Great-West Life
Information Services

Investment Accounting System (IAS) - Segregated Funds Financial Services (SFFS)

Test Strategy

Version 1.3
March 26, 2014

Document Revision History

Document Location:

Version	Date	Author/Editor	Comments
0.1	February 28, 2013	Larry Folmes	Initial version of this document.
0.2	March 19, 2013	Larry Folmes	Feedback from D. Emek & J. Bettencourt
1.0	March 26, 2013	Larry Folmes	Feedback from General Review
1.1	June 28, 2013	Larry Folmes	Updated to align to revised Project Plan
1.2	February 12, 2014	Larry Folmes	Updated to reflect the revised Testing Scope and Project Plan
1.3	March 26, 2013	Larry Folmes	Feedback from General Review and revised project schedule

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1   Introduction

1.1 Purpose

The purpose of the Test Strategy document for the Investment Accounting System (IAS) Program - SFFS is:

- To define a Test Strategy that will guide the project's testing deliverables through to completion of the SFFS implementation in 2014.
- To outline the testing approach, test objectives, scope and the different types of test execution phases that will be used.
- To identify the target test items, test environments, test tools, test case structure and defect management process.
- To build a common understanding and agreement amongst testing participants and approval from stakeholders.
- To ensure that all functionality and changes introduced into the system are compliant and accurate based on the Business requirements and system specifications

1.2 Project Context and Background

MPower, an investment accounting system provided by CGI, is currently used by the GWL segregated fund and general fund back offices; and IG and Mackenzie mutual fund back offices (the "Stakeholders").

The MPower replacement project became a requirement when CGI indicated that they will soon phase out MPower in favor of their new product – Mvest. The change from MPower to MVest is viewed by the Stakeholders to be so significant that it is a system replacement, not simply a system upgrade. Since the Stakeholders are faced with a mandatory system replacement, they have taken the opportunity to evaluate multiple investment accounting system vendors to see which system will best meet the needs of our organization. There was a desire by all Stakeholders to identify a single solution that met all Stakeholders' needs and provided the best solution from a Power Financial Corp. standpoint.

The Stakeholders have undertaken a formal and rigorous process to identify the replacement system that best meets their business needs from a strategic, financial, operational and technological perspective.

After an extensive and rigorous process which included RFI and RFP stages, a period of test driving the potential systems, performance tests by vendors and information obtained from industry consultants, GWL identified Multifonds (MF) as the vendor with the best fit for the GWL segregated fund and general account back offices and launched a Concept of Operations as the final round of diligence before requesting and obtaining C-Level approval to proceed with the implementation of a new Investment Accounting System.

The Investment Accounting System (IAS) program – SFFS Business Unit implementation will include the following projects:
- Core product implementation
- Integration – Core Product
- Infrastructure
- IRFI Gap Closure

The IAS Core Implementation Project for SFFS is responsible for functionally configuring the Multifonds Fund Accounting application, converting data from the legacy systems (MPower5 and SF01) into the Multifonds system, decommissioning the legacy systems and transitioning the business from legacy processes to the future-state processes.

The IAS Integration Project is responsible for replacing existing interfaces from MPower5 and SF01 to the new Multifonds solution and, where required, developing new interfaces. Some current interfaces may no longer be required and there may become a need for transitional interfaces required only in the short-term to support successful implementation of the Multifonds solution.

The Investment Accounting System (IAS) Infrastructure Project is responsible for putting in place the hardware, software, storage and network components that will support the new IAS solution. It is also responsible for preparing the IS organization to support the new solution and successfully transitioning the infrastructure to production and maintaining that infrastructure until the close-out of the IAS Program at which time it will be transitioned to business as usual (BAU).

The IAS IRFI Gap Closure Project is responsible for filling any gap created as a result of the decommissioning of the

SF01 System.

1.3 Scope

There will be three testing phases for the Investment Accounting System (IAS) – SFFS. The following initiatives will be part of the testing effort for each testing phase:

- **Phase 1 – Configuration**

    - Infrastructure Testing – Non-Production Environments

        - Configuration testing of the new Non-production environments by the Infrastructure Team will include:
            - Hardware
            - Operating System
            - Database
            - Network
            - Authorization
            - Authentication
        - Security Testing
            - Infrastructure Vulnerability Assessment Scan

    - Multifonds Fund Accounting – Release 4.0 Configuration

        - System Configuration
            - System Configuration/Setup will be created by the vendor in conjunction with the Business for the following:
                - Accounting Charts
                - Security Types (GTI's)
                - Operation Codes
                - NAV Codes
                - Fee Codes
                - Currency Codes
                - Industry Codes
                - Tax Tables
                - Valuation Model
                - Country Codes
                - Market Codes (ie New York Stock Exchange)
                - Workflow and Exemption Monitor (WEM set up)
            - Application Parameters
            - Setup validation
        - Security Groups

    - Multifonds Fund Accounting – Release 4.0 Configuration Functional

        - Transaction focused testing of all security types to validate the system configuration meets the Business requirements
        - Security Testing
            - Application Vulnerability Assessment Scan

- **Phase 2 – Functional Core/Gap Closure**

    - Multifonds Fund Accounting – Release 4.1 – Functional Gaps

- GWL Functional Gaps

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Processing
- DEV56 - Peer Groups Exception Management
- DEV23 - Fund of Fund Rate of Return Analysis
- DEV65 – Automated Distribution Reinvestment
- DEV64 - Daily Payable Expense
- DEV68 – WEM Control – Identify Deleted NAV Confirmations
- DEV51 - User Defined Fields and User Defined Comments
- DEV09 - Multi-book Accounting
- DEV62 – Fund ROR and Starting Unit Value
- DEV48 - Rating Agency Management
- DEV72 - Check on Duplicate Trades
- DEV71 - Control on Closed Series
- DEV70 – Control on Large Security or Shareholder Transaction
- DEV69 – NAV Reporting

- o Multifonds Fund Accounting - Release 4.1 **–** Security Pricing & WEM
  - Security Pricing
    - Inject Price Files
    - Price Scrubbing / Levels
    - Foreign Fair Value
    - Market Value Validation
    - Price Rollover

  - WEM – Workflow Exception Management
    - WEM Configuration
    - Test WEM Controls
    - WEM HSM

- o Multifonds Fund Accounting – Release 4.1 – NAV Cycle
  - Full Functional test of the NAV Cycle
    - Start of Day (SOD)
    - Final (FNL)
    - End of Day (EOD)
  - Milestone – To determine if additional performance testing of the Multifonds Fund Accounting application running on the GWL environments is required

- **Phase 3 – Integration/Reports/Migration/Model Office**

  - o Integration Testing – Functional

    - SFFS Interfaces
      - Test planning/execution of SFFS interfaces throughout the agile development cycle
      - Demand Service - TBD
        - o Security Request Process
          - Security Master Info
            - XIP FO to: SS&CNet, Expertus, Solium
      - Inbound
        - o Market Data (Pricing)
          - Pre NAV/PU End of Day Process
            - Security Prices
            - Foreign Exchange Rates
            - Dividend Announcements
        - o SS&CNet
          - Trade Capture Process

Capture Process (Possible Manual Load – TBD)
- Trade Info
- XIP FO
  - Trade Capture Process
    - Trade Info
    - Security Master Info
- CTI
  - Pre NAV/PU End of Day Process
    - Transactions
- MLS
  - Pre NAV/PU End of Day Process
    - Transactions
- Optimus
  - Pre NAV/PU End of Day Process
    - Transactions
- FundServ
  - Trade Capture Process
    - Trade Info
- Outbound
  - CS15/SAP
    - NAV End of Day Process
      - Transactions
  - InfoBase
    - Post NAV/PU End of Day Process
      - Security Positions
      - GL Balances
      - Security Master info
      - Transactions – Security Trades
      - Fund/Series Values
      - Security Prices
  - XIP FO
    - Start of Day Process
      - Security Positions
      - GL Balances (includes Cash)
  - IC – FO
    - Start of Day Process
      - Security Positions
      - GL Balances
  - SS&C Recon (BO and FO)
    - Start of Day Process
      - Security Positions
      - GL Balances – Cash Positions
  - GRDB
    - Post NAV/PU End of Day Process
      - Security Positions
      - Security Master info
  - Solium
    - Post NAV/PU End of Day Process (May NOT be required TBD)
      - Security Positions
  - SS&C Recon (BO and Custodian)
    - Post NAV/PU End of Day Process
      - Security Positions
      - GL Balances – Cash Positions
      - Cash Transactions

eries Values
- o TAS (Tax Allocation System)
- o FundServ
  - ▪ Trade Orders

- IRFI Interfaces with downstream systems

  - Inbound
    - o Deposits /Withdrawals Process
      - ▪ Transactions
  - Outbound
    - o NAV End of Day Process (Valuation after Deposits/Withdrawals)
      - ▪ Fund/Series Values
    - o Post NAV/PU End of Day Process (Valuation before Deposits/Withdrawals)
      - ▪ Fund/Series Values

- o IRFI Functional Enhancements

  - IRFI Functional Enhancements are required due to the decommissioning of the SF01 system
  - New IRFI tables/processes to support the move of data/functionality from SF01 to IRFI
  - All IRFI processes that access the new IRFI tables for the SF01 data
  - New functionality to assume SF01 processing – TBD – Scope to be confirmed during Requirements/Analysis phase
    - Forcing of unit values including maintaining a category force indicator
    - London Life zero tax factors
    - Future valuation dates

- o InfoCentre SFFS
  - GWL developed InfoCentre SFFS Reports/Extracts/Views

- o Data Migration/Conversion

  - Test the migration and reconciliation of funds including all hierarchical dependencies. Start by migrating simple funds, moving to larger scale funds; investigating/fixing/improving from one run to another until a full volume test is achieved.

- o Cycle Test – Functional Integration Test
  - Cycle Test Detail Test Planning
  - Functional/Integration testing of all inbound and outbound SFFS interfaces
  - Data Flow and Data Integrity test from Source Systems, Core and Downstream systems
  - Validate the correct interfaces are created with the correct data content for each of the 3 daily NAV cycles
  - Validation of the interfaces files by the Downstream systems

- o Infrastructure Testing – Production Environment

- Configuration testing of the new Production environment by the Infrastructure Team will include:
  -
  -

erating System
- Database
- Network
- Authorization
- Authentication
- Disaster Recovery (DR) Test
- Security Testing
  - Infrastructure Vulnerability Assessment Scan

o Model Office

- Parallel Test – Scope TBD during detail test planning
- Performance Timing Tests
  - Load of D/W's from IRFI
  - Processing of Available Cash for DEV40 trades (FundSERV, ASL, MSL)
  - End of Day (EOD) NAV including end to end WEM
- Final Security Testing
  - Infrastructure and Application Vulnerability Assessment Scan

Note:

- Scope items may change during the year due to Business and Project priorities.

1.4 Document Terminology and Acronyms

The following is a list of acronyms used in this document:

- AD – Application Delivery
- BA – Business Analyst
- BAU – Business As Usual
- BRD – Business Requirements Document
- ETL – Extract, Transform and Load
- FIT – Functional Integration Testing
- GRDB – Global Reporting DataBase
- IAS – Investment Accounting System
- PM – Project Manager
- QA – Quality Assurance
- SAN – Systems Analyst
- SD - Software Developer
- SFFS - Segregated Funds Financial Services
- TAS – Tax Allocation System
- UAT – User Acceptance Testing

1.5 References

The following is a list of deliverables that will be used as input or otherwise referenced in the development of this document.

Project Documents:

- Investment Accounting System (IAS) Program – Testing Framework:

\\Gwlanfs8\ias program\Testing\Establish Test Strategy and Plan

- Investment Accounting System (IAS) Program – Standard Quality Procedures & Guidelines:

\\Gwlanfs8\ias program\Testing\Establish Test Strategy and Plan

- All RFP Business Requirements Documents are located within the following Folder:

\\Gwlanfs8\ias program\99 RFP Work Stream\RFP Business Requirements Analysis and High Level Design

- All Gap BRD are located on the SharePoint Site - SEG-Net :

- All Integration Requirements Documents are located within the following Folder:

\\Gwlanfs8\ias program\30 Integration Project\30.2 Integration Blueprint

1.6 Test Objectives

The general objective of testing is to verify that the system solution meets the stated Business requirements. The specific objectives for each test level are defined below:

Test Level	Responsibility	Objective
Unit Test	Development Teams / Vendor	• To verify each software unit executes according to design specifications, and that it is free of data and logic errors.
Functional Test	Test Team	• To verify the Multifonds Fund Accounting Core Product, Configuration setup/changes, gap closure enhancements, data migration and reports work and process correctly according to Business Requirements.
System Integration	Test Team	• To verify all system interfaces in the system specifications process correctly with the new application and existing applications • To verify that interdependent modules/systems processes work correctly together after the inclusion of the new application and modified code.
Regression Test	Test Team	• To verify the existing code continues to process correctly after the integration of the modified code. • Test Team will determine the extent of regression testing to be performed by analyzing the impact the functional change has on the system.
Non-Functional Test	IS Technical Test Team	• Run automated performance scripts to verify the new application meets the performance requirements.
End-to-End System Test (Cycle Test)	Test Team	• To verify all system changes, system interfaces and data feeds work correctly together and deliver the expected results.
Parallel Test (Model Office)	Test Team	• To verify the processing of a number of business process cycles using the same sub-set of data on both the new and old systems; produce the same results.
Acceptance Test	Business	• To establish business acceptance of the system .changes. • To verify the new application and system changes work correctly and deliver the expected results from the business perspective.
Security Testing	Testing Services	• To verify there are no critical security vulnerabilities with either the infrastructure assets and/or the application that could compromise the integrity of business processes or allow unauthorized access to secure sensitive data.

1.7 Test Motivators

Validate all functionality and functional enhancements introduced in the new application work correctly according to the Business Requirements and System Specifications.

Validate all interfaces/data feeds, user interfaces and ETL processes work correctly and deliver the expected results.

Obtain Business Acceptance of the delivered functionality.

Technique Objective:	To verify the Multifonds Fund Accounting Core Product, configuration setup/changes, gap closure enhancements, data migration and reports work and process correctly according to Business Requirements.
Technique/Strategy:	The QA test team from the Core Implementation project will functionally test the application & code changes for the Core Product, configuration setup/changes, gap closure enhancements, data migration and reports in the GWL test environments.
	The QA test team from the IRFI Gap Closure project will functionally test the IRFI application & code changes required to fill the gap created by the decommissioning of the SF01 system.
	Detail Test Plan (s) will contain all planned and reviewed test scenarios and test cases that will be executed for each testing phase.
Required Tools:	ClearQuest will be used as the defect management tool for all systems. Any results which vary from the expected result will be logged as a defect.
Success Criteria:	Successful completion of all planned test cases with no outstanding Severity 1 or 2 defects.
Special Considerations:	

2 Test Approach

2.1 **Standard Quality Procedures & Guidelines**

The test effort for all three phases of the Investment Accounting System (IAS) Program – SFFS Business Unit implementation will follow the QA procedures as outlined in the Investment Account System (IAS) Program Standard Quality Procedures & Guidelines:

IAS Program
Standard Test Proced

Technique Objective:	To validate tha specifications
Technique/Strategy:	The GWL dev modules in the
	The vendor wi enhancement released to GV
Required Tools:	
Success Criteria:	No code will b executed and increased num
Special Considerations:	

2.2 **Conducting Tests**

2.2.1 Unit Testing

2.2.2 Functional Testing

Technique Objective:	To validate that each software module executes according to design specifications and is free of any logic defects.

2.2.3 System Integration Test

Technique Objective:	To verify all system interfaces in the system specifications process correctly with the new application and existing applications To verify that interdependent modules/systems processes work correctly together after the inclusion of the new application and modified code
Technique/Strategy:	The QA test team from the Integration project will functionally test a interfaces from/to the Core Product and validate the data flow from/ existing applications in the GWL test environments.
Required Tools:	ClearQuest will be used as the defect management tool for all syste results which vary from the expected result will be logged as a defe
Success Criteria:	Successful completion of all planned test cases with no outstanding or 2 defects.
Special Considerations:	

2.2.5 End-to-End System Testing (Cycle Test)

Technique Objective:	To verify all sy together and c
Technique/Strategy:	A series of Bu product, all sy together. The workflow/proc interfaces to v applications. The QA test te Integration pro the End-to-En
Required Tools:	ClearQuest wi results which v
Success Criteria:	Successful co or 2 defects.
Special Considerations:	

2.2.4 Regression Testing

Technique Objective:	To verify the existing code continues to process correctly after the integration of the modified code.
Technique/Strategy:	Regression testing will be combined with the functional/integration testing performed by the QA Test Team (s). The QA Test Team (s) will determine the extent of regression testing to be performed by analyzing the impact of the functional change to ensu existing code (after the integration of the modified code) continues t correctly and deliver the expected results. The analysis of the impac functional change will include the SAN, SD and BA if required.
Required Tools:	ClearQuest will be used as the defect management tool for all syste results which vary from the expected result will be logged as a defe
Success Criteria:	Successful completion of all planned test cases with No outstanding or 2 defects.
Special Considerations:	

2.2.6 Parallel Testing (Model Office)

Technique Objective:	To verify the p same sub-set results.
Technique/Strategy:	A series of Bu data on both t the new and c
Required Tools:	ClearQuest wi results which v
Success Criteria:	Successful co or 2 defects.
Special Considerations:	

2.2.7 User Acceptance

Testing

Technique Objective:	To establish business acceptance of the solution and verify the solution works correctly and delivers the expected results from the business perspective.
Technique/Strategy:	User Acceptance Testing (UAT) will be performed by the Business.
	The Business will review and approve all the completed detail test plans and test results from all the functional and system integration testing performed through the three phases of the SFFS implementation.
	The End-to-End and Parallel testing will be the final part of the User Acceptance Testing. End-to-End and Parallel (UAT) test plans will be created/executed by the Business and contain all the test scenarios/cases (test sets/conditions) required to be executed successfully to obtain business acceptance.
Required Tools:	ClearQuest will be used as the defect management tool for all systems. Any results which vary from the expected result will be logged as a defect.
Success Criteria:	Successful completion of all the End-to-End (UAT) planned test cases and approval of all functional and system integration completed test plans and test results.
Special Considerations:	

2.3 Test Deliverables - SFFS

- This is a Canada Life Internal Information and should not be shared outside.

- Test Strategy - SFFS

- Test Deliverables by Test Phase

  o Detailed Test Plan (s) – Test Scenarios/Cases (Test Sets/Conditions)

  o Test Managements Reports

    - Weekly Dashbo

2.2.8 Security Testing

Technique Objective:	To verify there are no critical security vulnerabilities with either the infrastructure assets and/or the application that could compromise the integrity of business processes or allow unauthorized access to secure sensitive data.
Technique/Strategy:	Testing Services will run Vulnerability Assessment scans on the infrastructure assets and Core Product application to identify any security vulnerability threats. All critical/severe severity issues for the infrastructure assets and high/medium severity for the application will be reported back to the appropriate project team. The project team will be required to perform the required remediation action and the scan will be rerun.
Required Tools:	Testing Services is responsible for the Vulnerability Assessment scan tools.
Success Criteria:	Once all the identified security issues have been remediated.
Special Considerations:	

ard/Status Report
- Defect Reports
  - Completed Detailed Test Plan (s) and Test Results
  - Test Summary Report

SFFS Test Strategy

Test Phase 1- Configuration
Detail Test Plan (s)
Test Execution (s) – Status / Defect Reports
Completed Detail Test Plan (s) & Results
Phase 1 Test Summary

Test Phase 2 – Functional Core/Gap Closure
Detail Test Plan (s)
Test Execution (s) – Status / Defect Reports
Completed Detail Test Plan (s) & Results
Phase 2 Test Summary

Test Phase 3 – Integration/Reports/Migration/Model Office
Detail Test Plan (s)
Test Execution (s) – Status / Defect Reports
Completed Detail Test Plan (s) & Results
Phase 3 Test Summary

2.4   High Level Test Schedule

Below is the high-level test schedule for the Investment Accounting System (IAS) Program – SFFS Implementation – Mar 2013 – May 2014.

Test Activity	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Test Strategy - SFFS	TBD														
Phase 1 - Infrastructure				TBD	TBD										
Phase 1 – MF Rel 4.0 –			TBD												

Activity				
Configuration Test Plan				
Phase 1 – MF Rel 4.0 – configuration Test Execution			TBD	
Phase 1 – MF Rel 4.0 – Functional Test Planning			TBD	
Phase 1 – MF Rel 4.0 – Functional Test Execution				
Phase 2 – Rel 4.1 – Dev Test Planning				
Phase 2 – Rel 4.1 – Dev Test Execution				
Phase 2 – Rel 4.1 – Pricing & WEM Test Planning				
Phase 2 – Rel 4.1 – Pricing & WEM Test Execution				
Phase 2 – Rel 4.1 – NAV Cycle Test Planning				
Phase 2 – Rel 4.1 – NAV Cycle Test Execution				
Phase 3 – Integration – Testing throughout Agile Development & FIT				
IRFI System Testing				
IRFI Integration Testing				
IRFI UAT/End-User Testing				
IRFI Implementation				
Info Center Reporting				
Phase 3 – Data Migration – Test Planning				
Phase 3 – Data Migration – Test Execution				
Cycle Test – Test Planning				
Cycle Test – Test Execution				
Phase 3 – Model Office – Test Planning				
Infrastructure Testing - Prod				
Phase 3 – Model Office – Test Execution				
Implementation – SFFS				

3 Environmental Needs

3.1 Base System Hardware

The following table sets forth the system resources for the test effort.

System Resources		
Resource	**Quantity**	**Name and Type**
Presentation Layer Server	1	- GWIASAPU1 (Dev, FIT, UAT & Support) - IBM x3650 M4, 3.46Ghz, dual sockets, single 8 Core CPU - Memory: 96GB - Disk: 146 GB mirrored
Reporting Server	1	- GWIASAPU2 (Dev, FIT, UAT & Support) - IBM x3650 M4, 3.46Ghz, dual sockets, single 8 Core CPU - Memory: 96GB - Disk: 146 GB
Presentation Layer Server	1	- GWIASAPP1 (Prod) - IBM x3650 M4, 3.46Ghz, dual sockets, single 8 Core CPU - Memory: 96GB - Disk: 146 GB mirrored
Presentation Layer Server	1	- GWIASAPP2 (Prod) - IBM x3650 M4, 3.46Ghz, dual sockets, single 8 Core CPU - Memory: 96GB - Disk: 146 GB mirrored
Reporting Server	1	- GWIASAPP3 (Prod) - IBM x3650 M4, 3.46Ghz, dual sockets, single 8 Core CPU - Memory: 96GB - Disk: 146 GB
Reporting Server	1	- GWIASAPP4 (Prod) - IBM x3650 M4, 3.46Ghz, dual

System Resources		
Resource	**Quantity**	**N**
		s C - M - D
Integration Server	1	- G II - G II - A
Application/Database Servers	1	- D C - U C - F - S C - F C - F - A
Storage		- 3 - 1 S L - 7 S U - V
Central File Share Server	1	TBI
SQL Transition DB Server	1	- G - V S
SQL WEB Server Tool	1	- G - V
MOVEIT Central Server	1	- S - V S
MOVEIT DMZ	1	- S - V S

3.2 Base System Software

The following base software elements are required in the test environment for this *Test Strategy*.

Software Element Name	Version	Type and Other Notes

Software Element Name	Version	Type and Other Notes
Client Tier		
Internet Explorer	7 or 8	
Windows	7	
Java applet	SUN JRE 1.6.0_20	
Middle Tier – Presentation Server		
Windows Server	2008 R2	
Weblogic Suite	10.3.5	
Middle Tier – Reporting Server		
Business Intelligence Publisher		
Weblogic Server Enterprise Edition		
Middle Tier – Integration Server		
Ab Initio Co>Operating System	3.0.4	
Database Server		
Oracle Server Database Enterprise Ed	11g R2 11.2.0.3	
Oracle Diagnostics Pack		
Oracle Partitioning		
Multifonds	4.0	
Backup Software (UNIX & Windows)		Networker
Networker Backup Agents		25 Pack Networker licenses for Windows and UNIX

3.3 Test Environment Configuration

The following Test Environment Configurations needs to be provided and supported for this project.

- DEV – Development (DEV1, DEV2)
- FIT – Integration (FIT1)
- UAT – User Acceptance (UAT1, UAT2, UAT3, UAT4)

3.4 Tools

The following tools will be used for this project

Defect Tracking	
Project Management	

4 Business Acceptance Criteria

4.1 Acceptance Test Strategy

The successful execution of the different levels of testing for each test phase will prove that the application can be deployed to Production.

UAT (User Acceptance testing) will establish business acceptance of the application and verify the application works correctly and delivers the expected results from the Business perspective.

The Business will review and approve the all detailed test plans and test results obtained during the different levels of testing performed by the test team (s) for all three phases.

The Model Office Testing will consist of the End-to-End and Parallel Testing. The Model Office testing will be the final part of the User Acceptance Testing. End-to-End and Parallel (UAT) test plans will be created/executed by the Business and contain all the test scenarios/cases (test sets/conditions) needed to be executed to successfully to obtain business acceptance.

5 Risks, Dependencies, Assumptions, and Constraints

5.1 Risks

All project risks are documented and managed at a project/program level.

The following risks associated with testing should also be highlighted:

Risk	Probability	Impact	Mitigation Strategy	Contingency
Risk that testing resources are not 100% allocated to the projects will impact project schedule	H	H	Full time resources internal/external can be requested. Monitor shared resources workload against schedule.	Additional external resources can be engaged to meet project timelines.
Risk that delays encountered in the testing phase of one project may impact the testing schedule of the other projects	M	H	Monitor all projects testing schedule to analysis the impacts of a delay to the other projects and take required actions to minimize the impacts.	Escalate any issues causing delays to remediate quickly and minimize the impacts to other projects.
Risk that delays in acquiring the infrastructure components for the non-Prod environments may impact the testing schedule	H	H	Multifonds Release 4.0 and Pre-Release 4.1 testing will be performed on a vendor hosted test environment	
Risk that a high number of vendor defects and/or extended defect turnaround time may impact testing schedule	M	H	Monitor Vendor's defect tracking systems on a regular basis for defect resolution updates	Escalate any delays in defect resolution that will impact the testing schedule

5.2 Dependencies

Dependency between	Potential Impact of Dependency	Owners
Test case creation is dependent on	Delay the start of test	
requirements/specifications being completed on time.	case creation.	
Test execution is dependent on code being written/modified and unit tested by GWL and the vendor respectively	Delay the start of test case execution	
Test execution schedule is based on the vendor's software release schedule	Any delay the vendor release schedule delay the start of test execution that phase testing	

5.3 Assumptions

Assumption to be proven	Impact of Assumption being incorrect	Owner
Test Resources will be available to start at the beginning of the scheduled testing activities and be assigned through to the end of testing activities for each project	Delay testing schedule.	
One Portfolio QA will be resourced to manage the test effort on all projects	Possible inconsistency between projects and potential loss of any testing synergies between projects	

5.4 Constraints

Constraint on	Impact Constraint has on test effort	Owners
Production Support Issues	Delay testing schedule.	

6　Sign-off – version 1.3

I have confirmed that the planned Test Strategy described in this document will meet the required needs and addresses any potential risks. The level and types of testing to be completed will be satisfactory in ensuring the required functionality works as per defined requirements. I agree with the test approach identified by the test expert assigned to this work.

Approvals

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Account Manager, Investment Systems　　　　　　　　**Date :**

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　　Ismael Mukhtar, Business SME/Tester
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　　Guy Carriere, Business SME/Tester
　　Rajdeep Mahal, Quality Assurance Analyst

Integration Project:
　　Pervaiz, Aftab, Project Manager
　　Marcela Sussi, Systems Analyst
　　Scott Cochrane, Systems Analyst
　　Marina Ferguson, Systems Analyst
　　Doris Wiebe, Systems Analyst
　　Gurmukh Roopra, Systems Analyst
　　George Poritsanos, Systems Analyst
　　Kristen Hokke, Systems Analyst
　　Jay Bauerlein, Software Developer
　　Dean Norrie, Software Developer
　　Delvin Klimack, Software Developer
　　Mark Fleck, Software Developer
　　Devadev Annadurai, Software Developer
　　Sivaramakrishna Thondapi, Software Developer
　　Lalit Tankala, Software Developer
　　Ihor Hluszok, Senior Systems Architect
　　Alex Wiebe, Systems Architect
　　Dean Bartlett, Quality Assurance Analyst
　　Sreya Chakravarty, Quality Assurance Analyst

IRFI Gap Closure Project:
　　Mary Coghlin, Project Manager
　　Lynda Hughes, Lead Analyst
　　Terri Sinclair, Lead

Developer
        Donna Coombs, Business SME/Tester
        Tonia Montoya, Business SME/Tester

Internal Audit:
        Ken Fanstone, AVP Internal Audit
        Wade Bo-Maguire, Manager, Internal Audit Systems
        Sushma Uniyal, Associate Mgr, Internal Audit Systems
        Karyn Masson, Associate Audit Manager
        Laura Wetton, Assistant Audit Manager

Appendix A: Testing Checklists

Security

Application Security Standard

This standard outlines how software applications must adequately protect the use and management of the Enterprise's information. The controls within this standard apply to all new project initiatives, whether they are interactive or batch in nature and regardless of their ownership (business vs infrastructure) or design (in-house built vs purchased).

Application Security Standard	Applied?			COMMENTS
	Yes	**No**	**N/A**	
Standards for Testing				
1. All software must be comprehensively tested prior to being placed into production, by persons other than the designers/developers of the system.	☒	☐	☐	
2. All data must be scrubbed to remove any personally-identifiable information before begin used in test environments	☐	☐	☒	Production data will be used for testing but no personal information is included. Approval to use production data for testing has been obtained in the Investment Accounting System (IAS) Program – Testing Framework document.
3. All code must be subjected to a peer review to assist in identifying potential security weaknesses.	☐	☐	☒	
4. Applications which expose client/corporate confidential data or which have a high sensitivity to breaches of confidentiality, integrity or availability must be tested for application-layer vulnerabilities.	☐	☐	☒	
5. Tests including expected and actual results must be formally documented and any defects must be tracked and resolved.	☒	☐	☐	

7 ADULT SIMPLIFIED RENEWAL PASSPORT APPLICATION

7.1 for eligible Canadians applying in Canada or the USA

Warning: Any false or misleading statement with respect to this application and any supporting document, including the concealment of any material fact, may result in the refusal to issue a passport, the revocation of a currently valid passport, and/or the imposition of a period of refusal of passport services, and may be grounds for criminal prosecution as per subsection 57 (2) of the Criminal Code (R.C.S. 1985, C-46).

Read Instructions

Type or print in CAPITAL LETTERS using black or dark blue ink.

1 Personal Information (see Instructions, section I)

Surname (last name) as it appears in the previous passport   Row

Given name(s) as it appears in the previous passport   Danny

Anticipated date of travel

Month   Day

All former surnames (including surname at birth if different from above. These will not appear in the passport).

Unknown

It is recommended that you do not finalize travel plans until you receive the requested passport.

Mother's maiden name   Stigger

Place of birth   Canada

City		Country	Prov./Terr./State (if applicable)
Toronto			

Date of birth as it appears in the previous passport   Year   Month   Day

Sex as it appears in the previous passport

F Female   M Male   X Another gender

Natural eye colour   Height (cm/in)

Current home address

Number	Street	Apartment	City	Province/Territory/State	Postal/ZIPcode

PPTC 054 (06-2019)   **(DISPONIBLE EN FRANCAIS - PPTC 055)**

Mailing address (if different from current home address)

| Number | Street | Apartment | City | Province/Territory/State | Postal/ZIP code |

Telephone (daytime)   Telephone (other)   Email address

Declaration—I solemnly declare that I am a Canadian citizen, that all of the information provided and all statements made on this application, as well as all documents and photos submitted to support this application are unaltered and true. I declare that I have read and understood the **Warning** at the top of this page and the Privacy Notice Statement in Instructions, section K. I consent to the collection, use and disclosure of my personal information as outlined in the Privacy Notice Statement.

Sign within border

Signature (see Instructions, section I)

Signed at

Year   Month   Day

Date

City   Province/Territory/State

2   Previous Canadian Passport (see Instructions, section J)

Enclose any Canadian passport issued to you that is not expired or is expired for less than one year from the date the application is submitted.

Passport number
GK485392

Date of issue   Date of expiry

Year   20032   Year   Month   Day
Month 03
Day15

If you cannot submit the previous passport, or if the previous passport is damaged, or was ever reported lost or stolen, you cannot use this form. Any passport that is damaged, or was ever reported lost or stolen will not be returned. Unreturned passports will be securely destroyed to protect your personal information.

- Would you like the previous passport to be cancelled and returned to you?

   Yes, please return it to me. If this box is not checked, the passport will not be returned and will be securely destroyed.

3   Canadian Citizenship

- ☐

To be completed if you were **born outside of Canada between February 15, 1977 and April 16, 1981 inclusive.**

a) Are you a naturalized Canadian, i.e. did you receive Canadian citizenship following immigration to Canada?   ○ Yes ➡ Go to page 2   ○ No ➡ Continue to question **b)**

b) Was one of your parents born in Canada?   ○ Yes ➡ Go to page 2   ○ No ➡ Continue to question **c)**

c) When was your current certificate of Canadian citizenship issued?

○ **After January 1, 2007** ➡ Submit the certificate with your application (original only).

○ **Before January 1, 2007** ➡ Complete and submit form PPTC 001, *Proof of Canadian Citizenship—Additional Information*, available online at Canada.ca/passport.

Canada

④	Period of Validity (see Instructions, section C)

Choose **one (1)** of the following periods of validity: ○ **5-year** or ○ **10-year**

⑤	Additional Personal Information

Note: If insufficient space, attach a separate signed and dated sheet.

A ○ Addresses in the last **two (2)** years ○ Same as current home address

○ Different from current home address (complete below)

	From Year	Month	To Year	Month
1.				

	From Year	Month	To Year	Month
2.				

B Occupation in the last **two (2)** years (check all that apply): ☐ I was employed (full- or part-time)   Ongoing occupation?

☐ I was in school (full- or part-time)

☐ Other, e.g. homemaker, unemployed or retired

Enter full details below for the last **two (2)** years:

Employer, school or other	Address	Telephone (daytime)	Field of employment or studies	Date (from)	Date (to)
○					

6	References

Provide the following information for **two (2)** persons who are neither your relatives; are 18 years of age or over; and who have known you for at least **two (2)** years. They must agree to have their contact information provided as they may be contacted to confirm your identity. Visit Canada.ca/passport for more information on the Passport Program's definition of a relative.

1. Surname (last name)	Given name(s)	Relationship to the applicant

Address (Number, Street, Apartment, City, Province/Territory/State, Country, Postal/ZIP code)

Telephone (daytime) ○	Telephone (other)	Email address	Has known me for Number of **years**

2. Surname (last name)	Given name(s)	Relationship to the applicant

Address (Number, Street, Apartment, City, Province/Territory/State, Country, Postal/ZIP code)

Telephone (daytime)	Telephone (other)	Email address	Has known me for Number of **years**

7	Emergency Contact Information (optional)

✚ This information is helpful if you require emergency assistance while outside of Canada.		

Surname (last name)		Given name(s)	

Relationship to the applicant	Telephone (daytime)	Telephone (other)	Email address

Current home address

Number	Street	Apartment	City	Province/Territory/State	Postal/ZIP code

7.1.1.19

Signature of applicant	Date		
	Year	Month	Day

Adult **Simplified Renewal** Passport Application

7.2 for eligible Canadians applying in Canada or the USA

Instructions

○

A	**Who May Use This Form?**

Important notice: We recommend that you not finalize your travel plans until you receive the requested passport.

Note: If you cannot answer **yes** to all of the conditions outlined here, or if this is your first application for a Canadian passport, you must complete form PPTC 153, *Adult General Passport Application.*

Additional documents or information may be requested in support of this application.

You may use this form to **renew a passport** only if all of the following conditions are met:

• **you were at least 16 years of age at the time of your previous application**

CANADA

PASSPORT PASSEPORT

Type/Type P Issuing Country/Pays émetteur CAN Passport No./N° de passeport ZE000509

❶ Surname/Nom
MARTIN
Given names/Prénoms
SARAH
Nationality/Nationalité
CANADIAN/CANADIENNE
Date of birth/Date de naissance
01 JAN 71AN 85
Sex/Sexe Place of birth/Lieu de naissance
F OTTAWA CAN

Requirements Checklist

B The Canadian passport being renewed:
• is valid or expired for no more than **one (1)** year
• ☐ **Both** pages of the application form completed and signed within the last **twelve (12)** months
• was or is valid for **five (5)** years or **ten (10)** years
• ☐ Two (2) identical and unaltered passport photos taken within the last **six (6)** months. No signature is required on the photos Enclose any
• **is not** damaged
• was **never** reported lost or stolen
  ☐ Canadian passport issued to you within the last **six (6)** years

  ☐ The fee

P<CANMARTIN<<SARAH<<<<<<<<<<<<<<<<<<<<<<<<<
ZE000509<9CAN8501019F2301147<<<<<<<<<<<<<<08

○

D	**Credit Card Information**

If you are applying in person, **do not complete** this section. If you are applying by mail and paying by credit card, complete and submit this section with your application.

Where the application is made **in Canada** and the passport is to be delivered in Canada:

Card type: ○ Visa ○ MasterCard ○ American Express

5-year validity – CAN$120*
10-year validity – CAN$160*

Name as it appears on card

Where the application is made **from the USA**** or the passport is to be delivered to the USA**:

5-year validity – CAN$190*
10-year validity – CAN$260*

Card number

Date of expiry
Month   Year

*A CAN$25 consular services fee is included in the above-mentioned fee.
**Includes Bermuda, American Samoa, the Midway Islands, Puerto Rico and the US Virgin Islands.

Name of applicant GK485392

For official use only

Authorization—I authorize the Passport Program to charge ___ CAN$ ___ to my credit card.

Signature of cardholder

Date
Year   Month   Day

Methods of payment (Canadian funds only):

• Debit card (Interac), Visa Debit, Virtual Visa Debit or other prepaid cards (Visa, MasterCard, American Express) only for in person applications submitted by the cardholder. Prepaid debit cards are not accepted;

• Credit card and prepaid card (**embossed only**). If you are applying by mail, see section D; or

• Certified cheque or money order (postal or bank) in the exact amount, payable to the Receiver General for Canada.

Important

• Every person who requests passport services must pay the applicable fee in the exact amount.

• Applicants who cancel their application or are refused a passport are not eligible for a refund of the passport service fee. Only the consular services fee of CAN$25, applied only to adult applications, is refundable.

• The Passport Program, Immigration, Refugees and Citizenship Canada does not accept personal cheques or payment in cash for applications submitted in Canada.

• Administrative fees and applicable interest will be applied to all dishonoured payments.
• Fees are subject to change.

E   Applying in Person

Canadians can submit an application in Canada at:

• a Passport Program regional office; or
• a participating Service Canada Centre.

For information on service locations, service standards and requirements for expedited services, visit Canada.ca/passport.

For Canadians submitting an application from the USA:

If you require a passport in exceptional circumstances, contact the nearest Government of Canada office. You can find a list of Government of Canada

F   Applying by Mail

Mailed-in applications are processed in Canada.

By mail
Passport Program
Gatineau QC K1A 0G3
Canada

By courier
Passport Program
22 de Varennes Street
Gatineau QC J8T 8R1
Canada

The original documents that you enclose with your application are valuable. We recommend that you use a courier or mail service that allows you to track your package

G	Contact Information

General information is available 24 hours a day, 7 days a week. Agents are available Monday to Friday from 7:30 a.m. to 8:00 p.m. (Eastern Time) in Canada.

Information on passports, fees and processing times

Canada.ca/passport

Toll-free: 1-800-567-6868
Outside the continental USA: 1-819-997-8338

TTY (for people who are Deaf or hard of hearing)
Toll-free: 1-866-255-7655

Travel reports, warnings and requirements

For travel advice and warnings or foreign entry and exit requirements (how long the passport has to be valid for travel to a foreign country), visit travel.gc.ca

H	Anticipated Date of Travel

Regardless of the date of travel you indicate on the application form, processing times and requirements for expedited services are still applicable. Processing times begin once a completed application form and all required supporting documentation are received (see section B). Processing times **do not** include mailing time. Visit Canada.ca/passport for more details.

It is recommended that you do not finalize travel plans until you receive the requested passport.
The Government of Canada, or any representative of the Government of Canada will not be liable for any loss incurred as a result of or arising out of the passport not being delivered in time for you to travel on the date you have specified on the application form.

I	Personal Information

Surname and given name(s) to appear in passport
Your name must be written **exactly** as it appears on page 2 of the submitted passport. Your surname (last name) and given name(s) must be spelled the same and be placed in the same order. If your name has changed, you **cannot** use this form. You must complete form PPTC 153, *Adult General Passport Application*.

All former surnames
All former surnames that differ from the surname requested to appear in the passport, including your surname at birth must be declared. These former surnames will not appear in the passport.

Mother's maiden name
Indicate your mother's surname (last name) at birth.

Place of birth
Your place of birth must be provided on the application form. If you do not wish the place of birth to appear in the passport, complete and submit form PPTC 077, *Request for a Canadian passport without place of birth*, available online at Canada.ca/passport.
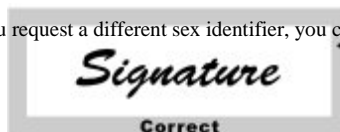
Date of birth
The specific **year**, **month** and **day** of your birth will be entered as shown on the submitted passport.
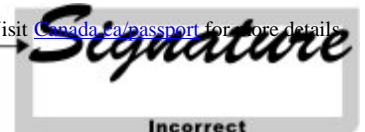
Sex
The sex will be entered as shown on the submitted passport. If you request a different sex identifier, you cannot use this form. Visit Canada.ca/passport for more details.

Signature
You **must** sign your usual signature on **both** pages.

Ⓙ   Previous Canadian Passport

Enclose any Canadian passport issued to you in your current name or any other name that is not expired or is expired for less than one year from the date you submit your application. If the passport is valid for more than **twelve (12)** months from the date the application is submitted, provide a written explanation as to why you are applying at this time. Should the Passport Program not be satisfied that you have an acceptable reason for applying early, your application for a new passport may be refused.

Note: If the passport has been lost, stolen, damaged or is inaccessible, you cannot use this form.

Ⓚ   Privacy Notice Statement

Personal information provided on this form is collected by Immigration, Refugees, and Citizenship Canada (IRCC) under the authority of the *Canadian Passport Order*. The personal information provided will be used for the purpose of processing applications, determining entitlement to passport services and administering passport services. The personal information provided may be disclosed to other federal government institutions, provincial/territorial governments, foreign governments, investigative bodies and/or law enforcement for the purpose of validating identity, determining current and ongoing entitlement to passport services and administering or enforcing any law or carrying out a lawful investigation.
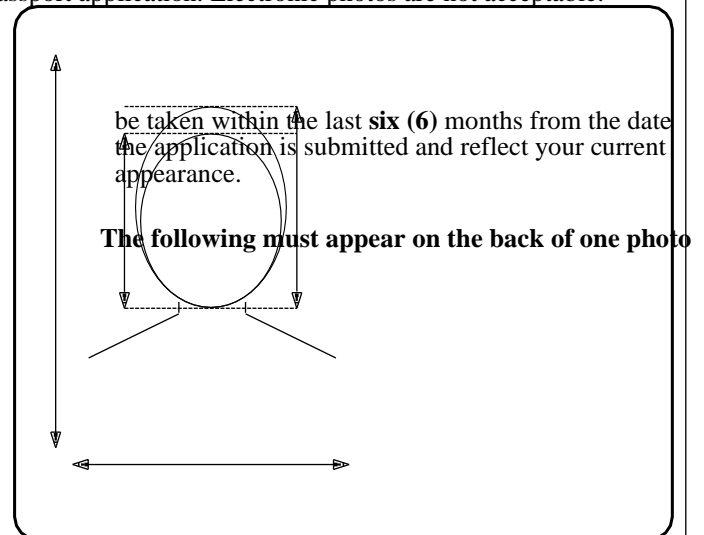
Personal information may also be used for purposes including research, statistics, quality assurance, program and policy evaluation, internal audit, compliance, risk management, strategy development and reporting. Failure to complete the form in full may result in a delay or the application not being processed. The *Privacy Act* gives individuals the right of access to, protection, and correction of their personal information. If you are not satisfied with the manner in which IRCC handles your personal information, you may exercise your right to file a complaint to the Office of the Privacy Commissioner of Canada. The collection, use, disclosure and retention of your personal information is further described in IRCC's Personal Information Bank – IRCC PPU 081 and IRCC PPU 082.
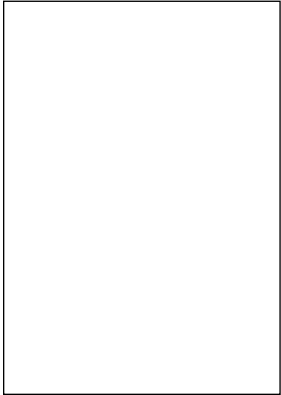

7.3 Ⓛ   Canadian Passport Photo Instructions

You must submit **two (2)** identical and unaltered photo prints with each passport application. Electronic photos are not acceptable. More information is available at Canada.ca/passport.
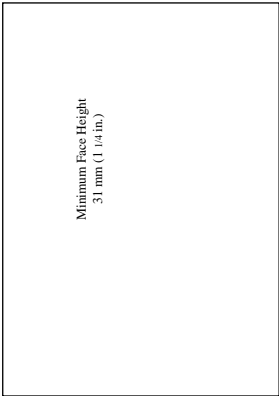
7.3.1 *The photos must:*

- be taken in person by a commercial photographer;

- be professionally printed on plain, high quality photographic paper (photos printed at home are not acceptable);

- be clear, sharp and in focus; in colour or black and white;

- show a neutral facial expression (**no smiling, mouth closed**) and looking straight at the camera, with **eyes open and clearly visible**;

- have uniform lighting—no shadows, glare or flash reflections;

- show a full front view of the face and top of the shoulders squared to the camera (face and shoulders centered in the photo, head not tilted or turned);

- reflect natural skin tone and be taken against a plain white or light-coloured background with enough contrast between the background, facial features and clothing, so that your features appear clearly against the background;

- be originals that **have not been altered in any way** and not taken from an existing photo;

- be taken within the last **six (6)** months from the date the application is submitted and reflect your current appearance.

The following must appear on the back of one photo

7.3.1.1 No signature is required on the photos.

Frame Width 50 mm (2 in.)

Minimum Face Height
31 mm (1 1/4 in.)

7.3.1.2 Not actual size (refer to measurements above)

The name and complete address of the photo studio (not a P.O. Box) and the date the photo was taken. The photographer may use a stamp or handwrite this information (stick-on labels are not acceptable).

No signature is required on the photos.

7.3.2 Additional information

Prescription glasses may be worn in photos as long as there is no glare and the eyes are clearly visible. The red-eye effect, tinted glasses and sunglasses make the photos unacceptable.

Hats and head coverings must not be worn, except for religious beliefs or medical reasons. The head covering and hair must not cast shadows on the face and the full face must be clearly visible.