8: Moreland City Council Passenger Fleet Purchasing Protocol) has been developed.

**Table 9: Salary sacrifice package vehicles to be reviewed**

| Registration Number | Vehicle Make | Vehicle Model | Vehicle Function |
|---|---|---|---|
| 1NW7CH | Subaru | Outback | Salary sacrifice package |
| 1CP9UR | Kia | Sorento 7ST SLI | Salary sacrifice package |
| 1GK6GR | Kia | Sorento Platinum | Salary sacrifice package - Commuter travel 80% |
| 1IZ3OS | Holden | Captiva LTZ 2.2L | Salary sacrifice package |
| 1IZ3PC | Holden | Captiva LTZ 2.2L | Salary sacrifice package |
| 1KF7XL | Holden | Captiva LTZ 2.2L Diesel | Salary sacrifice package - Commuter travel 70% |
| 1LX1XP | Holden | Captiva LTZ 2.2L Diesel | Salary sacrifice package - Commuter travel 90% |
| 1LX1XD | Holden | Captiva | Salary sacrifice package - Commuter travel 90% |
| 1LX1XE | Holden | Captiva | Salary sacrifice package - Commuter travel 90% |

[9] Recommendations to replace 6 cars to EVs and 4 cars to PHEVs

| Registration Number | Vehicle Make | Vehicle Model | Vehicle Function |
|---|---|---|---|
| 1MZ9EK | Isuzu | MU-X LS-M 4D Wagon | Salary sacrifice package |
| 1LX1XQ | Holden | Captiva LTZ 2.2L Diesel | Salary sacrifice package - Commuter travel 90% |
| 1LX1XR | Holden | Captiva LTZ 2.2L Diesel | Salary sacrifice package - Commuter travel 90% |
| AYO174 | Mitsubishi | ASX | Salary sacrifice package |
| 1NK6ZI | Holden | Captiva LTZ 2.2L Diesel | Salary sacrifice package |

Council staff should be encouraged to opt for low emission options when replacing vehicles. Council can facilitate this by establishing a 'Business Use Incentive'[10] for salary sacrifice package vehicles as recommended in Section 0. Identification of specific vehicles for replacement can be determined by a process such as the flowchart outlined in Figure 8.

#### 5.3.1.5 Passenger Vehicles Recommendations

| ID | Recommendation |
|---|---|
| PV.1 | Council is part of a broader regional initiative (GBGA) considering the adoption of EVs. It is recommended that Council initially replaces two of the pool cars (prioritise the ones with lowest payback periods) to Hyundai Kona EVs (See Appendix 3), then determine the rate of uptake of EVs in subsequent years pending regional programs with GBGA. The pool vehicles with higher annual mileage should be prioritised as these will present the largest cost and GHG emissions savings. |
| PV.2 | Install a charging station (Level 2 or 3) at the Euroa Civic Centre which has a solar capacity of 30kW. This is a suitable location given all pool vehicles are parked at the Civic Centre. This can dramatically reduce the cost of installing charging infrastructure as the Civic Centre has an existing meter supply with Council as the account holder. |
| PV.3 | Replace 4 Council 4x4 vehicles to the Mitsubishi Outlander PHEV |
| PV.4 | Re-evaluate the business case annually for replacing passenger vehicles to EVs or PHEVs, with the aim to replace all passenger vehicles to EVs by 2030 |
| PV.5 | In the medium term (3 to 5 years), Council can consider fully or partially subsidising the installation of Level 2 chargers at staffs' residences as a part of the salary sacrifice package. This will greatly increase the viability and attractiveness of owning an EV. Before implementation address points detailed in the "Home Charging for Salary Sacrifice Package Vehicles" section |

[10] This would be ideally underpinned by a Council fleet policy and is established to incentivise the use of lower emissions vehicles and linked to the amount of Council cash contribution in an employee's remuneration package.

## 5.3.2 Light Commercial Vehicle Opportunities

### 5.3.2.1 Fringe Benefit Tax

Council pays Fringe benefits tax (FBT) on certain benefits they provide to their employees.[11] These benefits include providing private commuter use vehicles that are owned by Council, which will incur FBT. This tax liability for Council is part of the salary sacrifice packages that Council provides to its staff. A car is exempt from FBT if its private use is limited to:

- travel between home and work
- incidental travel in the course of performing employment-related travel
- non-work-related use that is minor, infrequent and irregular (for example, occasional use of the vehicle to remove domestic rubbish).


**Figure 17: 2019 Mitsubishi Navara**

Fleet operators traditionally provide officers entitled to limited private vehicle use with light commercial vehicles like utility vehicles to avoid paying FBT. This often results in the decision to procure an often large and inappropriate vehicle rather than a smaller more fuel-efficient vehicle and paying the FBT. Moreover, if the ATO determined that the purchase of a utility vehicle was to avoid paying FBT, this would amount to tax fraud.

As such, it is necessary to understand the specific purpose of each vehicle in Council's fleet to uncover opportunities to reduce the number of large vehicles and also ensure that Council is not actively avoiding FBT.

Council has around 23 utility vehicles – almost the same number of Council owned passenger vehicles. 5 of these are salary sacrifice package vehicles. The table below lists these 5 vehicles along with each of its functions:

[11] https://goo.gl/N9BYug

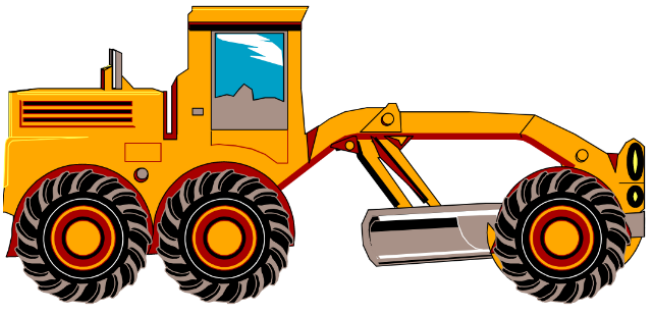
**Table 10: Summary of Council operated utility vehicles**

| Vehicle Make | Vehicle Model | Vehicle Function |
|---|---|---|
| Holden | Colorado 7 LT | Salary sacrifice package |
| Holden | Colorado 7 LT | Salary sacrifice package - Commuter travel 80% |
| Holden | Colorado LS | Salary sacrifice package - Commuter Travel 50% |
| Nissan | Navara DC Ute | Salary sacrifice package |
| Volkswagen | Amarok TDI420 | Salary sacrifice package - Commuter Travel 60% |

#### 5.3.2.2 Light Commercial Vehicles Recommendations

| ID | Recommendation |
|---|---|
| LCV.1 | The use of utility vehicles should be reviewed[12] to determine if a suitable low emissions replacement is warranted. For instance, if a utility vehicle is used for 80% commuter travel, it could be replaced by a more fuel-efficient passenger vehicle (i.e. hybrid, EV or PHEV). |
| LCV.2 | Consider including in the vehicle policy mandating the highest published fuel efficiency for utility vehicles during procurement. For example, on today's Green Vehicle Guide (https://www.greenvehicleguide.gov.au) the Nissan Navara would be chosen as the more efficient vehicle in the crew cab diesel utility range. |

### 5.3.3 Plant Equipment & Heavy Vehicles Opportunities



To date, there are generally limited opportunities within a council's plant equipment to reduce emissions. For instance, there are electric fuelled variants in the market for mowers, but these have been designed for the domestic market and are not useful for heavy duty commercial use. To get a picture of the largest emitters in this category, we have ranked the top 10 highest consumers of diesel which make up around 70%[13] of total diesel consumption for this group. The top 10 vehicles consist of mostly trucks, two graders and a tractor.

It is evident that the largest opportunity to reduce emissions within this group is in reducing truck emissions. This is similar across most councils in Victoria.

[12] Moreland's procurement process can be used here

[13] This is based on FY2016/17 data and does not include fuel use from mowers as the data was not available.

#### 5.3.3.1 Hydrogen Fuel Cell Trucks

Reduction in truck emissions will result in a substantial reduction in Council's fleet emissions profile and overall corporate profile, given that trucks alone account for around 50%[14] of plant equipment emissions. When it comes to commercial vehicles such as waste trucks and buses, driver training and route-optimisation can reduce emissions to some extent but there has yet to be a fuel-switching solution adopted by councils in Australia. For Strathbogie Shire, a truck fleet with a secure fuel source ensures Council is able to continually provide essential services such as rubbish collection, water delivery to rural areas, firefighting and emergency access to parts of the community experiencing crises.

A potentially viable clean technology for waste trucks and other heavy vehicles in councils' fleet is hydrogen fuel cell. Hydrogen Fuel Cell Electric Vehicles (FCEV) use hydrogen to power electric motors and are comparable to conventional vehicles in terms of range and refuelling process – pressurised hydrogen is fed into vehicles taking less than 10 minutes to refuel. Paired with renewable energy generation to power electrolysis which extracts hydrogen from water, this presents an attractive clean fuel alternative.

In recent years, hydrogen fuel cell trucks paired with electrolysis technology has been building momentum in Australia. This will have the potential to reduce all local government emissions by a very significant amount, given that trucks constitute a significant portion of councils' corporate GHG emissions. More broadly, hydrogen as a fuel source has a wide range of vehicle applications and has very compelling environmental benefits - emitting nothing more than clean water and are much quieter. It is also important to note that hydrogen fuel cell technology is the only zero emissions fuel switching technology for heavy vehicles that can match the duty cycle[15] of the current diesel vehicles in terms of range, payload and refuelling times – presenting a much more viable alternative than electric trucks in most cases.

Currently, there are many hydrogen trials around the world - notably ports in Los Angeles, Long Beach, Honolulu, Valencia and Rotterdam are trialling this alternative fuel source. Closer to home, New Zealand should have its first hydrogen and refuelling station operational by the end of 2019 at Ports of Auckland in line with its target to be zero emissions by 2040. This station is expected to fuel cars, buses, tugs, straddle carriers and other port equipment with further uses planned. Hydrogen power has also been successfully used in Germany by two rail operators to power commercial services trains. Hydrogen fuelled trains have a range of 1,000 km on a full tank. Hyundai and Toyota global who are both active in the Australian market have publicly stated that they are moving fuel cell technology into their commercial vehicle range. Hyundai are supplying 1,000 Class 8[16] fuel cell trucks to the Swiss postal service starting 2019. The success of these trials will initiate a wide range of other applications toward a low GHG emissions future.

[14] See preceding footnote

[15] A duty cycle defines how much a vehicle is used.

[16] Heavy duty trucks with a Gross Vehicle Weight Rating (GVWR) exceeding 14,969 kg

In Victoria, Toyota and the Australian Renewable Energy Agency (ARENA) are co-funding a $7.4 million hydrogen refuelling centre at Toyota's decommissioned manufacturing plant in Altona, west of Melbourne. The Toyota Ecopark Hydrogen Demonstration project will be a renewable energy hub that produces renewable hydrogen for both stationary energy and transport energy uses. This hub will be fully operational by late 2020. Toyota has also enlisted some trial partners for its passenger hydrogen fuel cell EVs, notably, Hobsons Bay City Council is participating in a 12-week trial of three Toyota hydrogen fuel cell powered Mirai cars. There are currently other councils that have also expressed interested in running trails.


**Figure 18: Trial Toyota Mirai hydrogen fuel cell powered car**

Toyota and Hyundai are currently seen as the leaders in FCEV technology and both have plans to ramp up production of FCEVs in the coming years. Toyota views the greatest perceived impediment to adoption is the lack of infrastructure but sees FCEVs a very large part of its future fleet.

Nationally, FCEV technology has been gaining attention from both government and large private stakeholders as a commercially viable technology and a large part of Australia's low GHG emissions future. Australia's Chief Scientist Alan Finkel is currently leading a National Hydrogen Strategy to map out a domestic and export hydrogen sector to be implanted from 2020, with support from the COAG Energy Council.

The incumbent Federal Coalition Government has committed to spending at least $31 million in support of this technology in the short term through ARENA. Energy Minister Angus Taylor recently stated that the government would support infrastructure growth in "measured fashion".

Additionally, the Australian Labour Party (ALP) pledged a bolder $1 billion plan to support the Australian hydrogen economy through research and development, commercialisation, deployment, infrastructure and regulatory reform. The ALP has pitched this as a way to secure Australia's role in a growing industry and secure more jobs in the future.

Although this fuel source is not commercially available in Australia yet, it is expected this will be available within the next 3 to 5 years based on strong Government and private sector

support. In the interim, Council should closely monitor the progress of both international and national trials. Council can also advocate for the GBGA to contact Toyota or Hyundai to express interest and discuss opportunities to trial this technology in the Goulburn Broken region. Given hydrogen fuel cell's wide applications and longer-range FCEVs, this presents a substantive future opportunity, particularly for regional councils.

#### 5.3.3.2 Diesel-Electric Hybrid Trucks

A lower GHG emissions alternative for Council's trucks are electric-diesel hybrid trucks. Currently in the Australian market there are very limited options for Original Engine Manufacturer (OEM) electric-diesel hybrid trucks. For trucks between the 5 to 7.5 tonne range the following options are currently available:

- Hino 300 Series 716 Hybrid Truck
- Fuso Canter Eco Hybrid Truck

**Figure 19: Hino 300 Series 716 Hybrid (left) & Fuso Canter Eco Hybrid (right)**

The City of Sydney has added 66 diesel-electric hybrid trucks to its fleet and have estimated a reduction of up to 30 per cent reduction in GHG emissions per vehicle. Hybrid vehicles are particularly suited for city driving where GHG emissions and operational savings are gained through the vehicle stopping and accelerating regularly.

In the context of Strathbogie, there are 14 trucks in Council's fleet, of which only 1 truck has been identified that can potentially be replaced to a Hino 300 Series 716 Hybrid:

**Table 11: Potential diesel-electric hybrid truck replacement opportunity**

| Registration Number | Description | Vehicle Year | Comments |
|---|---|---|---|
| TQG987 | 2005 ISUZU Tipping Truck (5 tonne) | 2005 | Purchased Approx. Sep 2005 |

Once a fleet manager is appointed, Council could look at a short-term lease of the Hino 300 Series 716 Hybrid equipped with telematics as a trial to replace the current tipping truck selected above. If results are positive, request a lease versus operating lease comparison from fleet management provider.

The remaining trucks in Council's fleet are much larger (above 10 tonnes) and do not currently have OEM hybrid options. Additionally, many of these vehicles are likely used for long range distance so will not gain much benefit from stopping and accelerating.

Converting larger trucks to a hybrid or electric by mounting a battery comes with trade-offs. A truck with a battery designed to match the diesel travel range will be significantly heavier than the diesel derivative – which compromises payload carrying capacity[17]. Generally, there is a compromise between payload and range for batteries in commercial vehicles. However, in instances where range is not a factor, electric/hybrid truck conversions can work. These are considerations that will impact on price and performance given current battery technologies. From a review of Council's truck fleet, no suitable trucks were identified for conversion.

#### 5.3.3.3 Biodiesel

Biodiesel is a renewable, biodegradable fuel made using vegetable oils or other feedstocks. It is known to produce fewer toxic particulates and significantly less greenhouse gas emissions than diesel. It works in the engine in the same way as standard diesel and can be switched between both diesel and biodiesel fuels if required. This fuel source is experiencing rapid growth in Asia and the United States and has been produced commercially in Europe since the 1990s. In Australia, Adelaide's Metro bus service has been fuelled by either B5 or B20 for some years, with positive results.

The most common blends available in the market place are:

- 20% biodiesel, 80% petroleum diesel is (B20)
- 5% biodiesel, 95% petroleum diesel is (B5)
- 2% biodiesel, 98% petroleum diesel (B2)
- 100% biodiesel is referred to as (B100)

Before determining if a vehicle should accept biodiesel, the following should be considered:

- Compatibility of vehicle – all diesel vehicles and equipment can take up to B5 and B2. Most modern vehicles can take up to B20. However, this should be checked first with the manufacturer – some manufacturer warranties are voided if biodiesel is used. B100 and other higher blends are less common and require engine modification and special handling procedures.
- Below 5 degrees Celsius, the higher biodiesel blends will become more viscous. This can leave residue and cause clogging in the engine. In Strathbogie Shire where temperatures fall in that range frequently, B100 and higher blends are generally unsuitable.
- Biodiesel has less energy density than pure diesel. A given vehicle will cover less distance on a full tank as compared to pure diesel. The higher the biodiesel blend, the lower the energy

[17] The amount of weight that the vehicle fully supports which includes passengers and load.

density and therefore, the quicker the fuel is consumed. B20 is the most common as it represents a good balance of cost, emissions reduction and cold-weather performance. This crudely represents an emission savings of around 15% for vehicles that switch over.

- The production of biodiesel produces nitrous oxide emissions which are a very potent GHG. Nitrous oxide is emitted as a result of fertiliser used to cultivate the energy crops. Fertiliser use not only increases the direct agricultural soil emissions, but also the indirect nitrous oxide emissions from aquatic systems, after leaching and runoff of nitrogen from fertilised soils. The combustion of biodiesel also produces higher nitrogen dioxide emissions than regular diesel. Nitrogen dioxide is an irritant gas and is considered to have adverse health impacts in high concentrations. The higher the blend of biodiesel, the more nitrogen dioxide is emitted. In determining if biodiesel should be used to fuel part of Council's fleet, it is important to understand the lifecycle emissions of the biodiesel production process.
- Large scale cultivation of crop for biodiesel can compete for land and water, which can affect the region's food security. Lifecycle fuel assessments have concluded that for biodiesel to be sustainable at least 40% second generation material (old cooking oil, beef tallow, etc) should be used in its production. If only virgin material is used, it will raise the food and land clearing debate. In the context of Strathbogie, this is currently not an issue since locally produced biodiesel is still on a small scale.

In using any form of biofuel, it is important for Council to determine that the negative impacts do not outweigh the emissions savings - particularly if the local production plant grows. The literature is rampant with intense debates for and against the use of biodiesel which are all dependent on factors like the production process and associated environmental impacts; local conditions (weather and availability of raw materials); vehicle type and function; and organisational goals.

Whilst biodiesel can be a solution to improve energy security for essential services in the short term, it is unlikely that the whole heavy fleet and plant equipment will switch to high blends for the reasons discussed and given the megatrends observed overseas. Currently, European cities which include Berlin, London and Paris have launched diesel car ban programmes to fight pollution – instituting low emissions zones where diesel ban schemes are in place. These schemes are emerging across Europe and in the longer term, European countries are trending towards announcing measures to completely phase out fossil fuel vehicles. For Council, a greener long-term solution will be other alternative fuel sources like hydrogen fuel cell technology and electric fuelled vehicles and equipment.

A community-owned company based in Longwood East (25 kms from Euroa), Environmental Diesel was launched in January 2019 using recycled cooking oils and locally-grown seed. This presents a good opportunity for Council to consider a trial with select plant equipment and heavy vehicles with a locally produced fuel source that is more environmentally friendly than conventional diesel.

Supporting the growth of this community initiative would also bring other regional benefits like increased employment, reduction of waste and economic growth. The availability of biodiesel in the region would present a cheaper locally produced fuel to the community – particularly for local farmers and other heavy vehicle operators.

### 5.3.3.4 Plant Equipment & Heavy Vehicle Recommendations

| ID | Recommendation |
|---|---|
| PE.1 | Periodically review council and international trials on alternative fuel sources for Council trucks. Once concept is proven, develop a business case and where relevant, implement. |
| PE.2 | Advocate for the GBGA to contact Toyota and Hyundai on behalf of member councils to express interest and discuss opportunities to trial this technology. |
| PE.3 | Investigate the cost benefit of biodiesel with local producers and trial with one of the plant equipment. It is important to check that the use of biodiesel does not void any existing manufacturer warranties. |

# 6. Summary of Recommendations

This section summarises the recommendations from this fleet review:

**Table 12: Fleet review summary of recommendations**

| ID | Recommendations |
|---|---|
| Regional Approach | |
| RA.1 | Send out an EOI to GBGA and GVRCA councils to gauge interest in a regional approach to developing a fleet policy; procuring fleet management services; and scoping out opportunities for shared services. This process could be through a formal letter or calling partner councils to gauge interest. |
| RA.2 | Advocate for partner GBGA councils to install charging stations to improve the network of charging stations in the region, enabling council EVs to conveniently travel across municipalities. This is expected to accelerate the uptake of EVs in the region. A regional approach through GBGA to approach EV infrastructure suppliers is recommended. |
| RA.3 | Approach GVRCA partner councils to investigate expanding the "Graders without Borders" program to include other heavy plant equipment |
| Fleet Management[18] | |
| FM.1 | Update Council's fleet guidelines to a best practice fleet policy that is aligned with Council's sustainability targets and develop vehicle procurement criteria. The fleet policy will inform fleet management decisions and should ideally be completed before progressing further with fleet management providers. |
| FM.2 | Consider the establishment of a 'Business Use Incentive'[19] for salary sacrifice package vehicles. This would be ideally underpinned by a Council fleet policy and is established to incentivise the use of lower emissions vehicles and linked to the amount of cash contribution in an employee's remuneration package. |
| FM.3 | It is recommended that Council liaises with the fleet management providers and invite them to:<br>• provide face to face presentations<br>• provides the requisite data for the service providers to provide a detailed quote<br>With this information, Council will be able to develop a detailed project specification. |
| Passenger Vehicles | |
| PV.1 | Council is part of a broader regional initiative (GBGA) considering the adoption of EVs. It is recommended that Council initially replaces two of the pool cars to Hyundai Kona EVs (See Appendix 3), then determine the rate of uptake in line with the broader GBGA councils. The pool vehicles with higher annual mileage should be prioritised as these will present the largest cost and GHG emissions savings. |
| PV.2 | Install a charging station (Level 2 or 3) at the Euroa Civic Centre which has a solar capacity of 30kW. This is a suitable location given all pool vehicles are parked at the Civic Centre. This can dramatically reduce the cost of installing charging infrastructure as the Civic Centre has an existing meter supply with Council as the account holder. |

[18] See Appendix 1 for supporting information

[19] This would be ideally underpinned by a Council fleet policy and is established to incentivise the use of lower emissions vehicles and linked to the amount of Council cash contribution in an employee's remuneration package.

| ID | Recommendations |
|---|---|
| PV.3 | Replace 4 Council 4x4 vehicles to the Mitsubishi Outlander PHEV (See Appendix 3) |
| PV.4 | Re-evaluate the business cases annually for replacing passenger vehicles to EVs or PHEVs, with the aim to replace all passenger vehicles to EVs by 2030 |
| PV.5 | In the medium term (3 to 5 years), Council can consider fully or partially subsidising the installation of Level 2 chargers at staffs' residences as a part of the salary sacrifice package. This will greatly increase the viability and attractiveness of owning an EV. Before implementation address points detailed in the "Home Charging for Salary Sacrifice Package Vehicles" section |
| Light Commercial Vehicles | |
| LCV.1 | The use of utility vehicles should be reviewed[20] to determine if a suitable low emissions replacement is warranted. For instance, if a utility vehicle is used for 80% commuter travel, it could be replaced by a more fuel-efficient passenger vehicle (i.e. hybrid, EV or PHEV). |
| LCV.2 | Consider including in the vehicle policy mandating the highest published fuel efficiency for utility vehicles during procurement. For example, on today's Green Vehicle Guide (https://www.greenvehicleguide.gov.au) the Nissan Navara would be chosen as the more efficient vehicle in the crew cab diesel utility range. |
| Plant Equipment | |
| PE.1 | Periodically review council and international trials on alternative fuel sources for Council trucks. Once concept is proven, develop a business case and where relevant, implement. |
| PE.2 | Advocate for the GBGA to contact Toyota and Hyundai on behalf of member councils to express interest and discuss opportunities to trial this technology. |
| PE.3 | Investigate the cost benefit of biodiesel with local producers and trial with one of the plant equipment. It is important to check that the use of biodiesel does not void any existing manufacturer warranties. |

[20] Moreland's procurement process can be used here

# 7. Next Steps

Within the 2019/20 year the following is recommended:

1. Send out an EOI to GBGA and GVRCA councils to gauge interest in a regional approach to developing a fleet policy; procuring fleet management services; and scoping out opportunities for shared services

2. Update Council's fleet guidelines to a best practice fleet policy that is aligned with Council's sustainability targets and develop vehicle procurement criteria including:

    a. prioritisation of low emissions vehicles and general environmental requirements;

    b. replacement and disposal guidelines; and

    c. roles and responsibilities

3. Scope and procure a fleet management service provider

4. Integrate data collection into the scope

5. Prioritise and plan for the remaining actions within this Strategy by 2022

The following diagram maps out the recommended next steps for Council over the next year, noting that this is just a guide and Council might decide to omit a step at any stage.

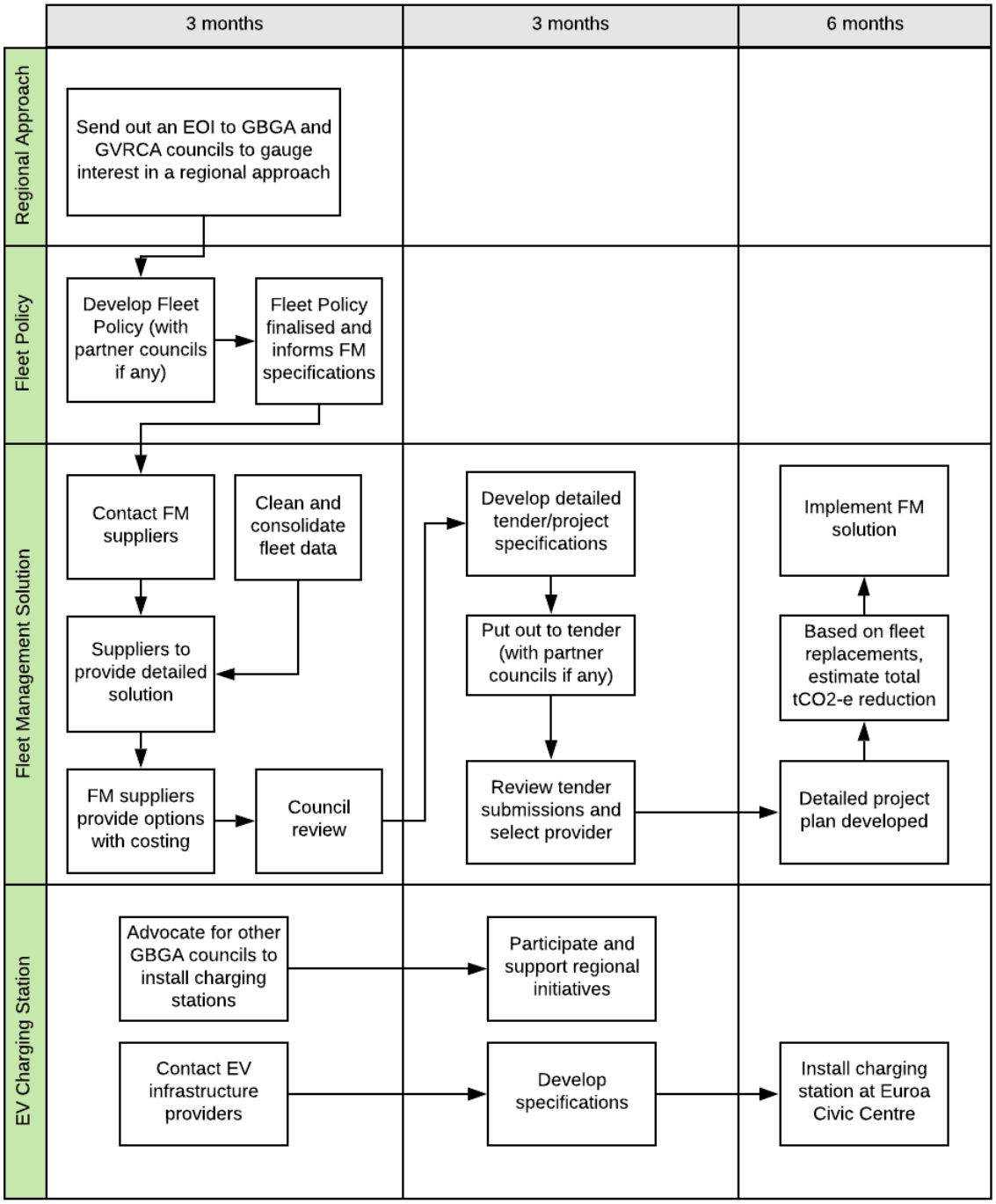



**Figure 20: Fleet review next steps flow chart**

# 8. Appendix 1: Fleet Management

## 8.1 Example Council Fleet Management Policy

Refer to attached file for an example of a best practice fleet policy

- Attachment 1 – Moreland City Council sample vehicle fleet policy 2018

## 8.2 Details from Fleet Management Providers

Three fleet management providers were contacted to provide information and indicative costs for fleet management services and preliminary costs for operating leases. Note that a higher level of detail is required to ensure each of these providers can tailor make a full package for Council. When contacting the fleet management providers, Council was kept anonymous to prevent unwarranted calls.

Should Council wish to progress further, the fleet management providers and contact details are provided below:

| Company* | Name | Role | Contact |
|---|---|---|---|
| FleetPlus** | Thomas Hayes | Business Development Manager | E: thomas.hayes@fleetplus.com.au \| Direct 02 8398 8687 \| Mobile 0427 064 947 \| Telephone 1300 353 381 |
| sgFleet | Wayne Excell | Business Development Manager | T: +61 3 8480 1320 \| M: +61 427 956 248<br>E: WExcell@sgfleet.com |
| FleetCare | Keiran McMinn | Sale Consultant | T: 134 333 ext: 822<br>E: Keiran.McMinn@fleetcare.com.au |

*Click on link to go to company website

**FleetPlus is the first fleet management organisation to be certified carbon neutral against the National Carbon Offset Standard (NCOS)

This report draws pricing information from the following responses attached to this report:

- Attachment 2 – FleetPlus indicative quote
- Attachment 3 – FleetPlus Lease Buy Back Case Studies
- Attachment 4 – sgFleet indicative quote
- Attachment 5 - sgFleet information on leasing
- Attachment 6 – Correspondence with Fleet Care
- Attachment 7 – indicative cost for operating leases

# 9. Appendix 2: Methodology

## 9.1 Data Consolidation and Treatment

The fleet review was based on integrating FY2016/17 fleet data that Ironbark already had from previous work with Council and most recent data that was provided in FY2018/19 through a questionnaire response, correspondence with Council and information compiled by data. Where there were data gaps, FY2016/17 data was used as a proxy. This process involved comparing old and new data and consolidating data from various other sources. It is expected that there will be some inaccuracies due to data gaps at the time of this report.

## 9.2 Fleet Management Services

Fleet management information was based on indicative market quotes from correspondence with large fleet management providers. Fleet management services modelling was based on this information.

## 9.3 GHG Emissions Estimation

GHG emissions reduction potential for recommended actions were based on benchmarking similar projects implemented and previous experience. The assumptions for the calculations underlying Figure 1 are:

- All passenger vehicles are replaced to EVs by 2028
- Telematics are installed for:
  - 9 passenger pool vehicles
  - 6 utility vehicles
  - 50% of plant equipment

## 9.4 Lease versus Council Owned Scenarios

The assumptions for the Council owned versus operating lease scenarios are as follows:

- Time horizon of 5 years for both scenarios
- Operating lease term of 5 years
- Operating lease monthly repayments informed by preliminary quotes from fleet management providers
- Discount rate of 4.5%
- Annual running costs are based on Council's transactions and RACV Car Running Costs Survey 2018. These running costs include on roads, stamp duty, registration, insurance, roadside assistance, tyres, and servicing. Cost of fuel was excluded because this is borne by Council regardless of the arrangement.
- The full range of indicative quotes sourced from fleet management providers for Fully Maintained Operating Lease are detailed in Table 13 and includes the following as standard:
  - Vehicle Finance

- Maintenance
- Tyres (km dependant)
- Registration / CTP – initial and renewal
- Roadside Assistance
- Accident Management
- Advanced Vehicle Management (GPS)
- FBT Reporting
- Fuel card – fuel costs recharged back to the customer on a monthly basis

**Table 13: Operating lease preliminary market quotes**

| **Make** | Holden | Holden | Holden | Hino | Hyundai | Mitsubishi |
|---|---|---|---|---|---|---|
| **Model** | Arcadia | Equinox | Colorado | Hino 500 series truck | Kona EV | Outlander PHEV |
| **Est. km per annum** | 25,000 | 25,000 | 40,000 | 60,000 | 30,000 | 50,000 |
| **Lease term** | 5 years | 5 years | 5 years | 5 years | 5 years | 5 years |
| **Quoted Range of Monthly repayments** | $750 to $1,300 | $$800 to $1,100 | $820 to $1,400 | $2,000 to $3,000 | $700 to $1,000 | $1,100 to $1,600 |

## 9.5 Business Case for EV and PHEV

The business cases for EV and PHEV replacement scenarios was based on assumptions from market research and knowledge from previous projects.

# 10. Appendix 3: Details of EV & PHEV Opportunities

**Table 14: Details of EV opportunities**

| Registration No. | Make/Model | Estimated CO2-e savings (tonnes p.a.)** | Estimated use & maintenance savings ($ p.a.) | Estimated cost differential ($)* | Simple payback (years)^ |
|---|---|---|---|---|---|
| **Council Owned** | | | | | |
| 1EA7XW | Holden Captiva | 4.32 | $5,242 | $25,000 | 4.8 |
| 1KF7XD | Mitsubishi XC ASX | 1.78 | $2,935 | $30,000 | 10.2 |
| 1KF7XD | Mitsubishi ASX | 1.78 | $2,935 | $35,000 | 11.9 |
| ZPI671 | Holden Captiva | 1.00 | $1,590 | $25,000 | 15.7 |
| 1HS9UX | Corolla Ascent | 0.24 | $2,116 | $34,000 | 16.1 |
| 1AG4AV | Holden Cruze | 1.30 | $1,810 | $35,000 | 19.3 |
| | Charging station | | | $6,000 | |
| **Total** | | **10.42** | **$17,627** | **$190,000** | **11.4** |
| **Operating Lease^^** | | | | | |
| 1EA7XW | Holden Captiva | 4.32 | $6,092 to $10,892 | No upfront cost | N/A |
| 1KF7XD | Mitsubishi XC ASX | 1.78 | $3,785 to $8,585 | No upfront cost | N/A |
| 1KF7XD | Mitsubishi ASX | 1.78 | $3,785 to $8,585 | No upfront cost | N/A |
| ZPI671 | Holden Captiva | 1.00 | $2,340 to $7,140 | No upfront cost | N/A |
| 1HS9UX | Corolla Ascent | 0.24 | $2,966 to $7,766 | No upfront cost | N/A |
| 1AG4AV | Holden Cruze | 1.30 | $2,660 to $7,460 | No upfront cost | N/A |
| | Charging station | | | $6,000 | |
| **Total** | | **10.42** | **$21,627 to $50,427** | **$6,000** | **<1 year** |

*The difference between the cost of the replacing the existing vehicle with a newer fossil fuel option and an EV (i.e. cost of new fossil fuel replacement – cost of EV)

**The emissions savings for the operating lease scenario is assumed to be the same as the council owned scenario

***Assume an estimated cost of a ground mounted charging station and installation cost at $6,000. This can vary between $6,000 to $8,000

^Note that the payback period has been sorted from low to high. There are two vehicles that clock less than 15,000 km per annum. This might indicate that these vehicles might not be needed as utilisation is low. A general rule of thumb in commercial fleets is that full time vehicles need to record a 70% plus utilisation to be justified

^^ This scenario assumes that each of these vehicles are replaced by a Holden Equinox (conventional fossil fuel vehicle) which is the proxy for business as usual. The savings represent the savings from selecting the Hyundai Kona EV over the Holden Equinox

**Table 15: Details of PHEV opportunities**

| Registration No. | Make/Model | Estimated CO2-e savings (tonnes p.a.)** | Estimated use & maintenance savings ($ p.a.) | Estimated cost differential ($)* | Simple payback (years)^ |
|---|---|---|---|---|---|
| **Council Owned** | | | | | |
| 1EC8SR | Toyota Kluger | 2.54 | $1,406 | -$2,000 | Immediate |
| 1MF4BS | Jeep Cherokee | 5.01 | $2,343 | $3,000 | 1.3 |
| 1FJ9NY | Kia Sorento | 4.75 | $2,103 | $8,000 | 3.8 |
| 1GU2QK | Jeep Patriot | 2.67 | $1,193 | $18,000 | 15.1 |
| **Total** | | **14.96** | **$7,045** | **$27,000** | **3.8** |
| **Operating Lease^^** | | | | | |
| 1EC8SR | Toyota Kluger | 2.54 | -$8,244 to $1,356 | No upfront cost | N/A |
| 1MF4BS | Jeep Cherokee | 5.01 | -$7,307 to $2,293 | No upfront cost | N/A |
| 1FJ9NY | Kia Sorento | 4.75 | -$7,547 to $2,053 | No upfront cost | N/A |
| 1GU2QK | Jeep Patriot | 2.67 | -$8,457 to $1,143 | No upfront cost | N/A |
| **Total** | | **14.96** | **-$31,555 to $6,845** | No upfront cost | N/A |

*The difference between the cost of the replacing the existing vehicle with a newer fossil fuel option and a PHEV (i.e. cost of new fossil fuel replacement – cost of PHEV)

**The emissions savings for the operating lease scenario is assumed to be the same as the council owned scenario

^Note that the payback period has been sorted from low to high

^^ This scenario assumes that each of these vehicles are replaced by a Holden Equinox (conventional fossil fuel vehicle) which is the proxy for business as usual. The savings represent the savings from selecting the Mitsubishi Outlander PHEV over the Holden Equinox

# 11. Appendix 4: Levels of EV Charging

This information has been sourced from the Electric Vehicle Council

**Level 1 Charging**

- Any existing power point (10 amp)
- No specialised installation required
- Charge time from 15 to 25 hours

**Level 2 Charging**

- A 15-amp power point, this will allow most electric cars to be fully recharged overnight
- Requires an electrician to install
- Typically installed in the home and at long stay destinations (work, shopping centres)
- Charge time 4 to 5 hours

**Level 3 Charging**

- A 55-amp power point, this can provide approximately 80% charge in 30 mins
- Require specialised installation
- Effectively replace today's fuel stations
- Charge time approximately 45 minutes