INFORMATION TECHNOLOGY AUDIT

OF

PUBLIC WORKS DEPARTMENT - COLLECTIVEFLEET

Fleet Management Software

Office of the Auditor General
January 2021

COLLECTIVEFLEET -
FLEET MANAGEMENT SOFTWARE

This is a report of an Information Technology Audit conducted by the Office of the Auditor General

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ABBREVIATIONS

DFID	Department for International Development
DITES	Department of Information Technology and e-Services
GoM	Government of Montserrat
ISSAI	International Standard of Supreme Audit Institutions
ISAE	International Standard on Assurance Engagements
KPI	Key Performance Indicator
MCWLE	Ministry of Communications, Works, Labour & Energy
MIS	Management Information System
OAG	Office of the Auditor General
PCN	Project Concept Note
PDF	Portable Document Format
PWD	Public Works Department
TC	Technical Consultant

PREAMBLE

Vision Statement

"To be a proactive Supreme Audit Institution that helps the nation make good use of its resources."

Mission Statement

"The O.A.G is the national authority on public sector auditing issues and is focused on assessing performance and promoting accountability, transparency and improved stewardship in managing public resources by conducting independent and objective reviews of the accounts and operations of central government and statutory agencies; providing advice; and submitting timely Reports to Accounting Officers and the Legislative Assembly."

The Goal

"To promote staff development, enhance productivity, and maintain a high standard of auditing and accounting in the public sector, thereby contributing to the general efficiency and effectiveness of public finance management."

OFFICE OF THE AUDITOR GENERAL
MONTSERRAT

AUDITOR GENERAL'S OVERVIEW

This audit examined whether the benefits identified at the acquisition of the software CollectiveFleet were achieved; reviewed any changes; and whether there were any plans for future enhancement of the software.

We note that the fleet management software was selected by the Public Works Department due to it being a comprehensive, centralised software with the requisite modules and features to perform the department's various operational assignments. Although it was upgraded over the years to the current version 6.1, which incorporates more standardised modules and features, we observed that the software has not being fully utilised since implementation; and the total expenditures associated with the procurement, implementation, training, upgrades, annual support and maintenance, is exceedingly high. The department stressed their commitment to capitalize on its use in the near future; however, the commencement is dependent on how quickly the required information from the various Workshop sections, is inputted into the software's database.

We have highlighted other findings and provided recommendations that we feel would benefit the PWD Workshop, once they are implemented.

We wish to thank the Ministry of Communications, Works, Labour and Energy, the PWD Workshop staff, and all other persons who provided information, clarifications, or extended courtesies to the auditors, during the course of this review.

Florence A Lee
Auditor-General
January 20, 2021

EXECUTIVE SUMMARY

Overview

1. The Ministry of Communications, Works, Labour and Energy (MCWLE), through its Public Works Department (PWD), is responsible for (a) for the development and maintenance of civil works and buildings infrastructure on Montserrat; and (b) emergency response during natural disasters, including preventative and reactive measures during the hurricane season. To accomplish this, the PWD must have a well maintained fleet of plant and equipment (bulldozers, backhoes, front-end loaders, bobcats, and trucks). However, due to the volcanic crisis and other extenuating factors, the Workshop operations and services were adversely affected. Consequently, a decision was made by the Government of Montserrat (GoM) to improve the Plant and Workshop operations and services.
2. Three independent consultation firms were commissioned between 2001 and 2006 to assess the situation; as per their recommendations, financial support was sought from the Department for International Development (DFID) in 2008, to facilitate the PWD Workshop restructuring project. One of the recommended initiatives of this restructuring project was that the PWD Workshop should introduce a computerised Management Information System (MIS). Hence the fleet management software CollectiveFleet was selected and purchased in 2009, from the vendor Collective Data.

Key Observations and Findings

3. **CollectiveFleet software benefits**. The CollectiveFleet software is very comprehensive, scalable, and customisable.

4. **CollectiveFleet is under-utilised.** Since CollectiveFleet was implemented in 2009, the PWD Workshop has not been utilising the software to its full capacity due to extenuating circumstances such as:

   i. Frequent service interruptions due to poor network connectivity to PWD's *PostgreSQL* database server housed at DITES.

   ii. Some of CollectiveFleet's modules require tailoring to be more suited to the PWD Workshop's operations.

5. **Role-based access control error.** CollectiveFleet provides role-based security that ensures users only have access to the information or files that are relevant to their job role and tasks. However, the PWD revealed that during training in January 2020, they noted a security permissions error in the Inventory Management module that enables other users, aside from the Store Keeper, to see the Stores inventory and to issue these items.

6. **Audit Logs module required.** The current version of the CollectiveFleet system at the Workshop does not include Audit Logs that tracks all user activity as soon as the person logs onto the system.

Recommendations

7. **Resolution of Role-Based Access Control issue.** The PWD should ensure that the vendor resolves the Role-based Access Control (RBAC) security concern, in the Inventory Management module. Until the issue is resolved, the PWD should continue to uphold the inventory control system prescribed in the GoM's *CAP 17.07 Procurement and Stores Regulations*.

8. **Audit Log module.** The PWD should consider acquiring the Audit Log add-on module for CollectiveFleet**.** This add-on will be beneficial to the department once the system is up and running, as it will provide an extra tier of defence from potential fraud or abuse by staff.

Audit Conclusion

9. The Office of the Auditor General has determined that although the PWD Workshop has not yet begun to fully utilise the fleet management software CollectiveFleet, this comprehensive, customisable, and scalable software has most of the required modules to perform and accomplish the PWD's Plant & Workshop operations objectives. However, it was noted that expenditures associated with the procurement, implementation, training, upgrades, annual support and maintenance, is exceedingly high for a system that has not been fully utilised since it was implemented in 2009.

10. Overall, the GoM and the PWD Workshop can benefit greatly from the CollectiveFleet system, once the software issues are addressed, and the system is put into full effect.

CHAPTER 1 INTRODUCTION

Background

1.1 [1,2] The Ministry of Communications, Works, Labour and Energy (MCWLE), through its Public Works Department (PWD), is charged with the responsibility of developing and maintaining civil works and buildings infrastructure on Montserrat. The PWD has a primary responsibility as part of Government of Montserrat's (GoM) emergency response in the event of natural disasters, including preventative and reactive measures during the hurricane season. To address its emergency response role, the PWD requires a well maintained fleet of plant and equipment (bulldozers, backhoes, front-end loaders, bobcats, and trucks). This involves optimising fleet size; plant/equipment replacement when maintenance becomes uneconomical; establishing programs to preserve the value of equipment and plant investments; minimising the incidence of unscheduled breakdowns; and the proper use of information technology to allow intelligent asset management decisions.

1.2 Due to the forced relocation of Government offices and the PWD Workshop to the northern part of the island, coupled with poor management infrastructure and the significant loss of its equipment and its plant, a decision was made to improve the Plant and Workshop operations and services. Therefore, the GoM commissioned three independent consultation firms during the period 2001 - 2006, after which the financial support of Department for International Development (DFID) was eventually sought in 2008, to aid in the restructuring of the Workshop. One of the recommended initiatives was for the PWD Workshop to introduce a computerised Management Information System (MIS); the fleet management software CollectiveFleet was purchased and implemented in 2009, by the vendor Collective Data.

Management Responsibility

1.3 Management is responsible for ensuring that the CollectiveFleet project objectives were achieved. More specifically, management is to ensure that the project outputs are advantageous to the users and beneficiaries of the CollectiveFleet software.

Auditor's Responsibility

1.4 Our responsibility is to independently express a conclusion on the Post-Implementation Benefits audit of the Public Works Department's (PWD) CollectiveFleet software, based on our audit. Our work was conducted in accordance with International Standards of Supreme Audit Institutions (ISSAI) 100 and International Standard on Assurance Engagements (ISAE) 3000. These principles require that we comply with ethical requirements and plan and perform the audit in order to obtain reasonable assurance whether tried and true policies, plans, procedures, and internal controls exist and are functioning effectively,

[1] *Department for International Development and Government of Montserrat Draft Project Memorandum, Restructuring of the Public Works Mechanical Workshop, Amended 19 April, 2010*

[2] *https://collectivedata.com/solutions/CollectiveFleet/*

proper records have been and are being kept, and all the necessary information and explanations for the purpose of our audit, has been obtained.

Audit Mandate

1.5 The Office of the Auditor General (OAG) is mandated through the Montserrat Constitution Order 2010 to perform audits. This mandate is supported by International Standards of Supreme Audit Institutions (ISSAI) 1, 200, 300, 400, and strengthened by the Public Finance Management and Accountability Act (PFMAA) 2008 and the Public Finance Management and Accountability Regulations (PFMAR) 2009.

Audit Standards and Guidelines

1.7 The standards and guidelines used to assess the CollectiveFleet software included the use of International Standards of Supreme Audit Institutions (ISSAI) 3100, 4100, 5300 and 5310.

Audit Objectives

1.8 The aims of this Post-Implementation Benefits review were to:

- Determine if the implementation of the CollectiveFleet software met the PWD's work objectives and delivered the anticipated benefits.
- Establish if changes were made to the CollectiveFleet software since it was implemented in 2009.
- Establish if there are any plans for future enhancements to CollectiveFleet.

Audit Scope and Methodology

1.9 The study covered the period 2009 - 2020, and focused on the examination of the Post-Implementation Benefits of the CollectiveFleet software. The Auditor would have monitored the audit in the field and may have amended any area of the audit scope in consultation with the Auditor General, so as to maximize the efficiency of the audit.

1.10 A combination of techniques were utilised to gather information and validate the beneficial achievements for implementing the CollectiveFleet software. These included, but were not limited to, interviewing the key stakeholder(s) at the PWD, Plant & Workshop, Stores, MCWLE Finance department and DITES; inspection of documents; and observation of the software in order to gather in-depth information about CollectiveFleet.

1.11 The findings of this study were discussed with the Director of Ministry of Communications, Works, Energy & Labour, PWD Lab Manager, and the Superintendent PWD Plant; their views were taken into consideration when finalising the report.

CHAPTER 2 PUBLIC WORKS DEPARTMENT

Background

2.1 Under the Ministry of Communications, Works, Energy & Labour (MCWLE), there are two main divisions: (i) Infrastructure services under which the Engineers, Architects, Quantity Surveyors, and Land Surveyors operate; and (ii) Plant Hire & Mechanical Services (PWD Workshop) under which the Mechanics and Heavy Equipment operate, as shown in the Organisational Charts on pages 30 and 31.

2.2 For the purposes of this Post-Implementation Benefits audit, focus was placed on the Public Works Department (PWD) Workshop; the department's objectives are:

(i) To expand, operationalize systems, and plan for a more cost effective and efficient operation of the PWD workshop; and

(ii) To implement systems for the management of the GoM's Fleet to increase efficiency in operations.

2.3 In line with the above objectives, the Plant and Equipment play crucial roles in the delivery of infrastructure works and services. The PWD Workshop provides effective fleet management such as fixing vehicles when they break down; optimising fleet size, plant/equipment replacement when maintenance becomes uneconomical, establishing programs to preserve the value of equipment/plant investments, minimizing the incidence of unscheduled breakdowns. Currently, the GoM owns a fleet of 146 pieces comprised of two categories of plant equipment and vehicles:

- **Equipment & Plant** - industrial class items used in heavy works and infrastructural development. These may include but not limited to tractor type units, compactors, etc.
- **Vehicles** - items utilised for light operations such as commuting passengers and small cargo on existing carriageways. These may include, but not limited to cars, sport utility vehicles (SUV), and buses.

PWD Workshop Restructuring Project[3,4,5]

Project Summary

2.4 The forced relocation of Government offices and the PWD Workshop in 1996, led to the construction of temporary facilities in the northern part of the island; in addition to losing its workshop, the Public Works Department lost most of its plant and equipment. Therefore, in 2001, the GoM retained the consultants **Roughton International** to assess the state of the workshops and the mechanical fleet with the intention of mainly developing an ownership and maintenance strategy for the PWD plant and equipment. The Roughton report provided a number of recommendations for improving the performance of the workshop, and fleet

[3] *DRAFT Department for International Development and Government of Montserrat Project Memorandum, Restructuring of the Public Works Mechanical Workshop, amended 19 April 2010*

[4] *Ministry of Communications, Works and Labour Government of Montserrat Operation Charter (Public Works Department Mechanical Workshop Restructuring), September 27, 2013*

[5] *https://www.softwareadvice.com/cmms/CollectiveFleet-profile/*

management capabilities. An EXCO memo dated 12th September 2003, endorsed the recommendations of the Roughton report.

2.5 In October 2005, the GoM contracted **Atos Consulting** to conduct another review and develop new strategies for the PWD plant and equipment. The firm submitted a Montserrat Public Service Review (PSR) and the review recommended institutional changes for the PWD and the Mechanical Workshops. Their concerns and criticisms of the workshops' operations were very similar to those of Roughton International report four years earlier.

2.6 Yet another assessment was carried out in 2006, by **Crown Agents**, to determine the extent to which Roughton's recommendations had been effected. They found that little progress had been made in improving the management of the workshop or the fleet; therefore, **Crown Agents** presented two options for making headway with the situation. The first option proposed that the PWD workshop should be retained but drastic changes had to be made to its organisation, management, and staff numbers, in order for the division to reach a point where it would be able to maintain its own equipment cost effectively, this would include vehicles from the various governmental departments. The second option proposed that the PWD should continue to own and operate the specialized pieces of equipment, but the maintenance aspect should be contracted out to the private sector. However, due to the advent of the sand mining industry in Montserrat after the **Crown Agents** report, there was reduced interest from the private sector to maintain the PWD's equipment as resources and efforts were being focused on mining activities.

2.7 Subsequently, a decision was made to implement **Crown Agents'** first recommendation, and a Project Concept Note (PCN) was submitted by the GoM to DFID in June 2008, to request financial aid for the proposed PWD Workshop restructuring project. The overall aim of the restructuring project was to develop a cost-effective workshop and fleet management operation that provided services to both the PWD and the private sector; and for the Workshop to be the only entity that services and maintains the GoM's fleet. The funding was to be used for training at both managerial and technical levels; for infrastructural improvements to the Workshop compound; and to acquire:

- Asset management system
- Management Information System
- Related hardware and software
- Plant & Workshop equipment and tools

Project Deliverables

2.8 The PCN had four complementary outputs; however, for the purpose of this Post-Implementation Benefits IT audit, we focused solely on the first project output and the corresponding component, pertaining to the introduction of a MIS (*refer to Figures 1 & 2 below)*.

Output 1: Institutional Framework:

Public Works Workshop institutional framework strengthened and management systems improved to facilitate industry best practices in workshop and fleet management.

B. Introduction of a data management system: This system will work in tandem with Government's SmartStream financial and accounting system to track expenditure and revenues from the workshop operations. The software is designed to manage fleet hire operations by providing an efficient scheduling, invoicing, and repair control system for the workshop's plant hire operations. The system will also support the workshop's maintenance operations by recording and tracking jobs, which will eliminate high paper volumes and reduce administration time for issuing invoices. Electronic job cards will enable real-time monitoring of staff utilisation and overall productivity of the workshop servicing/repair operations.

Stores management will also be improved by this system via barcode labelling of stock, inventory control, and monitoring the movement of spares. Indicators will "flag" high-turnover spares, which items need to be ordered by a certain time (based on equipment maintenance notes recorded by the mechanics). A key feature of this software is that it provides improved managerial and analytical reports that will strengthen informed decision making and reduce unproductive time waiting for the delivery of spare parts.

Figures 1 & 2 - Restructuring Project Complementary Output 1 and Component B regarding the introduction of a MIS

2.9 The introduction of the computer-based system was referred to by DFID *"…as being the most important change..." "…in terms of the improvements to the workshop…"*, and the anticipated input and outputs requisites of software, were summarised by the aid institution as follows:

SECTION	INPUTS	OUTPUTS
Maintenance operation	• Job cards • Vehicle maintenance info; and Preventative maintenance schedule • Fuel consumption • Purchase info	• Staff utilisation report & invoices • Vehicle history • Fuel efficiency management • Life cycle costing
Fleet hire	• Preventative maintenance schedule • Operators info • Order request • Work scheduling	• Monitor medium to long term equipment availability • Manage operators certification/performance • Develop & maintain client database • Manage & track available equipment

Stores	• Stock inventory • Preventative maintenance (PM) schedule • Suppliers • Job cards - spares request	• Efficient management of stock (barcode labeling) • Management of stock based on future PM scheduling • Develop suppliers database for automatic reordering • Efficient job-spares allocation for better invoicing

Table A - Requisites of the MIS for PWD Workshop sections

2.10 Pre-project expenditures were approved by DFID to permit the PWD Workshop to invest in the computerised MIS and procure the accompanying devices and equipment, including initial training for the workshop Management and mechanics.

Table 1: Summary Project Budget (£, 000)

Project Component	Pre-Project	Year 1	Year 2	Year 3	Total
Pre-Project Expenditures:					
Essential tools	15.6				
Computer MIS	27				
Training	8.4				
Sub-Total (pre-project)	51				51
Project Component	Pre-Project	Year 1	Year 2	Year 3	Total

Figure 3 - Summary of approved pre-project expenditures

Project Schedule and Cost

2.11 The computerised MIS was expected to be launched within the first six (6) months of the restructuring project, in order for the other subsequent project baselines to be established and monitored. The table below outlines the first project Output; the indicators, scheduled baselines, milestones and targets, for the implementation of the computer-based MIS, are circled in red. The total amount of funding that was allocated by DFID for acquiring the computerised MIS, are shown on page 16.

OUTPUT 1	Indicator	Baseline (2008)	Milestone 1 (after first six months)	Milestone 2 (end of Year 1)	Target (MTR after 1½ years)	Assumptions / Risks
Institutional Framework: Public Works Workshop institutional framework strengthened and management systems improved to facilitate industry best practices in workshop and fleet management	Policy documents and restructuring approved by ExCo and implemented by PWD: a) operational charter b) fleet management policy c) new management structure d) procurement policy e) training & HRD policy f) health & safety policy g) policy for vehicle safety checks	• policies not yet drafted • no arrangements for new management structure	• policies (a) to (g) approved by ExCo • new management structure approved by ExCo	• new management structure in place • workshop undertaking vehicle safety checks	• workshop and fleet managed in accordance with operational charter	Proactive high-level support is provided to ensure successful restructuring of the workshop and its fleet management operations Risks include failure to implement the policies and/or operational charter, lack of recurrent budget for operational cashflow requirements during project
		Source ExCo proceedings/records Project progress reports; including annual Financial and Management Audits Mid-Term Review Report				
	Indicator	**Baseline** (2008)	**Milestone 1** (start Year 1)	**Milestone 2** (start Year 2)	**Target** (start Year 3)	
	Adequate budget to facilitate operational cashflow, necessary procurement (including spares, etc)	20% of requirement	50% of requirement	75% of requirement	100% of requirement	
		Source MCW Budget PWD and Workshop management records				
IMPACT WEIGHTING	**Indicator**	**Baseline** (2008)	**Milestone 1** (after first six months)	**Milestone 2** (end of Year 1)	**Target** (MTR after 1½ years)	
30%	Computer-based asset management system and information management system operational	• no computerised management systems in place	• asset management system installed • information management system installed	• asset management system in use • information management system in use	• computerised management systems used as part of implementing the Operational Charter	
		Source Project progress reports; including annual Financial and Management Audits Mid-Term Review Report				**RISK RATING** Medium to High
INPUTS (£)	**DFID (£)**	**Govt (£)**	**Other (£)**	**Total (£)**	**DFID SHARE (%)**	
	42,710	**Nil**	**N/A**	**42,710**	**100**	
INPUTS (HR)	**DFID (FTEs)**					
	9%					

Figure 4 - Restructuring of the Public Works Workshop Project Output and Indicator regarding the MIS[6]

[6] *DRAFT Department for International Development and Government of Montserrat Project Memorandum, Restructuring of the Public Works Mechanical Workshop, amended 19 April 2010*

BUDGET BREAKDOWN IN POUNDS STERLING	PPE	Year 1	Year 2	Year 3
Output 1: Institutional Framework				
Development of an operational charter				
Fleet management policy				
Implementation of a new management structure				
Development of procurement policies				
Human resource development				
Health & safety policies & procedures				
Development of a programme for vehicle safety checks				
Procurement of Essential Tools	£15,650			
Introduction of computerised MIS	£27,060			
Output 2: Human Resource Development				
Staff training plan				
Training of management, mechanics & operators	£8,460	(included in plant procurement)		
Output 3: Workspace				
Infrastructural improvements	£2,490	£135,000		
Training room		£5,000		
Document library		£5,000		
Stores		£10,000		
Output 4: Appropriate Fleet				
Procurement of selected plant & equipment		£290,000	£280,000	£730,000
Project Management				
Project Manager		£50,000	£28,000	£15,000
Unspent Pre-Project Expenditure				
Unspent PPE up to March 2010	£7,490			
Sub-Totals for Project Components:	£61,150	£495,000	£308,000	£745,000
Technical Cooperation				
Annual financial and management audits		£5,000	£5,000	£5,000
Sub-Totals for Technical Cooperation:	£0	£5,000	£5,000	£5,000
Planned Annual Expenditures:	£61,150	£500,000	£313,000	£750,000
				Total = £ 1,624,150

BUDGET BREAKDOWN IN EAST CARIBBEAN DOLLARS	PPE	Year 1	Year 2	Year 3
Output 1: Institutional Framework				
Development of an operational charter				
Fleet management policy				
Implementation of a new management structure				
Development of procurement policies				
Human resource development				
Health & safety policies & procedures				
Development of a programme for vehicle safety checks				
Procurement of Essential Tools	EC$60,461			
Introduction of computerised MIS	EC$104,544			
Output 2: Human Resource Development				
Staff training plan				
Training of management, mechanics & operators	EC$32,678	(included in plant procurement)		
Output 3: Workspace				
Infrastructural improvements	EC$9,361	EC$540,000		
Training room		EC$20,000		
Document library		EC$20,000		
Stores		EC$40,000		
Output 4: Appropriate Fleet				
Procurement of selected plant & equipment		EC$1,160,000	EC$1,120,000	EC$2,920,000
Project Management				
Project Manager		EC$200,000	EC$112,000	EC$60,000
Unspent Pre-Project Expenditure				
Unspent PPE up to March 2010	EC$28,937			
Sub-Totals for Project Components:	EC$235,980	EC$1,980,000	EC$1,232,000	EC$2,980,000
Technical Cooperation				
Annual financial and management audits		EC$5,000	EC$5,000	EC$5,000
Sub-Totals for Technical Cooperation:	EC$0	EC$5,000	EC$5,000	EC$5,000
Planned Annual Expenditures:	EC$235,980	EC$1,985,000	EC$1,237,000	EC$2,985,000
Exchange Rate Used (except for PPE): £1.00 = EC$4.00				**Total = EC$ 6,442,980**

Figures 5 & 6 - Restructuring of the Public Works Workshop Project Budget Breakdown[7]

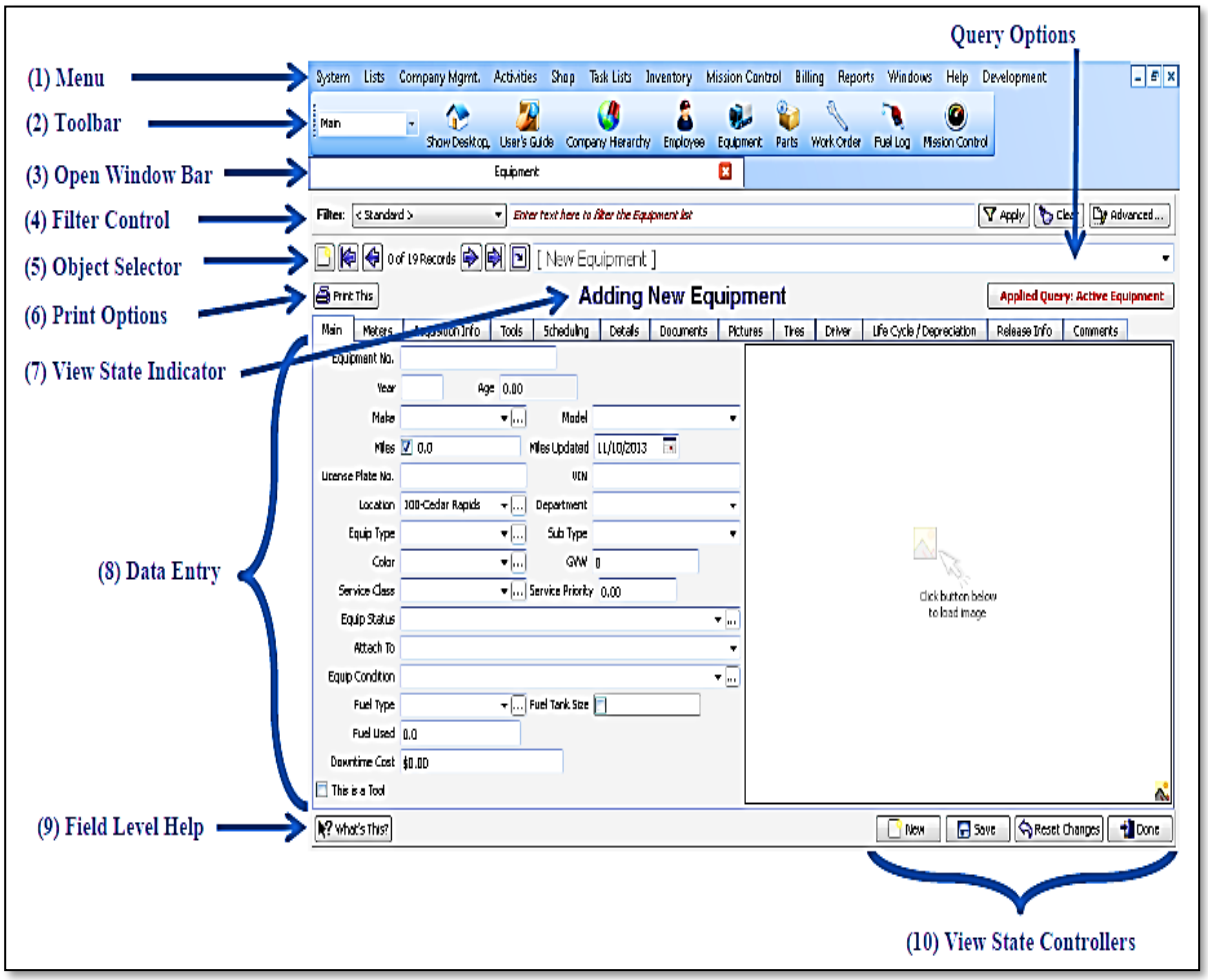
[7] *DRAFT Department for International Development and Government of Montserrat Project Memorandum, Restructuring of the Public Works Mechanical Workshop, amended 19 April 2010*

CHAPTER 3 SELECTED FLEET MANAGEMENT SOFTWARE

CollectiveFleet

3.1 As part of the PWD Workshop's pre-restructuring project activities, in 2009, a Project Team was organised specifically to select a computerised MIS that would perform the requisites defined in the draft DFID Project Memorandum. The Project Team was comprised of seven (7) PWD staff from the various sections of the Workshop, including an external Project Manager. After extensive research and comparisons, the fleet management software CollectiveFleet was selected, and the former Permanent Secretary (PS) of MCWLE managed the procurement process. Acquisition of the software was conducted in accordance with the GoM's Procurement Regulations.

3.2 [8,9,10,11]CollectiveFleet is a centralised fleet management software created and developed by the software vendor Collective Data. CollectiveFleet is Microsoft (MS) Windows-based, and the data is warehoused in *PostgreSQL* database. The system is very



[8] *https://collectivedata.com/solutions/collectivefleet/*

[9] *https://softwareconnect.com/fleet-management/CollectiveFleet/*

[10] *https://www.softwareadvice.com/cmms/CollectiveFleet-profile/*

[11] *https://www.concreteconstruction.net/products/web-based-CollectiveFleet-software-from-collective-data_o*

Figure 7 - Examples of CollectiveFleet Application Controls

flexible and scalable, user friendly, and relatively easy to use. The software is comprised of modules that have several forms (or windows), designed with various types of Graphical User Interface (GUI) input and output controls, and navigational features. The modules can be customised to any organisation's requirements, and the software is accessible from various devices such as personal computers, tablets, and smartphones.

3.3 Access to the software is user role-based where each user is assigned to different user groups and different levels of security according to their job roles and tasks; and each user accesses the system via unique User ID and password. These application controls facilitate and support straightforward secure and accurate input, processing, and output of data, thereby reducing the occurrences of security breaches, human error, and preserving the accuracy and validity of the data.

Module Features

3.4 The software was chosen specifically by the Project Team, for its ability to proficiently and effectively manage vehicles, inventory, gear, parts, work orders, staff, training, and so forth. The vendor Collective Data offers, for a one-time fee, the option of inserting additional module(s) at any time after the system has been set-up.

3.5 CollectiveFleet is comprised of modules that offers the following features:

(i) **Asset Management** – To track all of the equipment's information on one screen.

(ii) **Preventative Maintenance** – To track preventative maintenance service schedules, as well as receive email alerts when specific maintenance service is due.

(iii) **Inventory Management** – To track information on parts, quantities, and warranties. Extended parts tracking can also be purchased via the advanced parts module; and for efficiency in monitoring inventory, using a barcode scanner or printer.

(iv) **Work Orders** – that can be created and edited at any time; users have access to the history of specific work orders; create estimates; shop interface is accessible for both technicians and supervisors. Technicians can clock in an out and their work can be monitored by Supervisors as well as assign work to the technicians based on their skills.

(v) **Safety** – Within the safety module, users can monitor driving habits, employee incidents, manage inspections on assets, and keep track of claims and accident reports.

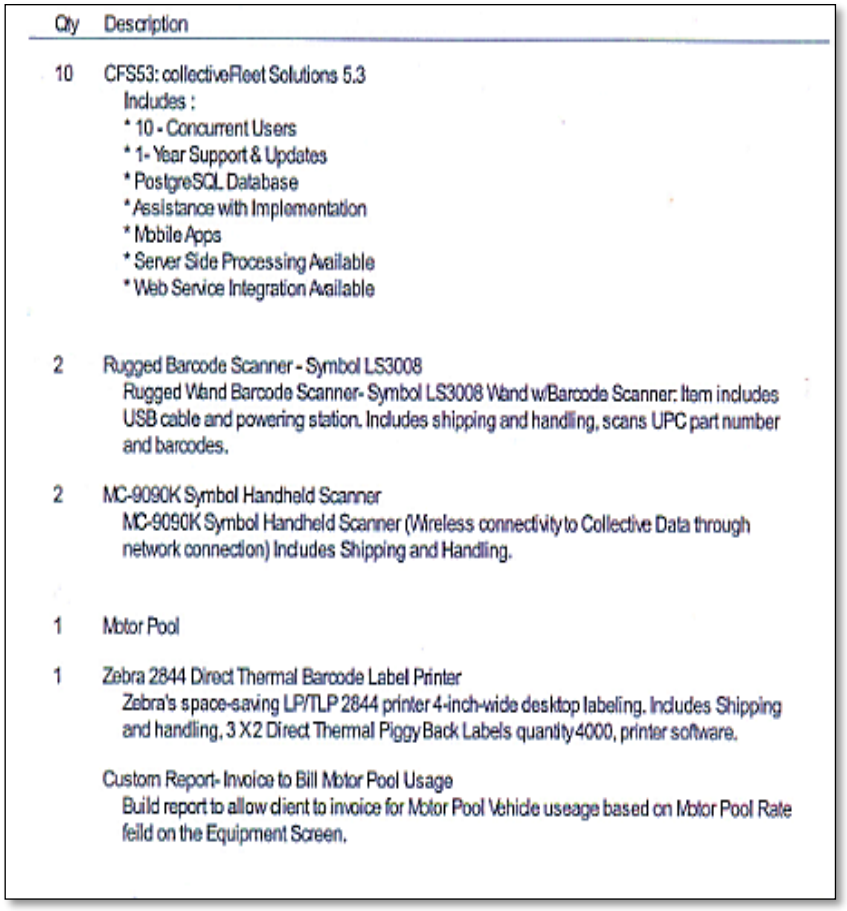
(vi) **Business Intelligence** – In addition to monitoring KPIs (Key Performance Indictors), users can perform additional analysis; and create their own custom reports to include graphs and charts. These reports can be exported to a *.pdf* or *.csv* formats.

(Refer to *Appendix IV* on pages 33 - 36, for a more detailed look at the above mentioned features).

PWD Workshop CollectiveFleet Package

3.6 In 2009, the PWD Workshop selected the Motor Pool module, including the customised reporting and invoicing features that permitted the PWD Workshop to generate invoices based on their Motor Pool rate. The package also included accompanying peripherals

and accessories such as barcode and handheld scanners, label printer and printer software, and labels.



Qty	Description
10	CFS53: collectiveFleet Solutions 5.3 Includes : * 10 - Concurrent Users * 1- Year Support & Updates * PostgreSQL Database * Assistance with Implementation * Mobile Apps * Server Side Processing Available * Web Service Integration Available
2	Rugged Barcode Scanner - Symbol LS3008 Rugged Wand Barcode Scanner- Symbol LS3008 Wand w/Barcode Scanner: Item includes USB cable and powering station. Includes shipping and handling, scans UPC part number and barcodes.
2	MC-9090K Symbol Handheld Scanner MC-9090K Symbol Handheld Scanner (Wireless connectivity to Collective Data through network connection) Includes Shipping and Handling.
1	Motor Pool
1	Zebra 2844 Direct Thermal Barcode Label Printer Zebra's space-saving LP/TLP 2844 printer 4-inch-wide desktop labeling. Includes Shipping and handling, 3 X 2 Direct Thermal Piggy Back Labels quantity 4000, printer software.
	Custom Report- Invoice to Bill Motor Pool Usage Build report to allow client to invoice for Motor Pool Vehicle useage based on Motor Pool Rate feild on the Equipment Screen.

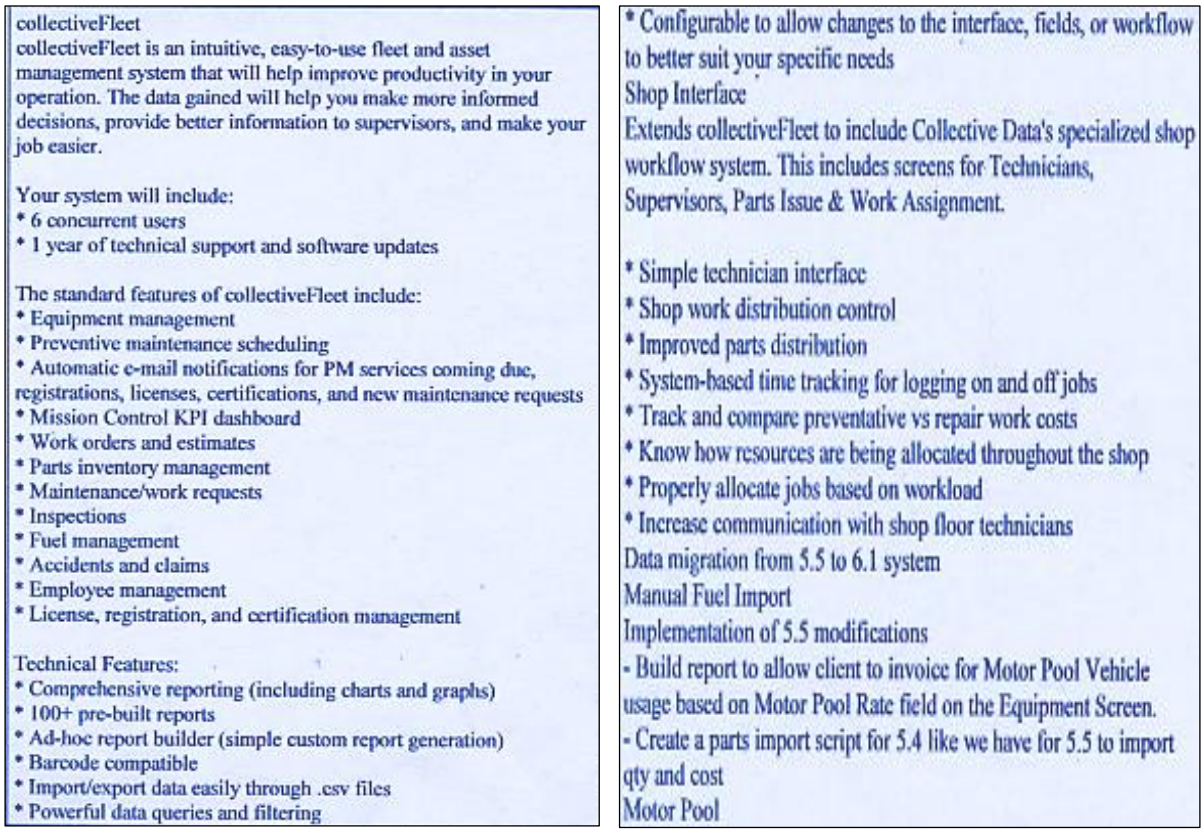
Figure 8 - PWD Workshop CollectiveFleet ver. 5.3 System procurement details

CHAPTER 4 CHANGES AND FUTURE INITIATIVES

Changes Made to CollectiveFleet

4.1 The following changes were made over the years to the PWD Workshop's CollectiveFleet version 5.3 system that was installed in 2009:

- **Software upgrade**. Over the years CollectiveFleet was updated from version 5.3 to version 5.5; then eventually to version 6.1 in 2015. This current version now contains several modules that are standards, in the software.
- **Decreased number of licensed users**. The number of concurrent licenced users was reduced from ten (10) to six (6).



collectiveFleet
collectiveFleet is an intuitive, easy-to-use fleet and asset management system that will help improve productivity in your operation. The data gained will help you make more informed decisions, provide better information to supervisors, and make your job easier.

Your system will include:
* 6 concurrent users
* 1 year of technical support and software updates

The standard features of collectiveFleet include:
* Equipment management
* Preventive maintenance scheduling
* Automatic e-mail notifications for PM services coming due, registrations, licenses, certifications, and new maintenance requests
* Mission Control KPI dashboard
* Work orders and estimates
* Parts inventory management
* Maintenance/work requests
* Inspections
* Fuel management
* Accidents and claims
* Employee management
* License, registration, and certification management

Technical Features:
* Comprehensive reporting (including charts and graphs)
* 100+ pre-built reports
* Ad-hoc report builder (simple custom report generation)
* Barcode compatible
* Import/export data easily through .csv files
* Powerful data queries and filtering

* Configurable to allow changes to the interface, fields, or workflow to better suit your specific needs

Shop Interface
Extends collectiveFleet to include Collective Data's specialized shop workflow system. This includes screens for Technicians, Supervisors, Parts Issue & Work Assignment.

* Simple technician interface
* Shop work distribution control
* Improved parts distribution
* System-based time tracking for logging on and off jobs
* Track and compare preventative vs repair work costs
* Know how resources are being allocated throughout the shop
* Properly allocate jobs based on workload
* Increase communication with shop floor technicians

Data migration from 5.5 to 6.1 system
Manual Fuel Import
Implementation of 5.5 modifications
- Build report to allow client to invoice for Motor Pool Vehicle usage based on Motor Pool Rate field on the Equipment Screen.
- Create a parts import script for 5.4 like we have for 5.5 to import qty and cost

Motor Pool

Figures 9 & 10 - CollectiveFleet version 6.1 standard Features

Future Plans for CollectiveFleet

4.2 CollectiveFleet has not yet been utilised to its full capacity by the PWD Workshop since it was implemented over a decade ago. To date, only various aspects of the software are being employed in terms of:

(i) **<u>Asset Management</u>**

- Populating the modules with the required information pertaining to the GoM fleet, Plant Equipment, Stores Inventory and Workshop employees.

- Applying the depreciation and disposal features on the department's fixed assets; for example, the various pieces of Plant equipment and the GoM fleet of vehicles.

(ii) **Personnel Management**

- oversight of the workshop mechanics and heavy equipment operators.

4.3 The majority of the Workshop and Stores procedures are still being reckoned and manually recorded in ledgers, requisition and order books, on bin tally cards and log sheets. Microsoft Excel spreadsheets and customised forms are also used.

4.4 However, the PWD Workshop has indicated its intentions to start utilising the upgraded CollectiveFleet system as soon as possible. Steps were already taken by the department in January 2020 to organise for the vendor to return to Montserrat to conduct three days of onsite training; participants were users of the system from Plant & Workshop, Stores, and MCWEL Finance sections. The anticipated start date is however contingent on how quickly the PWD Workshop Manager completes the time-consuming task of inserting all of the required information from the various Workshop sections, into the database.

4.5 There is also the intention to start utilising the Fuel Management feature for managing and monitoring of fuel dispensing for the Plant equipment. However, commencement is largely dependent on acquiring the necessary hardware, such as fuel meter loggers (or gauges), fuel cards, and card readers. The department indicated that requests have been made for a number of years for funding to procure these items, in their annual budget; however, to date, funding has not been allocated.

CHAPTER 5 OBSERVATIONS, FINDINGS & RECOMMENDATIONS

Observations

5.1 **Reallocation of PWD restructuring pre-project expenditures.** After some of the Plant and Workshop Restructuring Project expenditures were deducted, the remaining savings were reallocated to purchase items needed to establish network connectivity to the PWD server, and for the input, processing, and output, of the CollectiveFleet data. Reallocation of the excess funds had to be approved and authorised first, by DFID.

5.2 Some of the listed items below, were already factored into the pre-project costs; and the rest from DFID-approved reallocated funds:

- Radio link
- CAT5 cable & Trunking
- Gateways (networking hardware)
- Battery packs
- Five (5) computers
- Two (2) multi-purpose printers

5.3 However, not all proof of purchases were provided by the PWD Workshop or the MCWLE Finance Department.

5.4 **Solicitation of technical support.** DITES was approached for assistance during the implementation project of CollectiveFleet. However, at the time, the IT Department was unable to accommodate the PWD due to a shortage of software engineers, and extra manpower. The Workshop ultimately solicited the aid of a Technical Consultant (TC) who was contracted by the Ministry of Finance with software engineering and computer networking background skills. The TC had the jurisdiction to access servers at DITES and the MVO. However, after the initial set up of the server, the department received very minimal support from the TC.

5.5 **Reasons for non-use of CollectiveFleet.** The PWD cited the following extenuating factors as the main reasons why the system is hardly being used for the purpose it was acquired:

i. In 2009, there were frequent service interruptions due to poor network connectivity to the *PostgreSQL* database server housed at DITES, via the radio link between the Workshop and DITES. Uninterrupted access to this server is currently still an issue.

ii. Some of the CollectiveFleet's modules require tailoring to be more suited to the PWD Workshop's operations.

5.6 **Defunct or non-operational CollectiveFleet related peripherals devices**. The LS 3008 corded wand barcode scanners, MC 9090K handheld scanners, and Zebra 2844 thermal label printer, acquired in 2009, are all obsolete. In addition, this version of the handheld scanners were designed to operate on MS Windows Embedded CE .NET or Windows Mobile 2003 platforms; therefore, there is a high probability that there will be non-compatibility with the latest version of MS Windows on the PWD Workshop computers.

5.7 **Tracking and monitoring of expenditures**. One of the requisites of the introduction of a MIS is that the system was expected to work in tandem with the GoM's **SmartStream** financial and accounting system, to track and monitor all expenditures and revenues associated with the PWD Workshop operations. For example, vehicle parts, or work gear requisitioned by the Stores Keeper is entered into the Inventory Management module and the Purchase Order (PO) generated by CollectiveFleet, is hand delivered to the MCWLE Finance Department. However, similarly to the other users, the Stores Keeper does not currently use CollectiveFleet to execute his duties; but despite this, the tracking/monitoring process is being fulfilled by the MCWLE Finance department, using customised MS Excel spreadsheets and forms.

5.8 **Overall estimated CollectiveFleet related expenditures.** The PWD has spent between 2009 and 2020, an estimated EC$265,736 (US$97,808) for the CollectiveFleet software, training, upgrades, and annual support and maintenance fees, for a system that is hardly being used, as outlined in the table below.

Year	Details	Amount (EC$)
2009	• Software • Ten (10) concurrent user licences • 1-year Support & Updates • SQL database, • Implementation assistance • Mobile apps • Motor Pool Module • Peripherals and accessories • Onsite training	107,140.95
2011	2010 Annual Renewal - Upgrades	13,581.10
2015	• Software • Six (6) concurrent user licences • 1 year technical support and software updates • Standard & Technical features • Additional interfaces & modules (Shop, Fuel) • Data Migration from version 5.5 to 6.1 system • Implementation of modifications • Onsite training and associated travel expenses	88,299.25
2018/2019	Annual Renewal of Support and Maintenance	13,924.11
2019/2020	Annual Renewal of Support and Maintenance	13,924.11
2020	Onsite training and associated travel expenses	14,942.95
2020/2021	Annual Renewal of Support and Maintenance	13,924.11

Table B - Direct Expenditure associated with CollectiveFleet software from 2009 - 2020

5.9 **Vendor fees**. One of the main reasons why the decision was made by the Project Team to purchase CollectiveFleet was to eliminate the burden of paying costly annual licensing fees. However, the PWD Workshop was required to sign a *Support Agreement* with Collective Data for technical support, maintenance releases, and software updates for an annual fee of US$5,125 or EC$13,924.11. Notably, the PWD did not make several payments to Collective Data between the 2011 - 2014 and 2016 - 2017. They were exempted by the vendor because the software was not being used during these periods; however, regular payment of the annual support and maintenance fee, resumed in 2018. Despite this, at the time of this audit review in 2020, the system was still not being fully utilised for the purpose for which it was procured.

Findings

5.10 **Role-based access control error.** CollectiveFleet provides role-based security that ensures users access only to the information or files that are relevant to their job function. However, the PWD realised during training in January 2020, that there is a security permissions error in the Inventory Management module. Other users, aside from the Stores Keeper, can see the Stores inventory and also have the capability to issue these items. This should not occur, as users were assigned to specific user groups with access permissions based on their job roles and the tasks that they perform at the PWD Workshop. The facilitator, representing the vendor Collective Data, noted the problem to be corrected upon her return to the USA.

5.11 **No remote IT support by vendor**. As per Collective Data's *Support Agreement 5.3,* IT Support is provided mainly via telephone, email, or fax; and in some instances via remote diagnosis tools; however, PWD indicated that the vendor does not have remote access to their server at DITES. The department maintains that it was unaware this facility was offered by DITES, as this was not the case in 2009 when the software was being installed.

5.12 **No Audit Logs module.** The current version of the CollectiveFleet system at the Workshop does not include the important security Audit Log module that tracks all user activity as soon as the person logs into the system (for example, inserts, updates, and deletions). This is offered separately as an Add-on Module, which has to be purchased.

Recommendations

5.13 **Solicit remote access clearance from DITES.** The PWD should, as soon as possible, liaise with DITES to obtain clearance for the vendor Collective Data to gain remote access across their Virtual Private Network (VPN) connection to the server, whenever it is necessary for them to resolve issues or perform other maintenance tasks in the software.

5.14 **Ensure role-based access control issue is properly resolved.** The PWD should ensure that the Role-based Access Control (RBAC) issue that was detected in January 2020, is completed resolved by the vendor, as soon as possible. In the interim, the PWD Workshop should continue to uphold the inventory control system prescribed in the GoM's *CAP 17.07 Procurement and Stores Regulations*.

5.15 **Audit Log module.** The PWD should contemplate acquiring the Audit Log add-on module for CollectiveFleet**.** This add-on will be beneficial to the department once the system is up and running, as it will provide an extra tier of defence from potential fraud or abuse by staff.

CHAPTER 6 MANAGEMENT RESPONSE

6.1 The Ministry of Communication, Works, Labour and Energy agree that this is a fair assessment of the CollectiveFleet software. We accept the recommendation that we need to request that the vendor resolve the Role-based Access Control (RBAC) security issue.

6.2 The MCWLE will consider acquiring the Audit Log add-on module for CollectiveFleet. The MCWLE looks forward to the continued assistance of the Office of the Auditor General as we seek to improve our systems for accountability and ensure good value on government's investments.

CHAPTER 7 AUDIT CONCLUSION

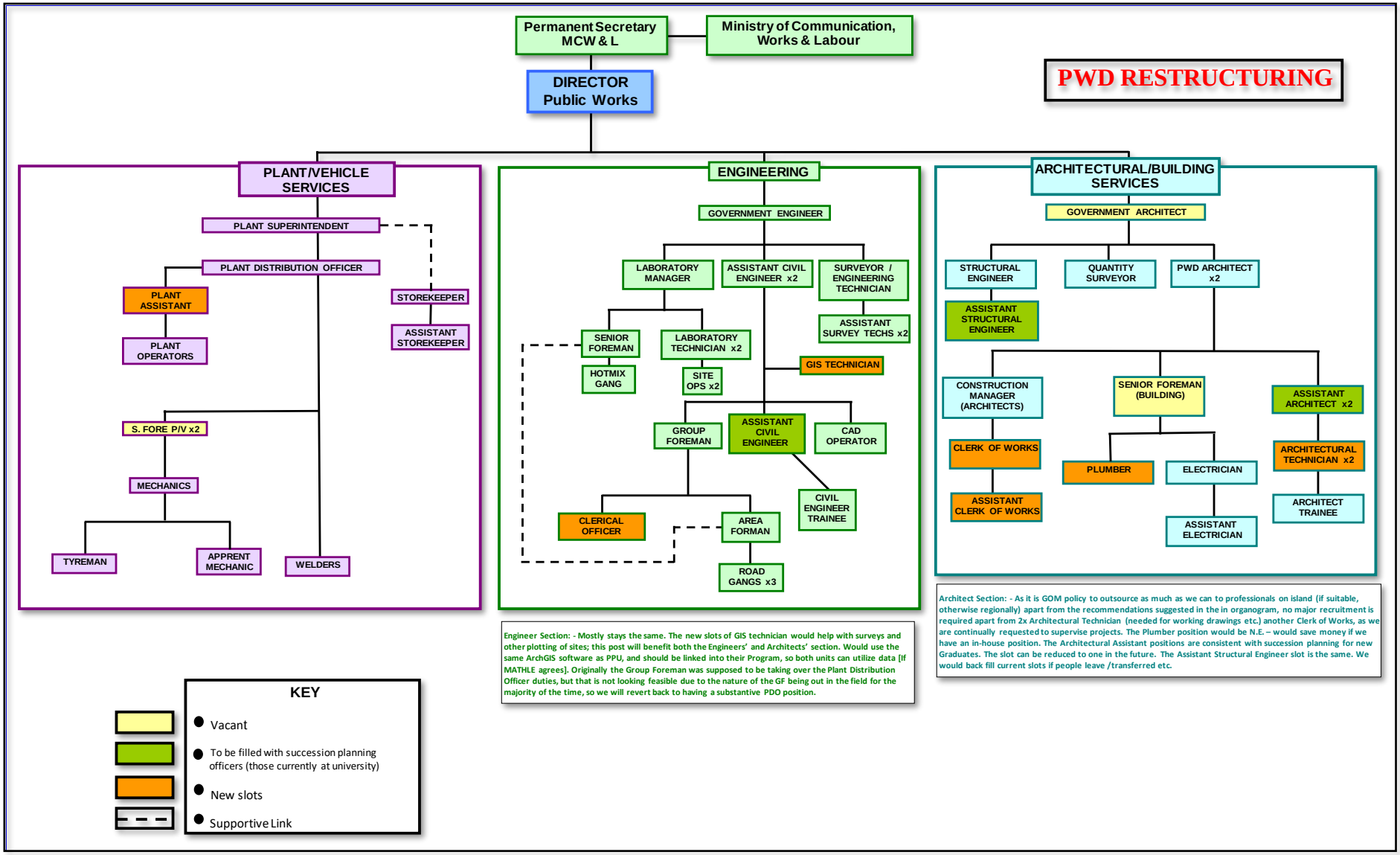
7.1 The Office of the Auditor General has determined that although the PWD Workshop is underutilising the fleet management software, CollectiveFleet, this comprehensive, customisable, and scalable software has the required modules to perform and accomplish the PWD's Plant & Workshop operations objectives.

7.2 Notably, to date, the total expenditures associated with the procurement, implementation, training, upgrades, annual support and maintenance, is exceedingly high for a system that has been underutilised, since it was implemented in 2009.

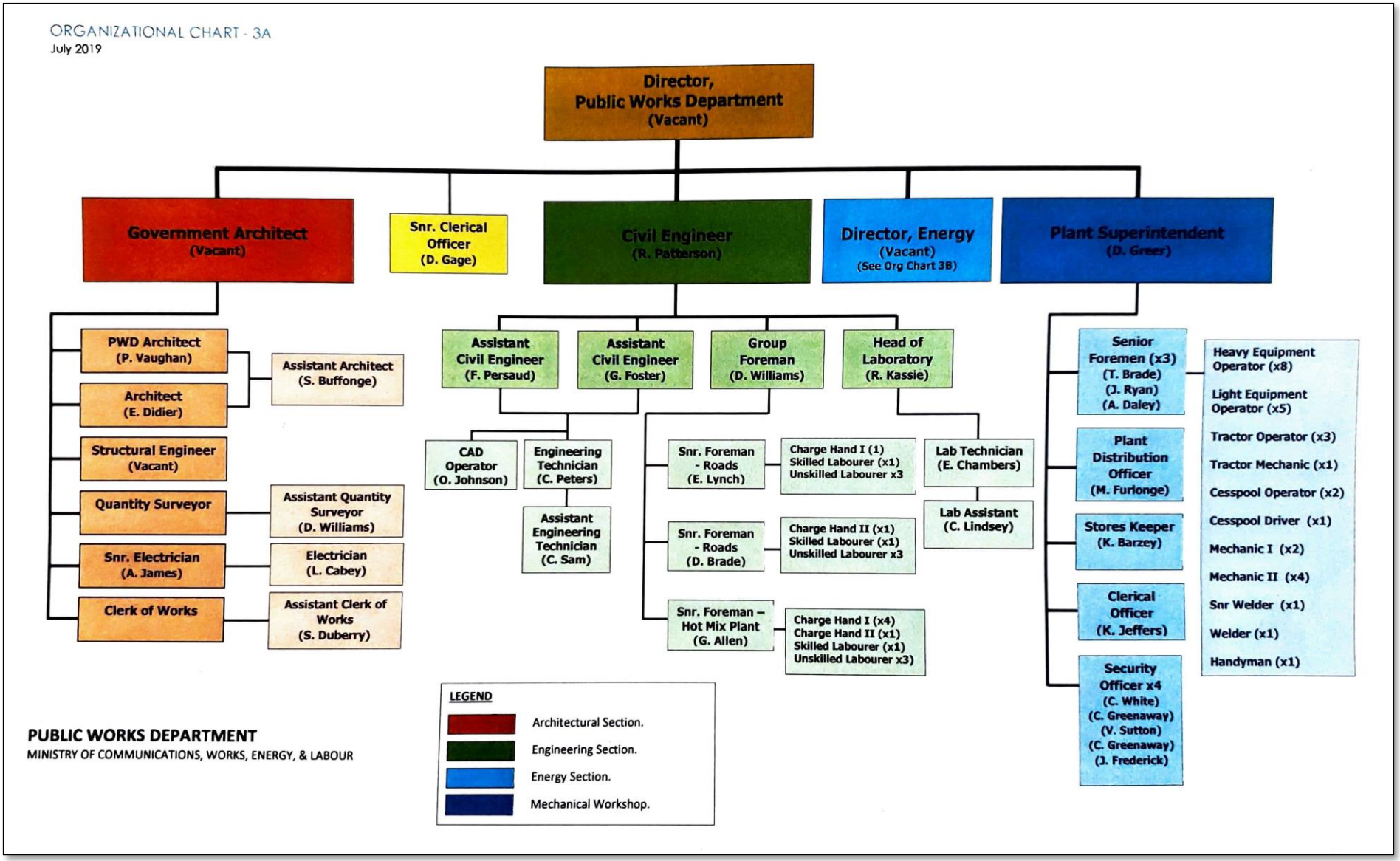
7.3 Overall, the GoM and the PWD Workshop can benefit greatly from the CollectiveFleet system once the issues associated with the software are addressed and the system is put into full effect.

APPENDICES

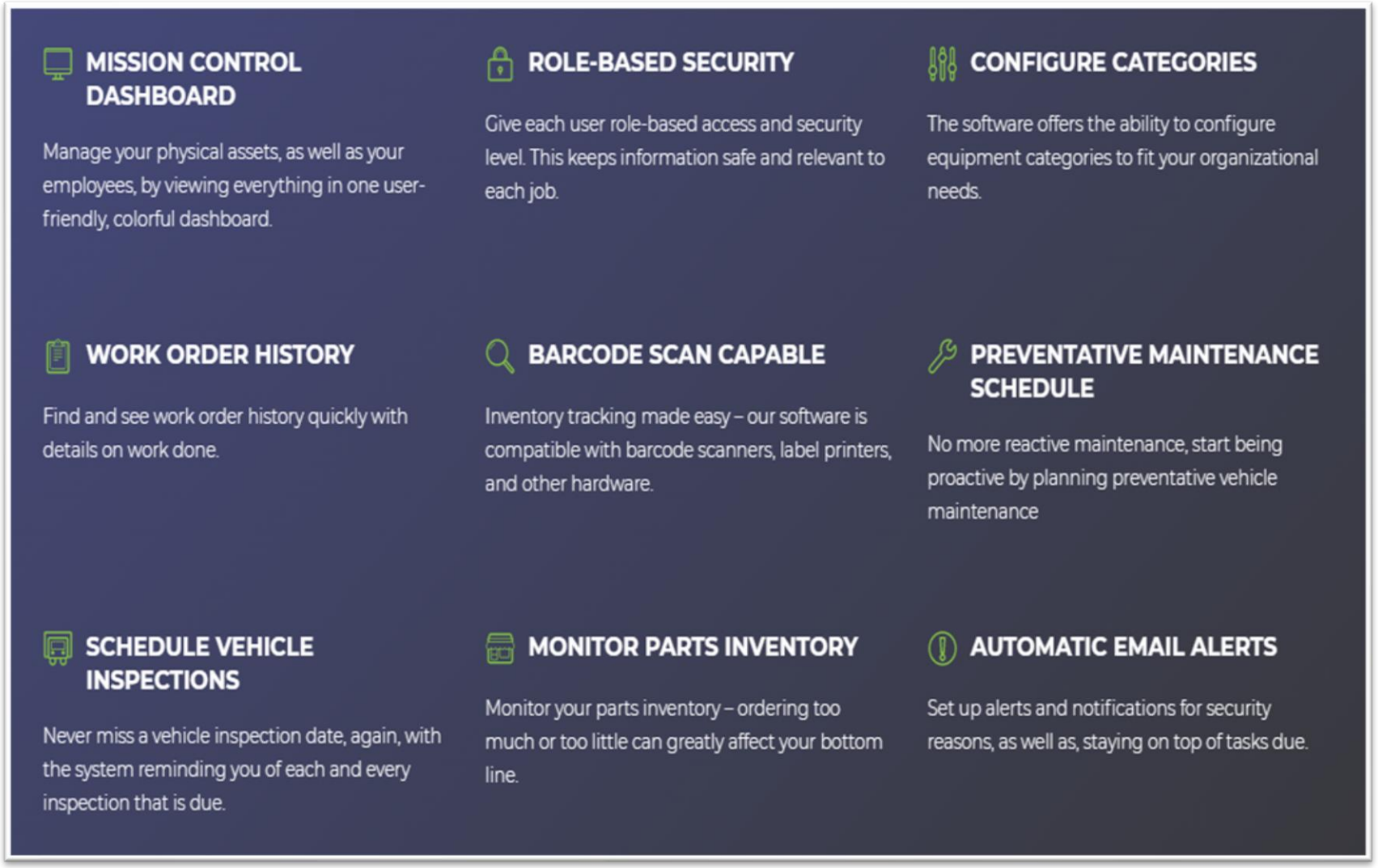
APPENDIX I – MCWLE Organisational Chart (Unofficial)



APPENDIX II – Public Works Department Organisational Chart



APPENDIX III – Services Offered by Collective Data's Fleet Management Solution



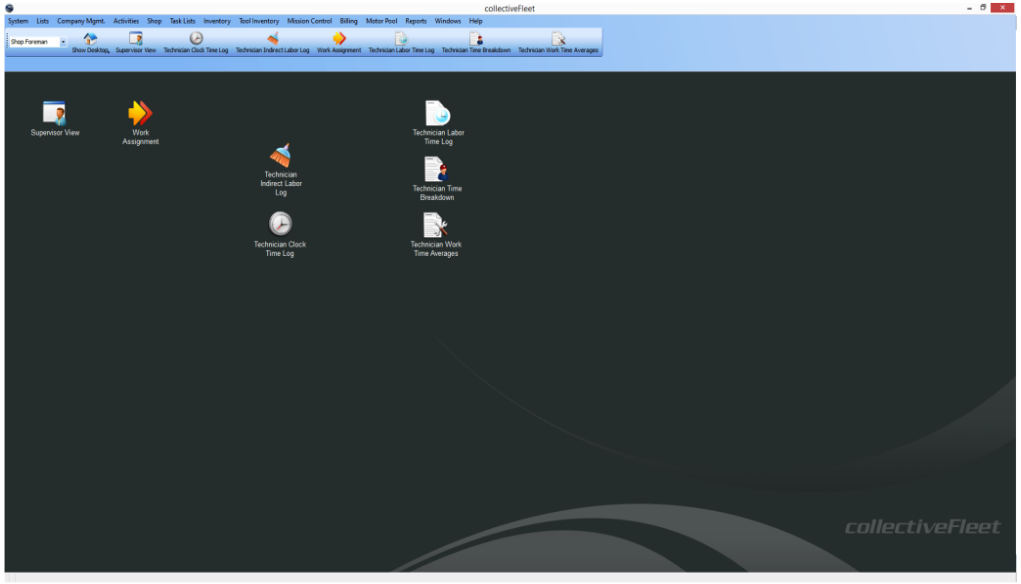
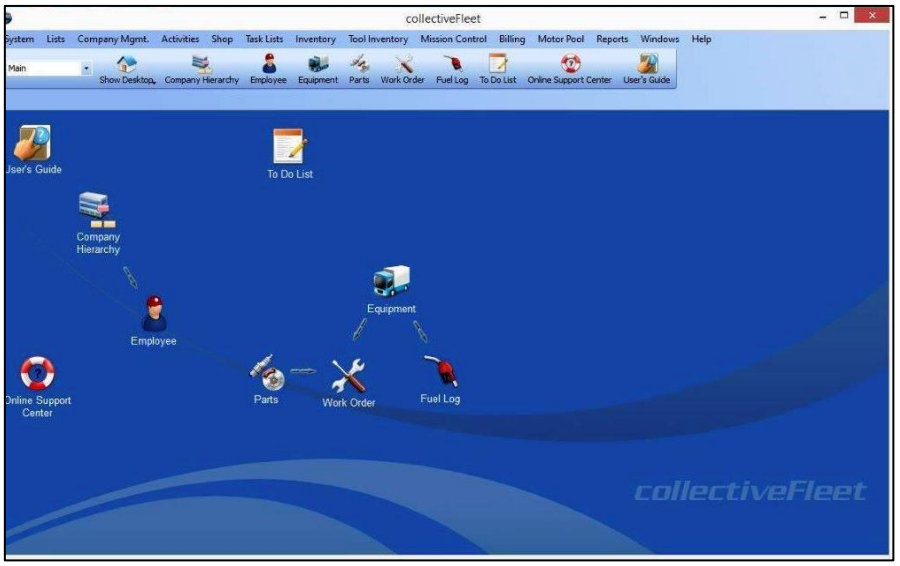
APPENDIX IV – Detailed Look at CollectiveFleet Modules and Features

CollectiveFleet **Features**[12]	
Track detailed Fleet and Asset Information with ease through standard and configurable options	• Reference your equipment data in real-time • Manage all costs associated with your assets such as costs-per-mile, depreciation, accidents, and more • Track equipment components on assets • Track contacts related to each asset and their roles • Easily manage registrations and inspections per asset • Analyse life cycle costs and determine when it's time for replacement • Optional Mission Control Dashboard for managing key performance indicators and take action on items
Improve how organisations manage Preventive Maintenance	• Know what preventive maintenance is due on any asset at any time • Templates make it easy to manage many vehicles with similar service schedules • Receive and send email alerts when services, registrations, licenses, or other scheduled items are approaching or overdue • Various reports give you cost, labor, parts used, and more related to your maintenance efforts
Part Inventory Management and Purchasing	• Monitor essential information on parts, quantity on hand, quantity on order, and more • Process purchasing, receiving, issuing, returning and transfer of parts • Manage and recoup more warranties and core part returns • Manage vendors and compare costs, history, and more through comprehensive reporting • Find ways to reduce unused inventory • Barcode scanning capabilities built in • The Advanced Parts Tracking enhancement option extends the functionality even further to meet specific needs
Powerful and easy-to-use Work Order System	• Simplified processes to let you get in and input data while still gathering detailed information • Specialized shop interface for giving technicians, supervisors, and parts personnel easy data entry and optimal workflow • Create estimates for services • The wealth of data works to provide reporting, quick access to repair histories, and decision-making power
Manage costs related to accidents and look for areas to improve safety	• Accidents and claims management • Monitor driver habits, traffic violations, and more • Keep track of employee incidents • Easily manage inspections on assets, resulting in issues being caught early and improving safety throughout the fleet • Report on accidents, costs involved, and drivers at fault

[12] *https://softwareconnect.com/fleet-management/collectivefleet/*

Flexible reporting and analysis	• 100+ standard fleet and operational reports • Ability to create custom reports with the built-in report editor • Ad-hoc style reports that make creating simple, custom reports easy for the average user • Advanced filtering and query options for showing relevant data • Export to .CSV and .PDF • Graphs and charts
Integrate with other software	• Fuel Cards (WEX, Fuelmaster, Gasboy, and many more) • GPS and Diagnostics Data (Networkfleet, Zonar Systems, and more) • Accounting systems • NAPA Parts integration • Others upon request • More about integrations
Advanced Parts Tracking	• **Part Measurement Conversions** - Allows you to set up separate units (i.e. Quarts, Case, Drum, etc.) for receiving and issuance of inventory. Prices and quantities will be calculated to reflect the desired units each step of the way. • **Automated Pre-Defined Parts and Labor** - The system will remember parts and labor added to work codes in past work orders. When you attempt to add a work code to a new work order, the system will automatically add in the parts and labor for that work code. This can save administrators and technicians a lot of time in the data entry process. • **Enhanced Inventory Count Options** - Allows quick adjustment of part quantity levels in stock. Adjustment can also be scheduled on a recurring basis and to notify users when this date has passed. This includes a quick inventory count view, where all parts can be sorted by aisle, row, shelf, or bin as they are physically counted, and can be updated through the software very easily. • **Vendor Part Return Credit Tracking** - Credits issued from a vendor are trackable in the system and when entering a new parts order for that vendor, a notification will let you know that there is a credit that can be applied. • **Part Kit Management** - Gives the ability to set up pre-defined "kits" of parts. Once these are set up, they can be added to the work order details with an easy click of a button. Instead of adding many parts for jobs associated with a service or repair, the part kit can be added and all subsequent parts will be added automatically.
Audit Logging	• Tracks data changes made by users; this includes inserts, updates, and deletes. This enhancement option adds an extra element of accountability and can be the key to helping you find out: "Who made that change?"
Customer Management	• Invoice customers and quickly report on paid/unpaid work • Allow customers to have access to their individual data (reports, repair histories, etc.) through the Collective Data Web Portal. • Know how much it is costing to service each individual customer • Keep track of markups and see your true profit margin for each customer • Set contracted rates for specific clients
Extended Asset Management	• Extended Asset Management allows you to track any physical asset type beyond vehicles or equipment. Items that can be tracked include: facilities and buildings, HVAC units, air compressors, etc.

Job site Tracking	• Set up the job site according to the location and customer if applicable • Predetermine the labor and equipment rental rates and limit the job site work to only those assigned items and rates • Work orders may then be performed for the job site and the totals will update the job site screen costs • All work orders performed for a certain job site will be rolled into that job site's cost
Mission Control	Mission Control is a dashboard-style screen that enables users to manage various aspects of the fleet operation in one place. The Mission Control Key Performance Indicators (KPI) can be configured to each user's task requirements and only present the information they would need. Options include: • Equipment in/out of service count or any custom status of equipment • Equipment registrations/warranties/PM's coming and overdue • Equipment average age/mileage/hours • Employee licensing/certifications coming due • Maintenance requests assigned/unassigned • Work orders of a selected status • Parts needing re-ordered • Parts inventory value total and by warehouse • Back ordered/other status of purchase orders
Motor Pool Management: Reserve and Check-Out Vehicles or Equipment	Motor Pool enhancement option increases efficiency by managing the information required to make better fleet-wide decisions, such as: • Check in / check out • Reserve / cancel • Pre-checkout and return inspections • Track rental rates
Quartermaster Inventory Control	The Quartermaster is an option designed specifically for the Police, Fire and other uniformed units. It adds the ability to track quartermaster inventory and track purchase orders, receiving of inventory, stock quantities, reorder reminders, and shelf life.
Shop Interface	• Simplified mechanic interface • Shop work distribution control • Touch screen enabled • Gain a more effective method of parts distribution • System-based time tracking for logging on and off jobs • Track and compare preventative vs repair work costs • Know how resources are being allocated throughout the shop • Easily allocate jobs based on workload • Tool management capabilities
Tool Manager	The Tool Manager enhancement option helps organisations manage a comprehensive tool inventory within the CollectiveFleet software system: • Check-Out/Check-In process for tools assigned to Equipment or Employees • Increase accountability

	• Gain various reports for information on location, assignment history, condition, who had the tool for how long, etc. • Track preventative maintenance on tools if needed
Vacation Tracking	• Vacation Tracking is useful Employee Management extension that allows the tracking of vacation days and time off. A custom time-off request form can be set up to for requests to take place in the system.
VMRS Codes	• VMRS (Vehicle Maintenance Reporting Standards) codes are standardised coding conventions for tracking equipment assets and maintenance repairs for a variety of industries. VMRS codes can be used in work orders for items such as Part Failure, Repair, Repair Reason, and Work Accomplished.

APPENDIX VI – CollectiveFleet details and the different user level desktops as per job functions