

2011



SOUTH CAROLINA RETIREMENT SYSTEM¹ INVESTMENT COMMISSION

STRATEGIC ASSESSMENT REPORT

SEPTEMBER 2011

¹ This report was created for the sole benefit of the South Carolina Retirement System Investment Commission; no third party is entitled to rely on the information within this report, and Deloitte & Touche LLP shall have no liability to any third party in connection with its use of the deliverables.

Foreword

Professional Standards

Our services were performed in accordance with the Statement on Standards for Consulting Services that is issued by the American Institute of Certified Public Accountants (“AICPA”). We provided to the South Carolina Retirement System Investment Commission (the “Commission” or “RSIC”) our observations, advice, and recommendations. However, our services did not constitute an engagement to provide audit, compilation, review, or attestation services as described in the pronouncements on professional standards issued by the AICPA, and, therefore, we did not express an opinion or other form of assurance with respect to our services.

In addition, we did not provide any legal advice regarding our services nor did we provide any assurance regarding the outcome of any future audit or regulatory examination or other regulatory action; the responsibility for all legal issues with respect to these matters, such as reviewing all deliverables and work product for any legal implications to the Commission, will be the Commission’s. It is further understood that the Commission has responsibility for, among other things, identifying and ensuring compliance with laws and regulations applicable to the Commission’s activities and for establishing and maintaining effective internal control to assure such compliance. The Commission will have responsibility for reviewing and approving any reports and/or deliverables.

Our services may include advice and recommendations, but all decisions in connection with the implementation of such advice and recommendations shall be the responsibility of, and made by, the Commission. In connection with providing the services described herein, we shall be entitled to rely on all decisions and approvals of the Commission.

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Executive Summary

Historical Background

We understand that the State Retirement Systems Preservation and Investment Reform Act (the “Act”) established the South Carolina Retirement System Investment Commission (“RSIC” or the “Commission”) in 2005.² The Act transferred the powers and duties to invest in equity securities and fixed income instruments from the State Budget and Control Board and the State Treasurer’s function, respectively, to the Commission.³ The Commission is currently responsible for investing and managing all assets held in trust for the South Carolina Retirement System (“SCRS”), as well as four other governmental defined benefit plans.⁴ In November 2006, a constitutional amendment, ratified by the Legislature in February 2007, allowed for full diversification of the investment portfolio. Since ratification, the Commission has taken steps to diversify the assets by targeting approximately 40% of the portfolio’s allocation to alternative asset classes such as private equity, strategic partnerships, opportunistic credit, and absolute return strategies (i.e., hedge funds).

In March 2006, the Commission hired Robert Borden, former Executive Director of the Louisiana State Employees’ Retirement System as its Chief Executive Officer and Chief Investment Officer (for purposed of this report, the “CIO”) to oversee the investment and management of the portfolio assets. We understand that, initially, the CIO’s primary directive from the Investment Commissioners was to diversify the assets in an orderly manner, consistent with the Constitutional mandate. We further understand that the Commission began implementing its new asset allocation strategy in June 2007 and that investment in alternative assets, as of March 2011, accounted for slightly more than 36% of the total assets under management.⁵

The Commission’s focus over the past two and one-half years has been to develop the operational infrastructure necessary to manage the complexities of its investment portfolio. In July 2009, the Commission approved its first strategic plan, wherein it identified a series of goals for building a “best-in-class” investment organization. To date, we understand the Commission has developed and implemented specific governance policies, created efficient and effective facilities, and performed a feasibility study and prepared recommendations in connection with its long-term organizational structure. Goals that the Commission is continuing to work on include: Execute Major Investment and Portfolio Initiatives; Improve and Standardize Due Diligence

² See South Carolina Code of Laws, Title 9, Chapter 16, Section 315 (<http://www.scstatehouse.gov/code/statmast.htm>).

³ The six-member Commission consists of five voting members, one each appointed by the Governor, the Comptroller General, the Chairman of the Senate Finance Committee, the Chairman of the Ways and Means Committee of the House of Representatives, the State Treasurer (ex officio), and one non-voting member, who is a retired member of the South Carolina Retirement System and unanimously appointed by the voting members.

⁴ The other governmental benefit plans include: the South Carolina Police Officers Retirement System; the Retirement System for Judges and Solicitors of the State of South Carolina; the Retirement System for Members of the General Assembly of the State of South Carolina, and the National Guard Retirement System.

⁵ As of March 2011, the market value of the investment portfolio was approximately \$26 billion.

Processes; Improve Reporting Processes; Develop Efficient and Effective Workforce; Improve Legal Processes; Improve Internal Controls; Strengthen Information Technology Resources; and Enhance External Communications.

As part of the strategic initiative to improve its internal controls, the Commission undertook this risk assessment and strategic analysis to identify areas of risk in light of its operations and investment activities. In connection with the aforementioned strategic assessment, this report provides recommendations for the Commission to consider for implementing additional policies, processes, systems, and resources to mitigate the identified risks to the Commission.

Assessment Overview

The Commission engaged Deloitte & Touche LLP (“Deloitte & Touche”, “we”, or “us”) under the terms of the agreement for Investment Risk Management/Assessment Consulting Services dated June 6, 2011 (the “Agreement”) to, among other things, conduct a strategic assessment of the Commission’s governance structure and to assist the Commission in developing an internal audit program. In connection with conducting the strategic assessment, we segmented the Commission into the following seven functional areas:

- Investment Management
- Legal
- Compliance
- Risk Management
- Operations
- Technology
- Internal Audit

Across each of the functional areas, we assessed the infrastructure (i.e., people, process and technology) that the Commission has put in place to fulfill its mission, achieve its strategic and investment objectives, and mitigate the risks associated with its investment operations and activities. The assessment involved the following analysis.

- **People:** Developing an understanding of (i) the organizational structure and functional teams, (ii) the collective roles and responsibilities across the organization, and (iii) the skill set of the various professionals responsible governing, managing and performing the day-to-day activities and operations of the Commission.
- **Process:** Assessing the business processes (including supporting documentation such as governance policies, policy manuals, and due diligence guidelines), approval mechanisms, reporting controls, and ongoing monitoring procedures (i.e., the overall system of controls) associated with managing and overseeing the plan assets.
- **Technology:** Assessing the systems, applications, and tools in place to support and facilitate the Commission’s operations and investment management activities.

Based on the above-described analysis of the three infrastructure elements, we identified a number of inherent risks related to the Commission’s management of the plan assets, reviewed the risk areas identified with the Commission, and provided an estimated residual risk rating for risk areas identified according to the below scale.⁶

- **High Residual Risk:** Missing policies, control activities and/or systems in place
- ◐ **Medium Residual Risk:** Opportunities for improving or enhancing one or all of the three infrastructure elements
- **Low Residual Risk:** Areas where controls and risk mitigation strategies are consistent with adopted policies or our understanding of leading practices

Summary of Estimated Risk Levels

The following table summarizes the assessment ratings for each of the identified risk areas.⁷ Additional details regarding specific inherent risks, recommendations with regard to any related risk mitigation strategies, and assessment rating for the identified risks can be found under the Risk Analysis section below.

Inherent Risk Areas	Estimated Risk Level
1. Data Management, Reporting, and Technology	●
2. External Manager Oversight	●
3. Risk and Compliance Programs	●
4. Internal Control Design and Effectiveness	◐
5. Service Provider Oversight	●
6. Internal Communication and Coordination	●

⁶ The *inherent risk* is the intrinsic exposure or vulnerability associated with or arising from the management of the plan assets in the absence of any controls. The *residual risk* is the exposure or vulnerability remaining after taking into consideration the efficacy of the controls put in place to manage and mitigate the inherent risks.

⁷ To assess the estimated risk level based on the parameters set forth by the Commission, we met with various individuals across the functional areas to gain and understanding of the control infrastructure (i.e., people, process and technology) in place to manage and mitigate the identified inherent risks. We did not perform any testing to confirm the accuracy of the information provided by the Commission or assess the operating effectiveness of the control activities.

Inherent Risk Areas	Estimated Risk Level
7. Key Person	●
8. Talent Management: Staffing, Recruiting, Retention and Training	◐
9. Financial Statement Risk	●
10. Legal Risk	◐
11. Portfolio Risk	◐

Summary of Priority Recommendations

We would recommend that the Commission consider undertaking the following measures to address what could be considered its more immediate needs and risk areas:

- **Establish an internal technology function and enhance reporting capabilities.** As a preliminary step to establishing an internal technology function, the Commission should consider evaluating its current data and information sources, technology platforms, systems and applications, and reporting requirements. Thereafter, the Commission should consider looking to implement a technology system/solution to support and facilitate its portfolio management, reporting, and data processing needs. To support and facilitate the development of the technology function, the Commission should hire a Director of Information Technology, as well as other technology resources. See **Recommendations A, B, and C** for additional details.
- **Improve cross-functional communications and organizational structure.** In an effort to foster better communications and cross-functional understanding of the organization, the Commission should consider looking to develop and/or enhance formal operating policies and procedures, as well as formal job descriptions that define the specific roles and responsibilities of the various professionals throughout the Commission. See **Recommendations O and P** for additional details.
- **Develop a succession/talent management plan.** In connection with developing a plan to manage staffing, recruiting, retention and training of Commission personnel, the Commission should identify those individuals that perform mission critical roles throughout the organization, determine the core competencies and skills necessary to perform their roles and responsibilities, establish clear performance objectives, and provide necessary training to further their career development. In addition, the Commission should consider looking to establish a compensation policy commensurate with performance and increasing responsibilities. See **Recommendations Q and R** for additional details.

- **Expand and implement standard due diligence processes and practices.** The operational and technology infrastructures are important components to an investment manager’s business model and investment activities. Accordingly, any initial or ongoing due diligence of an investment manager should include an assessment of not only the investment processes, but also the operational environment and technology architecture, platforms and systems in place to support and facilitate the investment manager’s investment activities. The Commission should consider looking to develop (or hire) operations and technology resources to supplement the investments due diligence performed by the investments team. See **Recommendations D, E, and F** for additional details.
- **Develop a compliance function.** A compliance function is fundamental to any organization’s overall governance structure, and the organization’s day-to-day efforts to monitor and enforce compliance with internal policies, regulations or laws. To enhance and improve the Commission’s system of internal controls and compliance environment, the Commission should consider looking to hire a dedicated compliance resource to support the Director of Internal Audit and Compliance and define a compliance program, including compliance processes, activities and trainings. See **Recommendations I and J** for additional details.

Project Approach

As previously mentioned, to facilitate the strategic assessment, we segmented the Commission into seven functional areas. Within each functional area, we met with those individuals responsible for managing, supervising or directing the area to gain an understanding of the Commission’s strategic objectives and investment operations (see Appendix A for a list of individuals with whom we met and interviewed). To further our understanding of the Commission’s operations and business functions, we requested and read documents related to the Commission’s governance structure and conducted process/control walk-throughs with the individuals responsible for performing the day-to-day operational activities related to the management of the plan assets (see Appendix B for a list of documents read in connection with conducting the strategic assessment). In addition, we analyzed the technology infrastructure (i.e., systems, applications and tools) in place to support and facilitate the investment activities of the Commission.

Based on our understanding of the above, we undertook the following activities:

- Identified inherent risks associated with the Commission’s investment operations
- Assessed the risk and control activities (i.e., control infrastructure) in place to manage and mitigate the inherent risks
- Assigned risk ratings based upon the parameters set forth by the Commission, as they relate to the risk and control activities performed by the various individuals across each of the functional areas
- Assisted the Commission prioritize the risks and risk mitigation strategies for Consideration by the Commission within their strategic planning

The following strategic assessment report sets out our recommendations and related implementation plan (see Appendix C for the Implementation Plan) that the Commission may wish to consider as it continues with its efforts to pursue its strategic goals and initiatives as set forth in the RSIC Strategic Plan, July 1, 2009 – June 30, 2012 (the “Strategic Plan”).

Cross-Functional Risk Analysis

The following tables outline the inherent risk areas considered within this assessment, the risk and control activities currently in place within the Commission’s operations to mitigate these risks, estimated risk level (i.e., assessment rating) with regard to the risk present within each risk area, and recommendations for the Commission’s consideration to reduce risks within each of the areas.

Inherent Risk Areas and Examples	Risk and Control Activities Currently in Place	Estimated Risk Level
<p>1. Data Management, Reporting, and Technology:</p> <p>An investment management firm’s ability to store, analyze, and report on enterprise-wide data is a key tool in managing both the investment and operational risk of the organization. Examples of risks associated with incomplete data management and technology programs include, but are not limited to:</p> <ul style="list-style-type: none"> • Loss or undetected corruption of key data • Reporting errors due to inaccurate or incomplete data • Incorrect calculations used within offline or manual reporting tools • Inconsistent source data or inputs used in reporting • Delayed access to essential information for staff • Non-standardized processing activities due to insufficient technology support • Workflow inefficiencies and limited transparency for management into processing activities 	<ul style="list-style-type: none"> • SCRS technology staff supports the Commission’s operations and administers a disaster recovery program. • The Commission stores portfolio and operational data on shared network drives and backs up this information on a nightly basis. • The Commission has identified a resource within the operations group to begin reviewing the Microsoft Excel (“Excel”) based reporting tools used across the organization and identifying potential improvement areas. 	<p>● (High)</p>
<p>Recommendations:</p> <p>A. Technology Support and Resources: The Commission may wish to consider implementing an internal technology function. In connection with administering an internal technology function, the Commission should evaluate the additional resources necessary to assume the technology support currently provided by SCRS.</p> <p>To start, the Commission should consider hiring a Director of Information Technology (“IT Director”) to begin working with SCRS’s technology</p>		

staff to inventory the work performed by SCRS on behalf of the Commission, and begin drafting a future state plan to move the technology support function away from SCRS and to the Commission.

After establishing the transition plan, a longer term goal would be to hire additional staff—possibly one to two technology resources—to execute on transitioning the technology infrastructure from SCRS. The additional technology resources could have the following responsibilities:

- Applications manager – This resource would be responsible for managing the Commission’s software platforms and data connectivity with service providers. This role should be staffed by a more senior resource that has experience in managing vendor applications and success in managing data interfaces and enterprise-wide software installations and upgrades.
- Desktop support and infrastructure lead – This resource would be responsible for the day-to-day technology support such as internet connectivity, personal computers, network security, network capacity and backups, server maintenance, and other general desktop support needs. **Note:** This may be a staff level position.

As the Commission may require additional software platforms to effectively manage its business (*as outlined below under **Recommendation B: Technology Platforms and Data Management***), additional resources may be required as the number of software platforms used or the amount of connectivity and integration increases.

This recommendation may be used to support the Strategic Plan initiative: “X. Strengthen Information Technology Resources.”

- B. **Technology Platforms and Data Management:** Currently, the Commission utilizes a legacy South Carolina Treasurer’s Office application, QED, within its operations. This application supports a small percentage of the portfolio assets (e.g., direct investments in fixed income securities and cash activity). The Commission manages the other portfolio assets using the custodian’s systems and reporting tools, Excel spreadsheets, and other service provider and strategic partner platforms. For recordkeeping purposes, all portfolio investments are posted to the custodian’s systems.

For private market investments and assets held within Strategic Partnerships, however, the information posted to the custodian is limited to a summary line item used as a placeholder for the investment. This results in portfolio data being sourced from multiple locations and consolidated within Excel spreadsheets to provide complex portfolio reporting such as risk and liquidity analytics.

The Commission should consider undergoing an in-depth assessment of its technology platforms and data management framework. This assessment should include a current state inventory of the applications and Excel spreadsheets used across the business, the definition of firm-wide technology requirements, and determination of a plan for addressing the Commission’s needs from a technology perspective going forward.

The types of solutions the Commission may want to consider are:

- Centralized data repositories
- Client relationship management systems
- Portfolio management and risk/compliance reporting platforms
- Investment decision support tools
- Compliance systems
- Document management systems

Utilizing the tools above may help the Commission develop a single consolidated source of portfolio data and manager information to enhance internal reporting capabilities, serve as a control point to reconcile against service provider information, and help improve cross functional communications and efficiency.

This recommendation may be used to support the Strategic Plan initiative: “IV. Improve Reporting Processes.”

- C. **Document and Records Retention:** The Commission should consider developing standardized document management practices and systems to facilitate document maintenance, retention and centralization.

To achieve this objective, the Commission should consider developing a formal document retention policy to manage its documentation, including service level agreements (“SLAs”), investment management agreements (“IMAs”), and other contracts or documents related to the Commission’s investment operations. The policy should include procedures relating to records retention and destruction, procedures for ensuring approval of all outgoing documents, evaluating ongoing compliance with requirements and safeguarding sensitive records. Additionally, the Commission should seek to set forth standard protocols related to documentation format, storage location, access privileges, and information sharing.

Concurrently with adopting a formal policy and standard protocol for document management, the Commission may wish to consider implementing a document management system *(as outlined above in **Recommendation B: Technology Platforms and Data Management**)*.

Inherent Risk Areas and Examples	Risk and Control Activities Currently in Place	Estimated Risk Level
<p>2. External Manager Oversight:</p> <p>Comprehensive and ongoing investment manager selection and oversight programs can be valuable risk mitigation tools. These programs allow firms to proactively identify issues with one of their investment managers prior to an initial investment being made or an issue occurring.</p> <p>Examples of risk areas associated with external managers include, but are not limited to:</p> <ul style="list-style-type: none"> • Valuation policies and the non-compliance of operating practices to those policies • The counterparties and service providers used by the external manager (custodian, administrator, prime broker, valuation agent, outsourced Compliance provider, etc.) • Incomplete oversight activities (e.g., audit reports not submitted directly to a board, or insufficient reporting by the Chief Compliance Officer (“CCO”) to the board) • Style drift and/or non-compliance with stated portfolio mandates and strategies • Incorrect fees charged by the manager <p>Note: The Commission’s Strategic Partnership investments were considered within this assessment and are included within the risk analysis and recommendations for this section.</p>	<ul style="list-style-type: none"> • The Commission has a formal approval process in place for new investments whereby new managers require approval by the Investment Committee prior to negotiations beginning with the manager. Note: This approval process does not apply to investments made within a pre-approved Strategic Partnership; however, those investments are reviewed and approved by an investment committee within each partnership. The investment committee for each partnership includes RSIC and Strategic Partner members. • The Commission is in the process of rolling out due diligence guidelines and formally adopting the new practices across all asset classes for evaluating new managers prior to an initial investment. Note: When completed, the Commission may evaluate the effectiveness of these guidelines for ongoing manager oversight. • The head of each asset class or Strategic Partnership is responsible for conducting ongoing ad-hoc analysis of their portfolio and the risks associated with the existing investments. These ad-hoc reviews may include reviews of reporting provided by the manager, market analysis, and periodic conference calls 	<p style="text-align: center;">● (High)</p>

with managers.

- SCRS operations staff reviews the management fee invoices received and reconciles the fees charged to the IMAs or similar contractual agreements to confirm the fees are correct prior to paying the invoice. **Note:** SCRS performs the reconciliation only for those managers that invoice the Commission. SCRS does not review management fees for managers that withdraw the fees directly from the Commission’s accounts.

Recommendations:

D. **New Manager Selection:** The Commission does not have a standardized due diligence process across asset classes and the current processes do not appear to include a complete operational and technology risk assessment of each manager. When selecting an external manager, it is our understanding that a common leading practice is to evaluate the operational controls of a manager, the service providers they are using, the oversight programs they have for controlling the activities of those providers, and the disaster recovery or business continuity planning they have in place.

The Commission should consider expanding its existing due diligence practices to include a complete operational and technology review of new managers and Strategic Partnerships. Examples of additional items for consideration when implementing these practices may include, but are not limited to:

- Assessing the manager’s valuation policy, confirming that the policy is in line with leading practices across peer firms, and meeting with operations and administration staff (internal or third party) to determine if the valuations performed as part of the net asset value (“NAV”) process or portfolio valuation process conform to the stated policy.
- Identifying and documenting the manager’s trading counterparties and custodians and the process they have for tracking and managing counterparty exposure.
- Assessing the manager’s risk management, service provider oversight, and disaster recovery or business continuity planning in place, and requesting examples for each program and/or category.

- Assessing historical performance information and discussing any changes in strategy or portfolio composition during the periods provided. The historical performance should also be compared to peer-firms, as well as to benchmarks. This may identify a manager with positive returns in a specific strategy, but underperforming its peers employing the same strategy. An example would be a distressed manager who is outperforming the market and a high-yield index, but not performing as well as other distressed debt managers of similar size.
- Requesting samples of the investor reporting provided and discussing any additional data needs of the Commission.
- Developing a scorecard for each manager or Strategic Partnership and including the investment management and operational categories assessed.

This recommendation may be used to support the Strategic Plan initiative: “III. Improve and Standardize Due Diligence Process.”

- E. **Develop Standardized Terms and Conditions, Data Request Lists, and Contact Lists:** To help identify potential challenges in connection with onboarding external managers and streamlining the negotiation and implementation process, the Commission should consider creating standard term and condition sheets, information request lists outlining the reporting and data required from the manager, and standard contact lists (potentially utilizing general mailboxes for consistency) to expedite the implementation process. This process may also help to identify potential issues with a manager earlier in the negotiation process.
- F. **Ongoing Manager Oversight:** The Commission does not have documented policies and procedures in place for ongoing manager or Strategic Partner oversight. The head of each asset class performs ad-hoc reviews of the manager’s performance, quarterly conference calls, and periodic surveys sent to managers. The Commission’s Investment Committee should consider implementing a more structured program for ongoing manager oversight across all asset classes and the Commission’s Strategic Partnerships.

This program should mirror the initial manager due diligence assessment and could also include the following measures:

- Monitoring for style drift, and identify the asset types or sectors contributing to the performance of the investment
- Analysis of counterparty, country, sector, currency, and strategy exposure whenever available
- Analysis of concentration within the portfolio if investment level details are available
- Assessment of the leverage model employed within the fund or account, and review the risk mitigation strategies in place
- Assessment of any changes in service providers, key staff, operational processes, and/or systems, and the impact of these changes on the investment
- Assessment of investment activity and portfolio exposure to confirm adherence to the Commission’s mandates (if applicable)
- Reconciliation of manager fees for each period to the provisions within the IMAs or similar agreement

- Documentation of the results of each periodic manager review for future reference and analysis
(Note: This corresponds to Recommendation B: Technology Platforms and Data Management)
- Development of a policy for evaluating managers in an ongoing manner *(similar to the balanced scorecard recommendation in Recommendation D: New Manager Selection)*, and outline a scoring matrix to identify when an investment with a manager should be re-evaluated or discontinued.

This recommendation may be used to support the Strategic Plan initiatives: “I.B. Standardize and Reconstitute Strategic Partnership Model, I.D Develop and Implement Risk Management Process, and I.E. Implement Investment Policy Compliance Monitoring System.”

Inherent Risk Areas and Examples	Risk and Control Activities Currently in Place	Estimated Risk Level
<p>3. Risk and Compliance Programs:</p> <p>Effective risk and compliance functions may proactively identify potential risk areas, and implement solutions prior to an issue arising. The risk function may serve as a support role to the investment management team by reviewing the investment activities for portfolio risks, and the compliance function can assist the firm in adhering to stated investment and operational policies.</p> <p>The risk and compliance functions may also serve as key resources when conducting evaluations of service providers and external managers to identify potential risk areas associated with managing assets on behalf of the Commission.</p>	<ul style="list-style-type: none"> The Commission is governed by the South Carolina Constitution and South Carolina Statutes, which include ethics provisions. The Commission staff informally monitors compliance with the constitutional mandates and ethics provisions. The Commission currently has in place one risk management resource to monitor portfolio and operational risks. 	<p style="text-align: center;">● (High)</p>
<p>Recommendations:</p> <p>G. Risk Management Resource: In its efforts to increase the number of risk management resources, the Commission has proposed structuring a Risk Management and Analytics team with one Director and one Senior Officer. As an alternative to this solution, the Commission may want to consider structuring the department with three positions. Specifically, these positions may include:</p> <ul style="list-style-type: none"> Director of Risk Management to serve as the overall manager of the group, and work with the Commission’s CIO to define the risk management framework for the Commission Portfolio Analyst to assist the investment management team in monitoring portfolio risk Performance Analyst to conduct ongoing reviews of the portfolio performance, operational risk, and service providers <p>The Commission should assess and evaluate the understanding of risk and risk management practices across the organization and develop an internal training program (or a training program facilitated by an external party) to provide a cross-functional view of risk and the Commission’s risk management practices. The Commission may also want to work with an outside consultant to develop a strategic plan targeted at identifying and recruiting risk management professionals. The strategic plan may include creative incentive packages such as remote working arrangements, accelerated career paths, and other benefits.</p>		

This recommendation may be used to support the Strategic Plan initiative: “V. Develop an Efficient and Effective Workforce.”

H. **Risk Management Policies and Oversight:** The Commission should consider developing a formal risk management policy. This policy should document and outline the Commission’s risk management objectives and define a framework for the newly developed risk management program and functional team under consideration. Next, the Commission should consider developing and maintaining a standard risk reporting package or implementing a risk reporting system ***(As noted within Recommendation B: Technology Platforms and Data Management)***. Some suggested focus areas for consideration when defining the firm-wide risk reporting framework are:

- **Portfolio and Investment Risk:**

- Variations to the Annual Investment Plan (“AIP”)
- Portfolio Value at Risk (“VAR”) or a reasonable estimate
- Firm-wide counterparty exposure for the swap overlay program and portfolio investments (wherever available)
- Liquidity terms for existing investments and future cash requirements (Note: The existing ***Liquidity Report*** used by the Commission does not include the liquidity terms of each investment or a summary for each asset class)
- Leverage across the portfolio including both the swap overlay program and the individual portfolio investments (wherever accurate data is available)
- Ratings information (or estimates) for fixed income investments and portfolios
- The methodologies and valuations of private market assets

- **Portfolio Performance, Operational, and Service Provider Risk:**

- Consistency of calculation methodologies used for reporting performance across asset classes and the Strategic Partnerships
- Any pricing exceptions that are identified within the performance reporting process (e.g., changes that exceed pre-defined tolerance levels)
- Data management and security across the Commission’s operations
- Quality of source data, timeliness, and accuracy of the Commission’s internal and external reporting
- Timeliness and accuracy of service provider reporting
- Service provider’s adherence to pre-defined service levels and SLAs

This recommendation may be used to support the Strategic Plan initiatives: “I.D Develop and Implement Risk Management Process and I.E. Implement Investment Policy Compliance Monitoring System.”

I. **Compliance Resource:** The Commission is looking to hire a Director of Internal Audit and Compliance to provide oversight for a newly formed

Internal Audit and Compliance function. As these functions are traditionally not combined, an alternative approach may be to combine the Compliance function with the Risk function. A combined Compliance and Risk function could support the Director of Internal Audit in developing a risk-based approach to assessing the Commission's control infrastructure.

This recommendation may be used to support the Strategic Plan initiative: "V. Develop an Efficient and Effective Workforce."

J. **Development of a Compliance Function:** The following is a list of recommendations for consideration as the Commission begins to implement a Compliance program:

- Hire a dedicated compliance resource that will be responsible for the oversight of the compliance function
- Define a compliance program, including compliance processes, activities, and training. Compliance activities may include collaboration with other State Agencies, compliance monitoring of IMA guidelines, and other reviews of compliance-related matters
- Develop compliance policies and procedure specific to monitoring, surveillance, and enforcement of stated compliance policies
- Develop a process to communicate policies and procedures to Commission professionals and provide training as necessary
- Develop a sanctions policy and enforcement mechanism
- Develop a process to oversee third parties' adherence to compliance policies whenever applicable

This recommendation may be used to support the Strategic Plan initiatives: "I.D Develop and Implement Risk Management Process and I.E. Implement Investment Policy Compliance Monitoring System."

Inherent Risk Areas and Examples	Risk and Control Activities Currently in Place	Estimated Risk Level
<p>4. Internal Control Design and Effectiveness</p> <p>Internal controls can be a valuable tool for managing risk across an organization. The definition of control activities, frequent performance of those activities, and a pre-defined program for escalating any issues detected are core components of an effective internal controls framework.</p> <p>Deployment of internal audit resources to assist in testing the quality and effectiveness of the controls in place is also necessary to continually improve and refine an organization’s control infrastructure.</p> <p>Some of the common key risks associated with inadequate internal control frameworks include:</p> <ul style="list-style-type: none"> • Lack of management insight into operational issues or inefficiencies • Corrupted or inaccurate data utilized in internal or external reporting • Undetected errors in reporting content or creation • Unintended release of confidential information • Unauthorized access to information • Incomplete evaluation of risk levels across the firm or its investment portfolios 	<ul style="list-style-type: none"> • The following is a list of operational controls currently in place at the Commission: <ul style="list-style-type: none"> – Daily reconciliations of the Commission’s cash balances on the QED system to the custodian bank’s balances. Note: These reconciliations do not include the cash balances associated with the Strategic Partnerships. – Monthly reconciliations of the Commission’s direct investment activity (short term fixed income securities only) between the QED system and BNYM. This reconciliation includes the par value, cost, accrued interest, and current market value. – The SCRS operations team performs a monthly reconciliation of the positions and market values on file at BNYM to the investor statements received from the external investment managers. – Outgoing cash wires from the investment accounts held at BNYM require one authorized signatory. The Commission’s operations staff obtains the signature, and faxes the request to BNYM for processing. BNYM has a copy of all authorized signatures and reviews the signature for 	<p style="text-align: center;">● (Medium)</p>

	<p>accuracy prior to processing the wire.</p> <ul style="list-style-type: none"> – Outgoing payments and checks from the Plan general and investor-related accounts at Wachovia require two signatures. The SCRS and the Commission operations groups obtain the signatures and fax confirmations to Wachovia. Wachovia has a copy of all authorized signatures and reviews the signature for accuracy prior to processing the payment. • The Commission is in the process of developing an Internal Audit and Compliance function. Note: This initiative is not yet complete, and there are not currently any internal controls reviews or testing programs in place. 	
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Recommendations:

K. **Internal Audit Resourcing:** The Commission is in the process of implementing an Internal Audit and Compliance function and has defined an Audit Committee to oversee this function. In connection with implementing this function, the Commission should look to develop a risk-based internal audit program that takes into consideration the following factors:

- The overarching governance structure, including the policies and procedures, oversight committees, and management team
- The individuals responsible for implementing the governance structure and system of controls, including approval mechanisms, control processes and reporting controls
- The operations, compliance and technology infrastructures in place to support the Commission’s investment operations
- The control environments of the external investment managers managing plan assets on behalf of the Commission

In addition to a risk-based internal audit program, the Commission should look to develop a formal risk framework that includes protocols for identifying risks across the functional areas, developing testing procedures, developing a risk response strategy, and assigning risk owners and anticipated completion dates to the action/response items.

This recommendation may be used to support the Strategic Plan initiative: “IX. Improve Internal Controls.”

L. **Control Infrastructure:** The Commission does not have a formal process in place for management to oversee its system of internal controls. In addition, the Commission does not have a process to identify and escalate out-of-balance (i.e., exception) items to management. These processing steps are key components of an effective control infrastructure. The Commission should consider defining, documenting, and implementing an internal controls framework with the following items:

- Inventory of cross-functional controls performed throughout the Commission
- Defined performance frequency of each control activity
- Defined thresholds or metrics for out-of-balance items that can be resolved by staff without management notification and the cases where management is to be notified
- Documentation standard to evidence performance and success of the controls

This recommendation may be used to support the Strategic Plan initiative: “IX. Improve Internal Controls.”

M. **Additional Controls for Consideration:** The following are some potential controls identified that the Commission may want to consider implementing within its operations.

- Reconciliation of the management fees charged by investment managers and netted against account balances
- Creation and review of a monthly price tolerance report to identify significant changes in asset valuations and stale prices
- Review of the fees and expenses associated with the Commission’s equity swap overlay program with Russell Investments (“Russell”)
- Review of the fees and expenses associated with the securities lending and repurchase agreements activity conducted by BNYM on behalf of the Commission
- Creation and monthly review of a report (or tracking spreadsheet) to identify the total committed capital and the current unfunded amounts within private equity investments, Strategic Partnerships, and other private market investments
- Monthly review of the distributions received from investment managers to confirm the taxable status of the distributions, and confirm the accuracy of the amounts

This recommendation may be used to support the Strategic Plan initiative: “IX. Improve Internal Controls.”

Inherent Risk Areas and Examples	Risk and Control Activities Currently in Place	Estimated Risk Level
<p>5. Service Provider Oversight:</p> <p>The use of service providers can reduce costs, improve efficiency, and add scale to an investment manager’s operations. However, in order to mitigate risk and maximize the effectiveness of service providers, a firm should employ a comprehensive and detailed framework for evaluating the performance of its service providers.</p> <p>This framework can help prevent operational errors, inefficient processing activities, and unauthorized transfers of information by a service provider.</p>	<ul style="list-style-type: none"> The Commission has several informal and undocumented reviews conducted by staff related to the oversight of the Commission’s service providers. 	<p style="text-align: center;">● (High)</p>
<p>Recommendations:</p> <p>N. Service Provider Oversight: The Commission should consider implementing a formal service provider oversight program to monitor the activities performed by its service providers. When developing a formal service provide oversight program, the Commission should consider the following actions:</p> <ul style="list-style-type: none"> Creating a document repository or database with access to the service level agreements (“SLAs”) or scope of services documentation for each service provider Assigning ownership of each service provider to a specific individual within the operations area Educating staff on its vendor management responsibilities Establishing a dashboard to provide a consistent monitoring tool across the service provider relationships and a document retention protocol (e.g., format, naming convention, storage location) Defining service guidelines and performance metrics (e.g., key performance indicators (“KPIs”) for each service provider) Establishing a frequency for evaluating each of the service providers Designating a reporting timeframe and format for presenting results of the service provide oversight program to management Identifying any audit or control testing to be performed on the services or reporting provided by the Risk, Compliance and/or Internal Audit staff <p><i>This recommendation may be used to support the Strategic Plan initiative: “IX. Improve Internal Controls.”</i></p>		

Inherent Risk Areas and Examples	Risk and Control Activities Currently in Place	Estimated Risk Level
<p>6. Internal Communication and Coordination:</p> <p>The structural stability of an organization, as well as clearly defined cross-functional workflows, responsibilities, and deliverables, may help a firm become more efficient and effective.</p> <p>Increased operational risk can occur when these items are not present within a firm. The morale of a firm can also be negatively impacted as the different functional areas do not have a clear understanding of their responsibilities, the responsibilities of others, and the goals of the organization.</p>	<ul style="list-style-type: none"> Note: Within the assessment, there were not any documented operational workflows or cross functional roles and responsibilities identified. It was also noted, that the organization had undergone several organizational changes, and the daily roles and responsibilities of staff members had fluctuated over the past eighteen to twenty-four months. 	<p style="text-align: center;">● (High)</p>
<p>Recommendations:</p> <p>O. Workflow and Process Documentation: The Commission should consider documenting formal operating policies and procedures across the organization. To achieve this, the Commission should consider undertaking the following measures:</p> <ul style="list-style-type: none"> Identify an agreed-upon format for policies and procedures List of activities for which each functional area is responsible Assign an owner for each documented policy/procedure Ask the owners to document the step-by-step actions and tools required to complete each activity they have been assigned Create a cross-functional review work group to review, edit, and approve the documented policies and procedures Define a management review and approval process for the consolidated policies and procedures manual Store the completed policies and procedures manual in a centralized and easily accessible location Create a review schedule to ensure policies and procedures manual stay current Update policies and procedures manual as needed (i.e. “living document”) Mandate that departing employees update their responsible policies and procedures manual before departure from the Commission Utilize the policies and procedures manual when on-boarding and training new employees <p><i>This recommendation can be used to support the existing Strategic Plan initiative: “V. Develop an Efficient and Effective Workforce.”</i></p>		

P. **Roles and Responsibilities Documentation:** The Commission should consider enhancing the documentation regarding the roles and responsibilities of each employee across the organization. To achieve this, the Commission should consider undertaking the following measures:

- Identify an agreed-upon format for documenting the roles and responsibilities of each employee
- Assign each employee the task of updating and documenting his or her daily activities, special projects, and key performance indicators and measures (this information may serve as the basis for position descriptions and documentation of roles and responsibilities)
- Assign a cross-functional mentor for each staff member to consult when documenting their roles and responsibilities
- Develop a review and approval process for each functional area
- Create a centralized location for storing the documentation
- Incorporate the documented roles and responsibilities and success criteria or performance metrics (once approved by management) into the yearly performance review process for each employee

This recommendation may be used to support the Strategic Plan initiative: “V. Develop an Efficient and Effective Workforce.”

Inherent Risk Areas and Examples	Risk and Control Activities Currently in Place	Estimated Risk Level
<p>7. Key Person:</p> <p>It is common for “small” organizations with limited resources to rely on key employees to perform mission critical tasks. However, there is risk to the organization if it does not have a clearly defined framework in place to support and backup the key employees. Items such as clearly defined roles and responsibilities, cross-training of staff, and documented policies and procedures can help to mitigate key person risk.</p> <p>Managing key person risk across front office functions can be more complex for firms with diverse and complex portfolios such as the Commission, and proactive steps to address this risk are important to maintaining the long-term success of the organization.</p>	<ul style="list-style-type: none"> There is an informal cross-training program in place within the operations group, and several investment professionals are familiar with the functional responsibilities of other staff; however, the Commission does not have a formal succession plan or cross-training activities documented and reviewed. 	<p style="text-align: center;">● (High)</p>
<p>Recommendations:</p> <p>Q. Key Person Risk: The Commission should consider developing a formal succession plan to manage key and mission critical positions (e.g., the CIO) necessary to fulfill the Commission’s strategic objectives, including investment and portfolio initiatives. In connection with developing a succession plan, the Commission should consider undertaking the following measures:</p> <ul style="list-style-type: none"> Provide cross-training for the operational staff, and identify a backup for each position, with the backup stepping in to perform the activities they support at least semi-annually Define competencies and skills necessary for managing the plan assets and operating the Commission Identify key roles for succession planning such as the CIO position and potential “successor” resources (e.g., recognized leaders, consistent high performers, and resources with specific technical skills), and determine responsibilities, qualifications, and capabilities Establish clear objectives and formulate a development plan and career track for successor resources, including opportunities to participate in external leadership and technical skills programs Establish a retention and compensation plan commensurate with increasing responsibilities and results-oriented performance measures Identify a member of the leadership/management team to work and communicate with the Investment Commissioners to direct, 		

manage, and monitor the succession planning efforts of the Commission

This recommendation may be used to support the Strategic Plan initiative: “V. Develop an Efficient and Effective Workforce.”

Inherent Risk Areas and Examples	Risk and Control Activities Currently in Place	Estimated Risk Level
<p>8. Talent Management: Staffing, Recruiting, Retention and Training:</p> <p>Employee turnover is a risk that impacts organizations of all sizes, large and small. Having clearly defined roles and responsibilities, a compensation policy and structure, tools to work with employees in defining performance goals, annual performance reviews to measure progress towards those goals, and defined metrics and capabilities necessary for career advancement can help an organization mitigate these risks.</p>	<ul style="list-style-type: none"> The Commission is currently undertaking an evaluation of its organizational structure and composition. In connection with the evaluation of its organizational structure, the Commission has received approval for 12 additional resources across the organization. The Commission recently instituted an Employee Performance Management System (“EPMS”) as a means to monitor employee progress with stated goals. 	<p style="text-align: center;">● (Medium)</p>
<p>Recommendations:</p> <p>R. Personnel/Talent Management and Communications: The Commission should seek to enhance the structure of the EPMS process. To institute consistency and accountability of the EPMS process, the Commission may want to consider developing a “Personnel/Human Resources (“HR”) Specialist” role dedicated to HR matters to manage the EPMS process. This individual would be responsible for ensuring the procedural stability of the program. In addition, the Commission should look to undertake an analysis and evaluation of the Commission’s organizational structure and talent model. This assessment should consider:</p> <ul style="list-style-type: none"> Aligning the Commission’s mission and strategic objectives to talent model Determining the full time employees (“FTEs”) required to support the Commission’s mission and strategic initiatives Establishing the skill set required for each of the Commission’s roles <p>Areas assessed should include: personnel policies, deployment of resources, recruiting and retention plan (including compensation model and incentive programs), and systems and tools for monitoring and measuring performance.</p> <p><i>This recommendation may be used to support the Strategic Plan initiative: “V. Develop an Efficient and Effective Workforce.”</i></p>		

Inherent Risk Areas and Examples	Risk and Control Activities Currently in Place	Estimated Risk Level
<p>9. Financial Statement Risk:</p> <p>The financial statements represent the complete financial picture of a portfolio at a given point in time. The accurate financial statements are critical to understanding the overall performance of the portfolio</p> <p>Common risks associated with the preparation of financial statements typically include:</p> <ul style="list-style-type: none"> • Incomplete or inaccurate data sources • Incorrect valuations of underlying assets • Errors in the posting of top-side adjustments • Issues with regard to consolidating sub-account information 	<ul style="list-style-type: none"> • SCRS is responsible for preparing the financial statements for the five specific pension plans managed by RSIC. This includes sourcing of the financial data from BNYM, preparing the financial statements, and managing the external audit process. RSIC performs a review of the financial statements; however, the Commission does not have a formal sign off process. 	<p style="text-align: center;">● (High)</p>
<p>Recommendations:</p> <p>S. Financial Statement Preparation and Oversight: The current outsourced model for the preparation of financial statements appears to have an elevated level of risk. The Commission does not have a pre-defined and structured cross-organization workflow for confirming the information used within the financial statements. In addition, the Commission does not have a formalized review and sign off process. As stated by RSIC, the external auditors engaged by SCRS to perform the financial statement audit have limited contact with the Commission. To mitigate the risk associated with the preparation of the financial statements, the Commission may wish to consider the following:</p> <ul style="list-style-type: none"> • Procedural enhancements to facilitate a joint SCRS-RSIC workflow that allows the Commission staff to be more involved with the preparation of the financial statements, including a formal review and sign off of the statements by the Commission prior to the release of the financial statements. This should include requests for structured and periodic communication with the external audit firm. • Preparation of the financial statements by the Commission would require the Commission to enhance its accounting capabilities to support the ongoing preparation of the financial statements. Assuming responsibility for the preparation of the financial statements would likely have a material cost impact for the Commission, as this would require the addition of multiple accounting resources, development of accounting policies and procedures, the selection and implementation of a general ledger accounting package (or a 		

portfolio management system with general ledger capabilities), and the sourcing of an external audit firm by RSIC to conduct the independent audit of the statements.

- **Outsourcing** of the accounting and administration functions. There are several third party administrators that provide back-office accounting and administration services for investment complexes, hedge funds, private equity firms, endowments, and pension plans. The Commission could utilize one of these firms to provide a complete back-office solution that includes accounting, administration, portfolio reporting, asset valuation, reconciliation and other operational functions. Given the Commission's current operational environment, this option could address several needs in a very cost-effective manner. Several of the administrators also provide tax support services for their accounting and administration clients.

This recommendation may be used to support the Strategic Plan initiatives: "IV. Improve the Reporting Process, IX. Improve Internal Controls, and XI. Enhance External Communications."

Inherent Risk Areas and Examples	Risk and Control Activities Currently in Place	Estimated Risk Level
<p>10. Legal Risk:</p> <p>The legal function within an organization typically provides internal counsel and support related to contractual matters, consultation and guidance pertaining to regulatory inquiries, and/or assistance with other legal matters. Errors within legal contracting and negotiations can be significant and result in considerable financial and reputational risk.</p>	<ul style="list-style-type: none"> The Commission currently has two and one-half Legal professionals. One attorney focuses on the investment management activities, and the other attorney is responsible for all other legal matters (e.g., HR policy matters). The third attorney on the Commission’s legal team is also responsible for overseeing the operations of the Commission under its current model. The Commission relies on outside counsel when necessary, and legal services provided by Strategic Partners as they pertain to the interests and investments within the Strategic Partnerships. 	<p style="text-align: center;">● (Medium)</p>
<p>Recommendations:</p> <p>T. Legal Resourcing and Organizational Structuring: The Commission indicated that the volume of investment activity, combined with the limited legal resources, results in significant delays in the negotiations of contracts and the implementation of new investments. The Commission should consider committing additional resources to its Legal function and structuring the function in the following manner.</p> <ul style="list-style-type: none"> Chief Legal Officer (“CLO”) to provide general oversight for the group and serve as an escalation point and final authority on legal matters. Two attorneys focused on supporting the investment team with the negotiation and execution of legal contracts related to the Commission’s investments (including the Strategic Partnerships) as well as the due diligence associated with the selection and monitoring of the Commission’s external investment managers. An attorney to focus on corporate governance and HR matters, as well as other administrative matters such as monitoring compliance with internal policies, statutory provisions, and internal trainings. 		

The Commission should seek to utilize existing resources where applicable and recruit additional resources where necessary with the skill sets to augment the Legal team.

This recommendation may be used to support the Strategic Plan initiative: “VIII .Improve the Legal Process.”

Inherent Risk Areas and Examples	Risk and Control Activities Currently in Place	Estimated Risk Level
<p>11. Portfolio and Market Risk:</p> <p>Common portfolio and market risks associated with investing in public and private market securities may include, but are not limited to:</p> <ul style="list-style-type: none"> • Exposure to markets, currencies, countries, exchanges, issuers securities, and counterparties (trading or custody) • Diversification across asset classes • Concentration within a portfolio of issuers, sectors, or asset classes • The probability of default for any investments • Liquidity of funds for redemption and sale, as well as future cash requirements • Leverage used within a portfolio, and the potential for loss <p>Note: Also considered within this assessment are the Strategic Partnerships used within the Commission portfolios. These partnerships are used as an implementation tool for private market investments in hedge fund vehicles, private equity fund structures, and other direct investments.</p>	<ul style="list-style-type: none"> • The Commission utilizes an Excel based Asset Allocation Tool to review existing asset class allocations and compare the allocations to the AIP. • The Commission uses an Excel based Liquidity Report to identify future cash outflows within the portfolio. Note: This report considers existing cash balances to fund the outflow requirements, and does not include the liquidity terms or availability of cash currently invested within the various asset classes. • A Strategic Partner, Goldman Sachs, provides a monthly portfolio level risk report utilizing data sourced from the Commission’s custodian BNYM. Note: This report is often provided on a 45 to 60 day delay, and may require manual manipulation and refinement once received by the Commission. • Investments made within a Strategic Partnership require unanimous approvals from the Investment Committee of the Strategic Partnership. These Investment Committees are comprised of one member from the Commission and one member from the strategic partner. 	<p style="text-align: center;">● (Medium)</p>

- For the equity swap overlay program administered by Russell, the Commission has delegated counterparty exposure tracking and reporting to Russell. **Note:** This counterparty exposure analysis conducted by Russell on behalf of the Commission is applicable only to the swap overlay program.
- The head of each asset class is responsible for conducting ongoing ad-hoc analysis of their portfolio and the risks associated with the existing investment vehicles.

Recommendations:

U. **Consolidated Investment Registry:** It is a common practice for investment management firms to have a single consolidated source of investment information and static data. The Commission may want to consolidate the static data for all investments and managers into a single location or data repository. Key data elements for consideration may include, but are not limited to:

- Investment name
- Investment approval amount or limits (if applicable)
- Parent organization or strategic partner
- Investment acquisition date
- Management fee and incentive fee terms and conditions
- Liquidity terms and or deadlines for redeeming funds
- Investment closing date or final redemption date
- Counterparties used by the investment manager
- Investor reporting or statement frequency
- Statement delivery cycle
- External Audit firm (if applicable)
- Portfolio management contact at the manager

- Operations contact at the manager

This consolidated data set can be contained within a data warehouse or a portfolio management, risk, or customer relationship management system. The data can then be used to support operational processing, due diligence requests, and other ongoing manager oversight activities.

This recommendation can be used to support the existing Strategic Plan initiative: “IV. Improve the Reporting Process.”

- V. **Integration of the Strategic Partnerships:** Currently, Strategic Partnerships are utilized as an implementation tool within the Commission’s investment management activities. The investments made within these relationships are managed by the Strategic Partnerships team, and although they are similar in nature to the other private market asset classes, the data and investment records are not integrated. The Commission should consider integrating the partnership assets with other similar investments in the Commission’s portfolios. This would likely result in the following enhancements to firm-wide portfolio reporting:

- Increased transparency into the individual investment performance within the partnerships
- Improved exposure reporting, as the individual investment data can identify sectors, issuers, or counterparties for each of the investments within the partnership
- Enhanced insight into the liquidity of funds allocated to the partnerships, as the investments within the partnerships may have a wide array of liquidity terms that would not be identified within summary level reporting
- Improved insight into the amount of leverage utilized within the partnership investments

This recommendation can be used to support the existing Strategic Plan initiative: “IB. Standardize and Reconstitute the Strategic Partnerships”

- W. **Increased Transparency Across Asset Classes:** The Commission relies on BNYM for consolidated portfolio reporting. This information includes detailed holdings level information for public market investments and separately managed accounts. BNYM, however, does not have access to information for private market and Strategic Partnership investments. These investments are shown as a single line item within the custodian’s systems and reporting provided to the Commission. The Commission should consider implementing data aggregation tools or a portfolio management system (***as noted within Recommendation B: Technology Platforms and Data Management***) to store and report on detailed investment level information whenever available. This data can then be used to track firm-wide exposure to sectors, issuers, and counterparties within portfolio management and risk reporting.

This recommendation can be used to support the existing Strategic Plan initiative: “IV. Improve the Reporting Process.”

- X. **Improved Portfolio Management Reporting:** Currently, the Commission leverages Excel based reporting tools for the reporting of asset class

allocations within the **Asset Allocation Tool** and liquidly within the **Liquidity Report**. These reports rely on manual data inputs, and are used within the investment decision-making process by the Investment Committee.

Excel based reporting may represent heightened levels of risk due to the manual input of data and management of formulas within the spreadsheets. The Commission may want to consider implementing a portfolio data warehouse or a portfolio management system to provide systematic support for the data processing and reporting needs of the Commission (*as outlined within Recommendation B: Technology Platforms and Data Management*).

This recommendation can be used to support the existing Strategic Plan initiative: “IV. Improve the Reporting Process.”

- Y. **Expanded Access to Market Data:** Expanded access to market data such as industry sector and asset class performance and benchmark information, and the technology platforms to store and report on the information may help improve the efficiency of the investment decision-making process. Greater access to information and the tools to electronically process that information can provide the investment management team with the infrastructure to more efficiently and effectively perform manager due diligence and ongoing oversight activities.

This recommendation can be used to support the existing Strategic Plan initiative: “IV. Improve the Reporting Process.”

- Z. **Investment Process:** Based on the investment process flow illustrated in the **2009 – 2012 Strategic Plan Update**, the Investment Commission reviews and approves the “traditional” investments and initial investments into Strategic Partnerships.⁸ As the Commission works to finalize the investment process, it should look to clearly establish the roles and responsibilities of the Internal Investment Committee and the Investment Commission, and the respective relationship Strategic Partnership Investment Committees. The Commission should look to:

- Establish a formal charter for the Investment Committee that specifically delineates its responsibilities
- Defined dollar limits, investment types, or other criteria that would trigger mandatory reviews and/or approval by the Investment Commission
- Include the Risk and Compliance functions as part of the Internal Investment Committee

This recommendation can be used to support the existing Strategic Plan initiative: “I. Execute Major Investment & Portfolio Initiatives.”

⁸ The Strategic Partnership Investment Committee reviews investments within the partnerships; sidecar investments go directly to the General Counsel or outside counsel for execution and closing without review and approval from either the Investment Commission or the Strategic Partnership Investment Committee.

Appendix A – Meeting and Interview Listing

South Carolina Retirement System Investment Commission

Individual	Functional Area/Title
Bob Borden	Chief Investment Officer
Robert Feinstein	Chief Operating Officer
Mike Addy	Liquidity/Cash Management
Dunkin Allison	Strategic Partnership
Geoff Berg	Global Equity
JP Boyd	Global Hedge Strategies
Harris Chewning	Strategic Partnerships
Dori Ditty	Legal & Policy Counsel
Brenda Gadson	Operations
Hershel Harper	Deputy Chief Investment Officer
Adam Jordan	Director of Planning, Budget and Policy
David King	Reporting
Dave Klauka	Private Equity
Doug Lybrand	Risk Management
Jared O'Connor	Strategic Partnerships
Nancy Shealy	General Counsel
David Philips	Global Hedge Strategies
Nicole Waites	Global FI/Credit

South Carolina Retirement System

Individual	Functional Area/Title
William Blume	SCRS
Tammy Nichols	SCRS
John Page	SCRS
Faith Wright	SCRS

Appendix B – Documents Read

Document	Description and/or Overview
2010 South Carolina Constitution	Subset of only sections “VI. Officers” and “X. Finance, Taxation, and Bonded Debt”
2010 South Carolina State Statutes	Title 8 - Public Officers and Employees, CHAPTER 13. ETHICS, GOVERNMENT ACCOUNTABILITY, AND CAMPAIGN REFORM, ARTICLE 1, GENERAL PROVISIONS
RSIC Governance Policies updated July 2010	Commission overview and roles and responsibilities
RSIC Strategic Plan for July 1, 2009 to June 30, 2012	Overview of the strategic initiatives, projects, and action items planned and underway for the Commission
RSIC Policy Statement 2009-01	Overview of procurement card policy for office supplies and items less than \$2,500
RSIC Policy Statement 2009-02	Overview of purchasing policy
RSIC Policy Statement 2009-03	Overview of travel expense policy
RSIC Policy Statement 2009-04	Overview of identification badge policy
RSIC Organization Chart	Transitional organization chart updated August 10, 2011
RSIC Performance Report as of March 31, 2011	Performance report
SCRS Disaster Recovery Plan	Plan overview, Windows recovery steps, and Unix recovery steps
SCRS Commvault DR Recovery and Media Explorer Install	Overview of the disaster recovery tool used by SCRS
SCRS Disaster Recovery Servers Listing	Listing of servers included within the disaster recovery program
SCRS Disaster Recovery Software and Tapes	Overview of software necessary to recover records and data
SCRS Production database restore	Overview of disaster recovery of ADADBAS production database
SCRS Restoring Windows Servers	Overview of server restore activities
BNYM Asset Servicing Statement of Controls Report	Overview of business activities and controls in place within the operations
BNYN Asset Servicing Statement of Controls Report	SAS70 report on controls
Independent Fiduciary Services Inc. Review of Operations and Accounting Infrastructure	Report in connection with Independent Fiduciary Services, Inc.’s October 2007 review of RSIC’s operations
RSIC Due Diligence Guidelines Updated 10/12/2010	Overview of due diligence guidelines

Appendix C – Preliminary Implementation Plan

The following preliminary implementation plan⁹ covers the five recommendations noted under the **Summary of Priority Recommendations** related to those areas that present the highest degree of risk to the Commission. The implementation plan does not cover all of the recommendations noted within this report. Moreover, we based the resource estimates (i.e., Full Time Equivalent—“FTEs”) on the below assumptions. Should the assumptions change, the FTE estimates would change accordingly.

Overall Assumptions:

- 1 FTE = 1,800 hrs.
- Work week = 40 hrs.
- The Commission will be responsible for making all management decisions.
- The implementation plan is an estimate based upon our understanding of the Commission’s current state operations and investment activities as of the conclusion of our field work (July 27, 2011). To the extent circumstances have changed since then (e.g., additional resources committed, change in workflows or new systems), the estimates may no longer be valid.

* * * * *

⁹ The implementation plan is considered “preliminary” insofar as it does not take into consideration any budgetary constraints, resource limitations, or input and approval from the Commission’s Audit Committee and/or Investment Committee.

Establish an Internal Technology Function and Enhance Reporting Capabilities

Assumptions:

- Should the Commission decide to move forward with establishing an internal technology function, the Commission will recruit and hire technology management and staff level resources. The below plan does not contemplate the hours involved with the recruiting and hiring of these resources.
- The focus of this plan is to assist the Commission in determining a technology strategy and the priority of various technology packages across the organization. The selection of specific software vendors and the implementation of any platforms related thereto is a subsequent activity.
- The Commission will continue to rely on SCRS for the preparation of the financial statements related to the plan assets.
- The plan does not include hours associated with implementing (or modifying) any business continuity/disaster recovery plans, which was not included within the scope of this strategic assessment.
- As the Commission identifies additional software platforms and systems within its technology strategy, the Commission may require additional information technology and applications personnel to support these applications.
- The below hours estimates includes time necessary for secondary reviews and final approvals by management. Estimated at 15% of the overall time to prepare and draft the strategy planning, procedures and/or protocols, as applicable.

Recommendation Links	Tasks and Activities	Estimated Hours	Estimated FTEs
A.	A.1. Determine and document the current technology framework and infrastructure, as well as the technology services provided by SCRS A.1.1. Document the existing network, desktop support tools, telecommunications, and other technology infrastructure services/support used by the Commission A.1.2. Inventory and document the software (including license terms) and the hardware used to host the applications A.1.3. Inventory and document the off-line/personal applications developed and used by various professionals throughout the organization	90	
A.	A.2. Develop a transition plan for migrating the existing technology infrastructure and support functions from SCRS to the Commission A.2.1. Identify new hardware acquisitions the Commission will need to make A.2.2. Determine and document which software licenses the Commission will need to	185	

Recommendation Links	Tasks and Activities	Estimated Hours	Estimated FTEs
	transition from SCRS and any new software licenses that the Commission will need to obtain A.2.3. Define and document network setup, administration, and security activities that the Commission will require to support the transition (if currently supported by SCRS)		
A.	A.3. Define and document technology roles and responsibilities for the resources that will support the newly created technology function Note: As technology platforms and systems are added to the RSIC operational infrastructure, the Commission may require additional technology staff.	45	
B.	B.1. Define and document the current state data and reporting needs across the organization—investments, legal, compliance, risk management, operations, internal audit and technology—to determine the following: B.2.1 Source data and data elements used within each report B.2.2. Controls in place to test the accuracy of the data used to generate the reports B.2.3. Practices in place to standardize information across asset classes, as well as the functional areas B.2.4. Data and report storage practices across the organization	275	
B.	B.2. Determine and document future state requirements and reporting needs: B.2.1. Identify and document data needs/dictionary for each asset class and functional area, including processes for collecting and compiling the data B.2.2. Define organization-wide reporting requirements to support the following activities: <ul style="list-style-type: none"> • Investment analysis and decision support activities to support the investment management team and the Investment Committee • Aggregation of portfolio information across asset classes for internal analysis • Internal portfolio reconciliation and reviews of service provider data to support the operations staff • Performance and testing of operational controls to support the internal audit, risk, and compliance functions 	140	

Recommendation Links	Tasks and Activities	Estimated Hours	Estimated FTEs
	<ul style="list-style-type: none"> • Risk reviews and compliance monitoring by the risk and compliance groups, respectively • Generating management and external reporting <p>B.2.3. Define cross-functional information flows and data interdependencies across the organization</p> <p>B.2.4. Define and document systematic processing and data storage requirements necessary to support the Commission’s operations and investment activities</p>		
B.	<p>B.3. Perform a gap analysis of current state processing activities to future state requirements, and identify current reporting gaps and areas for improvement based upon the results of the gap analysis and leading industry practices</p> <p>B.3.1. Review gaps noted within the current state and future state analysis, and prioritize gap items by operational value, estimated implementation costs, and time to implement</p> <p>B.3.2. Outline a technology strategy focused on the types of systems that should be implemented, and the order in which those systems should be acquired</p> <p>B.3.3. Develop a technology platform and integration diagram outlining the future state platforms and integration of data between platforms</p> <p>B.3.4. Develop and document business/reporting templates for future state operations across each of the functional areas, including report content and frequency of reporting</p>	140	
B.	<p>B.4. Undertake vendor identification and selection process based on desired future state technology and reporting needs within each functional areas</p> <p>B.4.1. Identify potential third-party vendor solutions¹⁰</p> <p>B.4.2. Develop a request for information, including key questions, requirements (e.g., data management, document management, processing and reporting needs), vendor</p>	90	

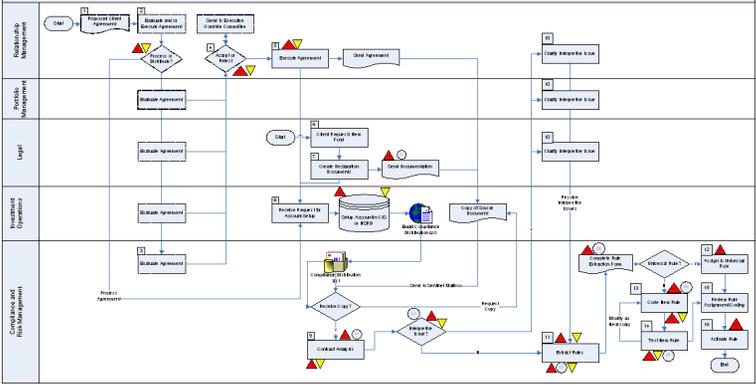
¹⁰ Examples of third-party vendors providing private equity management solutions include: Private I; Investran; Framework; EquityWorks; and AnalytX. Examples of third-party vendors providing hedge fund and fund-of-funds solutions include: Lighthouse; PerTrac Financial Solutions; Backstop Solutions; GlobeArc; and HedgeSphere.

Recommendation Links	Tasks and Activities	Estimated Hours	Estimated FTEs
	qualification and selection criteria, and timelines		
C.	C.1. Develop a document management program and records retention/destruction policy to support the Commission’s operations C.2. Establish protocol related to documentation standards, storage location, access privileges, safeguarding of sensitive records, and information sharing C.3. Identify a systems/technology solution to facilitate document maintenance, retention, and centralization	185	
	Total Hours and FTEs	1,150	0.64

Improve Cross-functional Communications and Organizational Structure

Assumptions:

- The Commission will structure the organization in a manner consistent with the “transitional organizational chart,” which include the 24 current FTEs and the 11 vacant FTEs.¹¹
- The Commission will assemble a cross-functional working group to facilitate the development and/or enhancement of its operating policies and procedures and oversee the maintenance of the operating procedures on an ongoing basis
- The below hours estimates includes time necessary for secondary reviews and final approvals by management, which is estimated at 15% of the overall time to prepare and draft the policies, procedures and/or protocols, as applicable.

Recommendation Links	Tasks and Activities	Estimated Hours	Estimated FTEs
O.	<p>O.1. Develop an operational procedures manual(s) for each of the functional areas</p> <p>Q.1.1. Document the day-to-day procedures and control activities, including systems, tools and reports used performed the daily activities</p> <p>Q.1.2. Develop operational workflows (see illustrative cross-functional swim-lane chart below) to identify control activities within a functional area as well as control activities that impact multiple functional areas</p> 	550	

¹¹ The Commission provided a draft copy of a proposed transitional organizational chart on August 10, 2011.

Recommendation Links	Tasks and Activities	Estimated Hours	Estimated FTEs
O.	O.2. Identify the internal and external data sources and information flows necessary to support the operational procedures, including the reporting needs of each of the functional areas (e.g., portfolio holdings, investment compliance, contractual provisions)	-- ¹²	
P.	P.1. Enhance and/or develop, for new positions, job descriptions for each of the Commission's professionals, including key activities performed, performance measures and criteria, and backup resources	90	
P.	P.2. Develop training materials to educate and inform personnel throughout the organization regarding the Commission's operational procedures and overarching operating model (i.e., data/information sources, workflows, and reports)	-- ¹³	
	Total Hours and FTEs	640	0.35

¹² Hours included within "Estimated Hours" under B.1 and B.2.

¹³ Hours included within "Estimated Hours" under R.3.

Develop a Succession/Talent Management Plan

Assumptions:

- Key-person risk considerations based on organizational structure and staffing model in place as of the conclusion of our field work (July 27, 2011). For purposes of this implementation plan, assumed the CIO and the senior officers of the investments team were key-persons.
- The Commission will be able to recruit and hire qualified individuals to fill the 12 approved FTEs within a reasonable period of time (i.e., between 6 to 12 months).
- The Commission will identify a member of the leadership/management team to work the Investment Commissioners in managing the succession planning efforts of the Commission.
- The below hours estimates includes time necessary for secondary reviews and final approvals by management, which is estimated at 15% of the overall time to prepare and the policies, procedures and/or protocols, as applicable.
- In connection with enhancing the EPMS, the Commission will designate a HR Specialist (or equivalent) to manage the EPMS process. The plan does not contemplate the effort needed to manage the EPMS process on an ongoing basis.

Recommendation Links	Tasks and Activities	Estimated Hours	Estimated FTEs
Q.	Q.1. Develop a formal succession plan, including triggers for key-person events and subsequent actions Q.1.1. Identify mission-critical roles for succession planning as well as potential “successor” resources (e.g., recognized leaders, consistent high performers, and resources with specific technical skills), and determine responsibilities, qualifications and capabilities Q.1.2. Establish clear objectives and formulate a development plan/career track for successor resources, including opportunities to participate in external leadership and technical skills programs Q.1.3. Establish a retention and compensation plan commensurate with increasing responsibilities and results-oriented performance measures; consult with HR, Legal and other management teams, as appropriate and necessary	185	
Q.	Q.2. Define and document key-person events and contingency measures (i.e., circumstances where the Commission would need to put in place any contingency plans to operate without the services of the key-person)	90	

Recommendation Links	Tasks and Activities	Estimated Hours	Estimated FTEs
R.	R.1. Determine skills, competencies, proficiencies, and technical knowledge across the organization and compare to the Commission’s strategic objectives; identify potential gaps and enhance the Commission’s recruiting strategy (i.e., identification of applicant pools and marketplace competitors)	90	
R.	R.2. Assess workload capacity across the organization and identify opportunities to redeploy resources to balance the workload, as necessary R.2.1. Survey and document daily responsibilities of personnel across the organization, including assigned roles and responsibilities, special assignments, and unique circumstances (e.g., family situation) R.2.2. Determine processing, monitoring, and reporting requirements and systems in place to prepare and generate reports R.2.3. Evaluate current state distribution of roles and responsibilities and processing requirements R.2.4. Define and adopt “ideal” steady-state and redeploy resources, as necessary, to workload balance R.2.5. Provide training and learning resources, as necessary (see R.3. below for additional materials on training)	185	
R.	R.3. Develop cross-functional training programs and identify backup resources for each mission-critical position R.3.1. Identify subject matter content and materials for each functional area (e.g., investment strategies deployed to manage the plan assets; types of instruments used to implement the investment strategies; techniques to manage portfolio, operational, compliance and technology risks; and contract analysis) R.3.2. Develop approach(es) for delivering the training (e.g., self-study, on-line training, facilitated training, certification programs) R.3.3. Implement mentor/buddy systems to develop redundant resource and backup for mission critical positions	460	

Recommendation Links	Tasks and Activities	Estimated Hours	Estimated FTEs
	Total Hours and FTEs	1,010	0.56

Expand and Implement Standard Due Diligence Processes and Practices

Assumptions:

- The Commission will identify or hire resources to focus on operational and technology issues in connection with its external investment manager due diligence guidelines/framework
- The Legal team will participate in and support the due diligence team and process.
- The Commission will apply the due diligence procedures and processes across all asset classes and for initial and ongoing due diligence of external investment managers.
- The due diligence team will have access to review existing Strategic Partnership investments and documentation to incorporate the existing investments and activities into the new firm-wide due diligence and investment manager oversight program.
- The below hours estimates includes time necessary for secondary reviews and final approvals by management. Estimated at 15% of the overall time to prepare and draft the policies, procedures and/or protocols, as applicable.

Recommendation Links	Tasks and Activities	Estimated Hours	Estimated FTEs
D.	D.1. Expand and enhance the “RSIC Due Diligence Guidelines” to include assistance from operations and technology professionals in conducting manager due diligence ¹⁴ D.1.1. Develop and/or expand operational subject matter knowledge; operational areas may include: <ul style="list-style-type: none"> • Account and security setup • Post-trace activities, including trade processing, confirmations, settlement and reconciliations • Portfolio accounting • Pricing and valuations • Custody • Proxy voting • Corporate actions • Securities lending (as applicable) • Calculations of fees (management and performance fees), high-water marks, 	140	

¹⁴ In addition to assessing the manager’s investment processes, the due diligence process/framework should cover the manager’s overall governance structure, trading operations, middle- and back-office operations and administration, client service, compliance, and technology administration (including business continuity planning and testing).

Recommendation Links	Tasks and Activities	Estimated Hours	Estimated FTEs
	<ul style="list-style-type: none"> claw-backs <ul style="list-style-type: none"> • Expense allocations D.1.2. Develop and/or expand technology (including trading operations) subject matter knowledge; technology areas may include: <ul style="list-style-type: none"> • Systems architecture (network and hardware) and security measures, including access controls, firewalls, virus protection, and intrusion detection • Technology platforms, systems, and applications (e.g., portfolio management, order management, investment compliance, and portfolio accounting systems) • Business continuity and disaster recovery planning, including data redundancy, recovery, and systems testing • Data and applications security • Data dictionaries, libraries and security master files 		
	<p>D.2. Expand application of the due diligence process across all asset classes</p> <ul style="list-style-type: none"> D.2.1. Determine the manager identification and selection processes for each of the asset classes D.2.2. Develop and/or enhance due diligence checklists used across asset classes and determine the scope of the due diligence reviews D.2.3. Identify and document the investment manager data collected during the due diligence process and the protocol for storing the information D.2.4. Document commonalities and differences in the due diligence process across asset classes and harmonize practices across asset classes 	90	
E.	<p>E.1. Define standardized information packages used in connection with evaluating and on-boarding new investment managers</p> <ul style="list-style-type: none"> E.1.1. Identify and assign key contacts for each manager and put into operation centralized mailboxes to collect and route operational data and information flows E.1.2. Develop a standardized data request list E.1.3. Determine common terms and conditions essential to contracting with the Commission 	140	

Recommendation Links	Tasks and Activities	Estimated Hours	Estimated FTEs
	E.1.4. Draft standardized contact lists, data request lists, and overviews of key terms and conditions for use within the new manager evaluation and on-boarding process		
E.	E.2. Establish framework for conducting internal and/or external legal review of investment documents, including expected timeframes and sign-offs	45	
F.	<p>F.1. Enhance the “RSIC Due Diligence Guidelines” to include provisions for ongoing external manager and Strategic Partnership due diligence</p> <p>F.1.1. Identify frequency of communications with managers, format of the discussions, and discussion topics; discussion topics include, but are not limited to:</p> <ul style="list-style-type: none"> • Investment decision-making processes and controls to manage conflicts of interest • Oversight and administration of trading operations (e.g., trade allocations, trade error policy, best execution analysis, counterparty selection, affiliated transactions) • Controls and procedures to monitor post-trade activities (i.e., middle- and back-office operations) • Procedures, processes, and practices in place to comply with internal policies and applicable regulatory requirements • Technology infrastructure in place to support and facilitate the manager’s investment operations and activities <p>F.1.2. Define data and reporting provided to and received from each manager, and the current storage utilities for maintaining the information</p> <p>F.1.3. Define the scope of the due diligence conducted (i.e., telephonic communication, desktop review of certifications and/or questionnaires, targeted/focused monitoring, or in-person visit), the methods for documenting the reviews, and mechanisms to identify potential issues/triggering events</p> <p>F.1.4. Establish criteria for increasing or decreasing investment amounts and terminating manager relationships, as necessary</p>	140	
F.	<p>F.2. Develop tools used in connection with the ongoing due diligence of the external managers</p> <p>F.2.1. Develop due diligence questionnaire, document request list, meeting agenda, and</p>	185	

Recommendation Links	Tasks and Activities	Estimated Hours	Estimated FTEs
	reporting template F.2.2. Develop a framework for risk ranking the external managers (i.e., developing risk profiles) and determining the type and frequency of the due diligence F.2.3. Develop a system for collecting and analyzing data/information obtained from due diligence visits (e.g., portfolio holdings, counterparty exposure, use of leverage, use of derivative instruments, compliance activities, internal controls) F.2.4. Develop a scoring system for ongoing manager oversight activities and define metrics for measuring a manager’s performance, adherence to mandates, fit within the Commission’s risk and compliance profile, and risk mitigation strategies F.2.5. Establish an oversight group/committee to review and analyze due diligence results and make recommendations F.2.6. Develop reporting protocol (e.g., report format, information provided, frequency of communications) for communicating with the Investment Committee and/or the Investment Commissioners		
	Total Hours and FTEs	740	0.41

Develop a Compliance Function

Assumptions:

- Should the Commission decide to move forward with developing a compliance function, the Commission will hire a dedicated compliance resource (or reassign a current Commission resource to serve in that capacity). The below plan does not contemplate the hours involved with the recruiting and hiring of a compliance resource.
- The below hours estimates includes time necessary for secondary reviews and final approvals by management, which is estimated at 15% of the overall time to prepare and draft the policies, procedures and/or protocols, as applicable.
- The plan does not contemplate any tasks and activities associated with the implementation of any compliance systems.
- The Commission may need to implement additional measures once the compliance function reaches a steady-state. For instance, the Commission may decide to establish a formal compliance committee to oversee compliance matters. At which point, the Commission should adopt and approve a charter in connection with the operations of the compliance committee. The below plan does not contemplate the development of a charter or other related tasks.

Recommendation Links	Tasks and Activities	Estimated Hours	Estimated FTEs
I.	I.1. Define the mission statement and objectives of the compliance function	10	
I.	I.2. Develop compliance policies and procedures that will form the basis for the compliance manual I.2.1. Prepare an inventory of existing policies and procedures to identify those that the Commission may use in connection with its compliance manual I.2.2. Update and enhance existing compliance and/or compliance-related policies and procedures to conform to the mission and objectives of the compliance function I.2.3. Identify and develop additional compliance policies and procedures, as necessary I.2.4. Develop and/or enhance compliance control activities, work flows and tools to support the day-to-day application of the compliance policies and procedures (e.g., compliance checklists, reporting templates, escalation processes) I.2.5. Develop and/or enhance recordkeeping and documentation protocols (see C.1. – C.3. above for additional details regarding record retention practices) I.2.6. Develop a sanctions policy	550	

Recommendation Links	Tasks and Activities	Estimated Hours	Estimated FTEs
I.	I.3. Define the roles and responsibilities of the compliance resource including, but not limited to, the following tasks: I.3.1. Performing the day-to-day compliance activities I.3.2. Supporting the Director of Internal Audit and Compliance I.3.3. Supporting the investments team in conducting external investment manager due diligence, including the monitoring of compliance with investment mandates and guidelines I.3.4. Interacting with and supporting the Legal team, as necessary I.3.5. Interacting with and supporting the Audit Committee, as necessary I.3.6. Interacting with and supporting the Investment Committee, as necessary	90	
I.	I.4. Develop compliance training materials and periodic training/education program	-- ¹⁵	
	Total Hours and FTEs	650	0.36

¹⁵ Hours included within “Estimated Hours” under R.3.