the dtic
Department:
Trade, Industry and Competition
REPUBLIC OF SOUTH AFRICA

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Date: 18 June 2025

Subject: Request for Information (RFI): Development of the Energy One Stop Shop – Single Window Application Portal

Dear Prospective Respondent,

The Department of Trade, Industry and Competition (the dtic) invites interested parties to respond to this Request for Information (RFI) concerning the **development of a Single Application Portal** as part of the Energy One Stop Shop (EOSS) initiative.

This RFI is issued to solicit information from qualified service providers, consortia, or technology firms with experience in developing and deploying digital platforms that support investment facilitation, regulatory navigation, and application processing across multiple entities.

Key Details:

- **Briefing Session**: Scheduled for **1 July 2025** from **09:00 to 12:00**. Details will be confirmed upon registration. **The briefing session is not necessary but highly recommended.**
- **Deadline for questions 7 July 2025**
- **RFI Deadline**: All RFI responses must be submitted by **27 June 2025** at 17:00 SAST.
- **Submission deadline**: **24 July 2025**
- **Submission Format**: Electronic submissions in PDF format should be sent to info@energyoss.gov.za.
- **Once downloaded please notify BDaya@thedtic.gov.za to invite those interested to the briefing session with subject title "RFI Briefing"**

Interested parties are encouraged to review the full RFI document (Part A) and Functional Requirements Specification (FRS) (Part B), which outline the scope, technical expectations, and submission guidelines.

Please note that this is not a tender but a request to gauge market capacity and collect relevant technical and business information to inform a subsequent formal procurement process.

We thank you in advance for your interest and look forward to your response.

Sincerely,
The Department of Trade, Industry and Competition- EOSS

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PART A

REQUEST FOR INFORMATION (RFI)

Request for information on the Single Window Applications Process/Portal (SWAP) System required for the Energy One Stop Shop (EOSS) for Independent Power Producers (IPPs) to use, track, and view their applications within multiple departments, other competent and commenting authorities.

REQUEST FOR INFORMATION (RFI):

The Department of Trade, Industry and Competition (**the dtic**) request for information on the Single Window Applications Process/Portal (SWAP) system required for the Energy One Stop Shop (EOSS) for Independent Power Producers (IPPs) to use (apply for authorisations via the SWAP), track, and view their applications within multiple departments, other competent and commenting authorities.

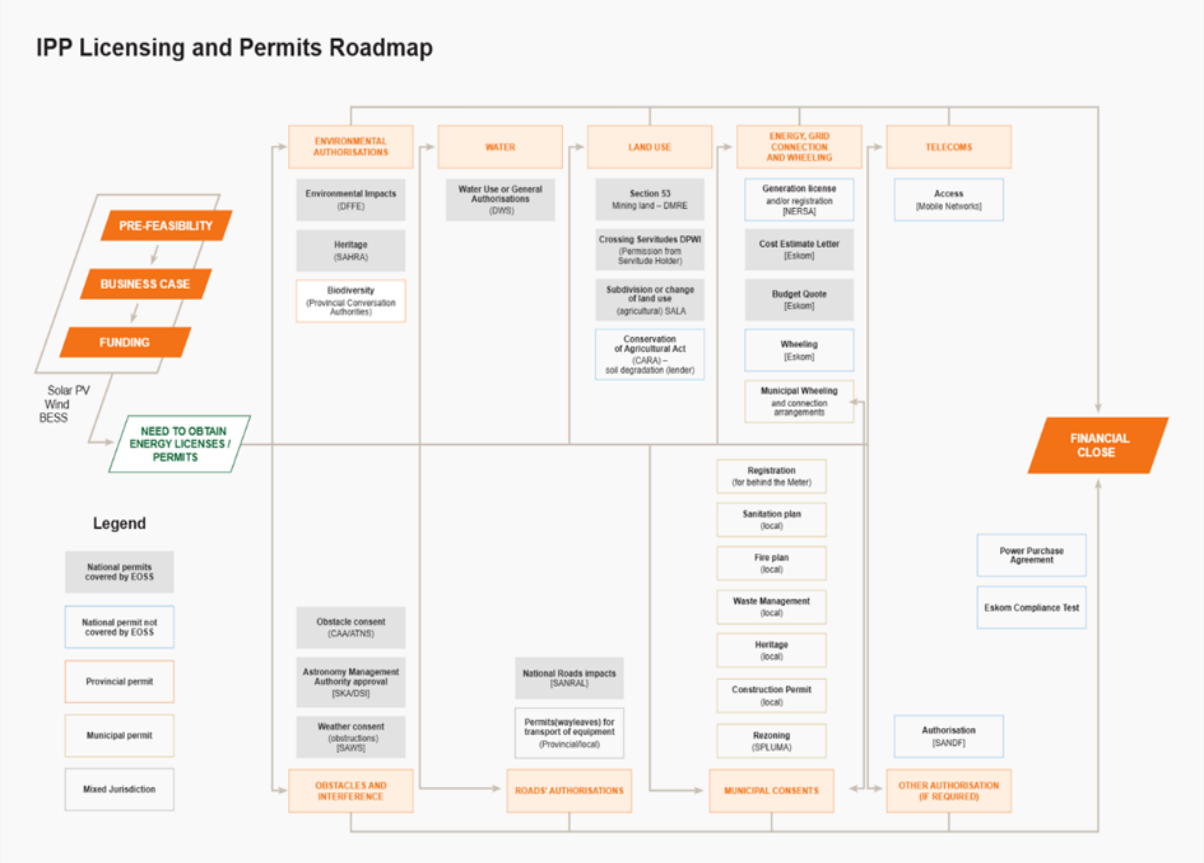
1 PURPOSE

1.1 The purpose of the request is to gather information on systems already available or to build for a Single Windows Applications Process/Portal (SWAP) system for the Energy One Stop Shop (EOSS) for Independent Power Producers (IPPs) to use (make applications for authorisations via a single window), track, and view their applications within multiple departments, other competent and commenting authorities. The intent of the RFI is to:

- Understand the systems already available or to be built that will meet the requirements of EOSS.
- Understand the technologies available that could optimise the SWAP system, including existing tools and platforms.
- Understand the manner in which non-functional requirements will be handled, including change management, testing, deployment, routine maintenance, high availability, and information security.
- Understand the types of processes that would ensure successful execution, maintenance and support.
- Understand the timelines for completion and to obtain the pricing range for budget purposes.

2 BACKGROUND

The Energy One Stop Shop (EOSS) initiative was established in 2023, by government to streamline and digitize the licensing process for independent power producers (IPPs), cutting approval times and accelerating projects to financial close. It supports both small- and large-scale renewable energy. To date, EOSS has played a critical role in unblocking bottlenecks, coordinating across government departments, and implementing reform action plans. Through multi-agency collaboration, the program has developed both "as-is" and "to-be" licensing process maps to simplify and optimize authorization workflows. Below are the various permits required from the competent authorities.



2.1 Although the process optimisation has been successful, it was deemed necessary to build certain systems which would optimise the overall process, both within the relevant authorities but also from the IPP (Independent Power Producer) or developer perspective. The use of systems would entrench the optimised processes and create greater transparency. These systems consist of:

- The Geospatial information System (GIS) Screening Tool: This tool enables the IPP to identify any major impediments to their project approvals by indicating the likely problems based on the physical location, layout, and type of renewable energy project. This tool is already built and available and is not within the scope of this RFI. This tool is available at https://screening.environment.gov.za/screeningtool/#/pages/welcome.

- **The Navigation Tool**: This will assist the IPP to determine which authorisations are required, based on a decision tree and what-if scenarios. This aspect of the solution will empower the IPP to determine which authorisations will be required and how long it will take to obtain them. This tool, which has been built, is not within the scope of this RFI; however, there is likely to be a need to interface with this tool. This tool will be launched in July 2025.

- **The Single Window Application Process (SWAP)** will enable the IPP to see all their applications in one place and to directly apply for all required applications from within the system, without having to recapture information. This system will also enable the IPP to see the current status of their application and the likely completion times. This is within scope for this RFI.

- **The Tracking Layer** will empower the IPP with dashboards that illustrate the end-to-end process and the status of their applications. The EOSS can also monitor the progress in real-time and proactively ensure that the turnaround times are met, and intervene where bottlenecks occur. The Departments will provide status updates for each step in their process, through automation. This is within scope for this RFI.

2.2 A detailed explanation of the SWAP system requirements is included in the SWAP Functional Requirements Specification. Information related to the EOSS (https://energyoss.gov.za/), the licences that are required are available online (https://energyoss.gov.za/licences.html) and should be scrutinized to understand the associated application process.

3 SPECIAL INSTRUCTION TO BIDDERS AND RFI CONDITIONS

3.1 The service provider must be an eligible, registered service provider in terms of the applicable laws of the Country and included in the National Central Supplier Database.

3.2 Bidders must ensure that their tax matters are in order in line with the Preferential Procurement Policy Framework Act and the Treasury Regulations.

3.3 Companies or Director that are included on the National Treasury register for Restricted

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Suppliers and/ or Tender Defaulters will be automatically disqualified from the process.

3.4 This RFI is only for information purposes.

3.5 The costs of preparing the submission shall not be reimbursed.

3.6 The bidder to provide a comprehensive proposed solution and how it addresses all the requirements

3.7 Also include a proposed Implementation Plan: This should include how the project will be phased and the timing thereof.

3.8 The bidder must provide total cost of the proposed system. This can be an estimated range (between X and Y).

3.9 Bidders are also required to complete the attached SBD.4 Bidders Disclosure

3.10 The prospective service provider appointed will assist the Department with:

4 SCOPE OF WORK

4.1 The following aspects needs to be included in the vendor's submissions:

- **System Design and Development**: The vendor is required to design a suitable systems architecture that meets all functional and non-functional requirements and thereafter to develop the solution as per this design. Consideration of the possible need to extend the system at a later stage with additional functionality and interfaces should be included in all aspects of the system design.
- **Setup of DevOps Environment**: The setup of a DevOps environment to optimise the software development process will be required. An overview of how this will be implemented must be included in the submission.
- **System Testing and Deployment**: Extensive testing of the system at multiple levels is expected to ensure proper operation under all conditions. This testing must ensure that new systems features and bug fixes can be implemented with the minimum risk of failures and system downtime. The deployment of the system should be as per best practices. The methodology and practical implementation of this should be described.
- **System Documentation and Training**: The architecture, deployment and fault-finding procedures, deployment plans, and change navigation must be concisely documented in a manner which assists to diagnose problems and implement enhancements and upgrades with a limited risk of failures. Training should be provided to all IT support and system owners/champions. Online training videos should be provided and, ideally, integrated into the system. Note that these documents and videos, etc do not need to be included as a part of the submission; only indicative examples should be provided.
- **Change Navigation Plans**: Detailed change navigation plans to limit post implementation issues, including resistance to change, must be designed and

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implemented. The methodology and practical implementation of this should be described.

4.2 The following are not in the scope for this projects:

- **HARDWARE:** This shall be provided by **the dtic**/EOSS. The vendor needs to, however, provide the expected minimum hardware platform specifications and high-level system architecture. A high-level overview of the typical requirements should be included in the RFI.
- WAN and LAN: This shall be provided by **the dtic**/EOSS. The vendor needs to, however, provide the expected minimum specifications. A high-level overview of the typical requirements should be included in the RFI.
- IT Infrastructure Processes: This shall be provided by **the dtic**/EOSS. The vendor will need to integrate into the DTIC/EOSS systems and processes to deliver support and maintenance.
- Prepare and develop draft Bills (including the omnibus Bill/s), Regulations, Guidelines, Notices and other related legal instruments such as , Rules, Standards, Protocols, Codes of Conduct, Codes of Good Practice in accordance with the policy and drafting instructions.

5 OTHER REQUIREMENTS

- Appropriate Best Practices: It is expected that the vendors selected will utilise best practices in all aspects of the solution delivery including, but not limited to, solution development approach, project management approach, architectural principles, coding standards, testing approach, quality management approach, change navigation and CI/CD (Continuous Integration and Continuous Delivery) plans.
- EOSS/DTIC IT Policies: The vendor shall be required to adhere to all applicable IT Policies of EOSS/DTIC.
- EOSS Architecture and Design Principles: The vendor shall be required to adhere to all EOSS Architecture and Design Principles.
- High Availability: The solution to be developed must be high availability (99.95%) and resilient to disruptions and disasters.
- Information Security: The vendor shall be required to provide security by design and include all certifications and tests necessary to provide EOSS with a protected and secure system. Consideration for such risks should be included within the system design, implementation, deployment and ongoing management.

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6 PRICING SCHEDULE

6.1 The bidder must list in detail all managed services requirements for the solution for which they are proposing and the fixed cost price for each.

Deliverables	Unit Price	Total Cost (R)
Total		

N.B. You may submit any additional information to support the above rates

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7 RFI SUBMISSION AND CLOSING DATE

7.1 RFI responses should be submitted via electronic mail with subject line EOSS SWAP System RFI. Submissions must be sent to info@energyoss.gov.za by no later than 17h00 on 27 June 2025. No responses received by paper, telegram, telex, facsimile or similar medium will be considered.

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ENERGY ONE STOP SHOP

Single Window Application Portal

PART B

Functional Requirements Specification

Release 1.0

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1 Background and context

South Africa has a shortfall of power generation that has resulted in load shedding, impacting the socio-economic fabric of the country. This has, from an economic perspective, brought about business interruptions for organisations and concerns regarding local and foreign investments. Renewable Energy Generation is seen as one component of the range of solutions necessary towards eliminating this problem. The process to obtain authorisations for a renewable energy project has, however, been long and complex.

The South African Government has established various programmes to deal with the power generation shortages and the inefficiencies of the processes to attain renewable energy authorisations. Project Vulindlela, Red Tape Reduction, Ease of Doing Business, NECOM, etc have culminated in the International Finance Corporation (IFC) providing project support to the Department of Trade, Industry and Competition (**dtic)** to create an Energy One Stop Shop (EOSS), review the baseline, and understand the current process referred to as the "as-is" and the streamlined process referred to as the "to-be" processes of the Departments, and to implement a Single Window Applications process.

The Energy One Stop Shop was launched in 2023 and received 114 projects that the Presidency was tracking. Of these, 26 were prioritised based on the least number of challenges outstanding for the IPPs. The task of the EOSS was to **unblock any red tape towards attaining Departmental authorisations**. In their pursuit to generate power using renewable energies, the Independent Power Producers (IPPs) must obtain multiple authorisations from various National or Provincial Departments (approximately 10 to 15) to reach financial close leading up to construction and finally project implementation. In addition, the Local Authorities (Municipalities) also require various authorisations (approximately 5).

The IFC contracted CPCS, a Canadian Management Consultancy specializing in renewable energy applications, to **map the as-is and to-be processes**. The project outlined a **roadmap of reforms** at a macro (value chain level) and a micro level (within a Department). The Departments have already started with **process optimisations and improvements in their turnaround times**. A website (https://energyoss.gov.za/) was created to support the IPPs **to access important information for authorisations and to log their projects and requests for assistance**.

Amongst the reforms proposed, a critical reform is the development of a Single Window Application Portal (SWAP) that will allow an Independent Power Producer to apply for their authorisations through a 'single point of entry' and have the ability to track their applications therein. This functionality is currently non-existent, requiring applicants to go through at least 12 competent authorities. To this end, the IFC is documenting the Functional and Non-Functional Requirements that will be used by an IT Service Provider to develop the solution.

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Presently, in their application, the IPPs must understand the chosen location's risk sensitivities and then determine out what authorisations are required. Thereafter, the problem arises that the stated or legislated turnaround times are not observed by the authorizing entities, and the controls for tracking applications are lacking, as many of the Departments do not have systems in place.

This results in market confusion as to which authorisations are required, from which relevant competent authorities, identifying these authorities [National vs Province], and distinguishing between mandatory and non-mandatory requirements. The fragmented silo approach has the net result of increased monetary and time costs.

1.1 Project Description

The SWAP is a technology-enabled solution that comprises of [1] a GIS-enabled screening tool, [2] a navigation tool that guides an IPP as to which authorisations are required, [3] authorisations through a 'single window', and [4] a tracking layer with reports and dashboards that shows an end-to-end process with progress updates.

- **The GIS Screening Tool** already exists but will be modified to include a separate report showing the risk sensitivities of all the department/competent authorities GIS Layers. During the CPCS interviews, the IPPs indicated that only a small percentage of projects actually materialise. This means the Government needs to expend resources to assess applications that may never generate any power. This aspect of the solution will empower the IPP with information about the chosen location, and reduce the incidence of unviable projects.

- **The Navigation Tool** will assist the IPP to determine which authorisations are required, based on a decision tree and what-if scenarios. This aspect of the solution will empower the IPP to determine which authorisations will be required and how long it will take to obtain them.

- **The Single Window Applications Portal** will enable the IPP to see all the authorisations in one place, directly apply within the system and provide any necessary evidence or documents as needed.

- **The Tracking Layer** will empower the IPP with dashboards that illustrates the end-to-end process and the status of their applications. The EOSS can also monitor the progress and be proactive in ensuring that the turnaround times are met, or to intervene where bottlenecks occur. The Departments will provide status updates for each step in their process through automation.

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1.2 Scope of the Functional Requirements

The scope includes the Single Window Application Portal and the tracking layer. It excludes the GIS Screening Tool and Navigation (decision tree tool).

For the software provider to understand the overall process it is essential that the software provider read and understand the following documents:

- 23003 Final Report
- Appendix A - Inception Report
- Appendix B - Current Assessment Report
- Appendix C - Implementation Action Plan
- Appendix D - Tools to accompany the 'to-be' process
- 23003 Checklist and Single Application Document - Final Draft

1.3 Stakeholder Map

The full set of stakeholders who are currently involved in applications is as follows. Many of these would be expected to use the SWAP System:

1.3.1 Developer and Representatives

Developer	This is the Independent Power Producer.
EAP	Environment Assessment Practitioner who is hired by the developer to assist with the environmental authorisations and other applications.
SAPVIA	South African Photovoltaic Industry Association
SAWEA	South African Wind Energy Association

1.3.2 Primary Approval / Licensing Entities

ATNS	Air Traffic Navigation System
DALRRD SALA	Department of Agriculture
DFFE	Department of Forestry, Fisheries and Environment
DMRE	Department of Mineral Resource and Energy
DSI	Department of Science and Innovation
DWS	Department of Water and Sanitation
Eskom	Eskom Generation and Transmission
Local and Provincial Authorities	Metros, Municipalities and Provinces
SAHRA	South African Heritage Regulatory Authority
SANRAL	South African Roads Agency
SANDF	South African National Defence Force

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SAWS	South African Weather Service

1.3.3 System Owners

DTIC	Department of Trade, Industry and Competition
InvestSA/EOSS	Unit within DTIC

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1.4 System Overview

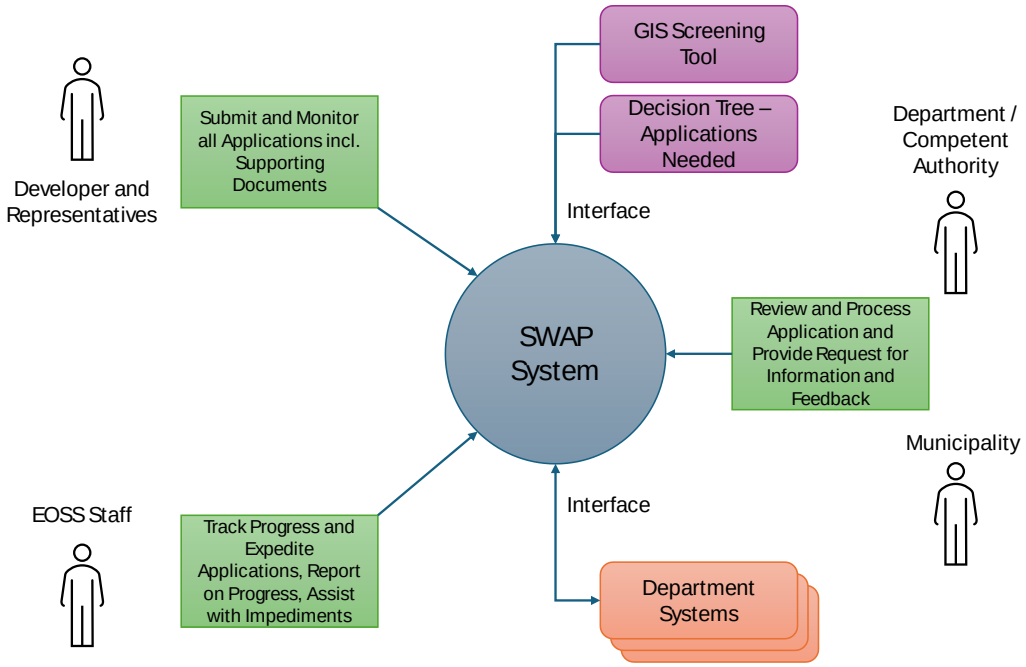

Figure 1: System Overview

The SWAP system is intended to streamline the application process that is followed for large renewable energy projects. The system should provide a seamless experience for project developers, by reducing rework, ensuring that the developers are aware (and reminded) of all applications needed and the information required for submission with each application. The system is also intended to provide a single point where developers can view the progress and status of all their applications.

From the Department/Agency/Municipal (subsequently called “department”) perspective, the system is intended to optimise their processes by having all required information available when the application is first started, to manage the approvals process, manage any feedback and additional analyses and documents required, and manage any comments and feedback needed from any other entity that is involved in the approvals process.

The SWAP system should include a workflow engine that could be used to manage the flow of work within and outside departments (for those who have no internal system). For the basic process steps needed to track each application, both OLAs and SLAs should be supported to ensure that approvals

remain on track. This enables communication of the current status to the developer and other approval authorities by logging onto the system.

The system should have the ability to interface with existing departmental systems for lodging of applications, upload of required data, and tracking of progress. The system should also be able to utilise information from the Decision Tree to inform the developer of all the required applications. The output from the GIS screening tool should also be possible to store within the system, although this may initially be a manual intervention to upload.

EOSS staff should have the ability to track and view progress across all applications. Any delays that are on the critical path should then be visible to EOSS and the developer. The admin facility should allow EOSS to configure new departments and add the basic high-level process steps with relevant OLAs and SLAs.

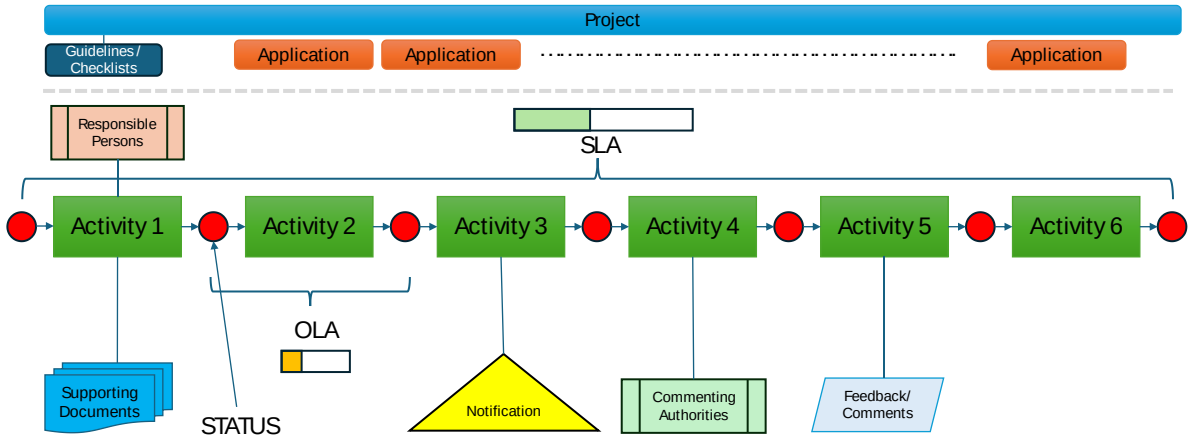

Figure 2: Process Flow Data

Figure 2 shows the data requirements for the application processes and includes:

- **Projects**: A developer could have multiple projects. The overall project and each application should allow for guidelines for a successful application to be displayed and configured by an Admin user.
- **Applications**: Each project will have multiple applications. Each application will have an end-to-end SLA which needs to be configurable by an Admin User (across the entire system). Different variations of the application process within the same department could have different SLAs. The system must visually show the progress vs. official stated maximum timelines.

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- **Activities**: The system should enable each application to be divided into a set of linear activities (no branches or decision points) which will enable the developer and EOSS to understand the status at a more granular level. Each Activity will have an OLA configurable by an Admin User (across the entire system). The number of days that have passed vs the total timeline should be visually displayed.
- **Status**: The completion status of each Activity should be visible on system.
- **Additional Data for Activities**: Additional pre-requisites for application (data and documents) should be configurable. The system must allow for notifications, comments and feedback. Where an Activity relies on an external Commenting Authority (not a Competent / Approval Authority) this should also be configurable and displayed to the Developer.

1.5 Application Approval Timelines

The following is an overview of the timelines involved:

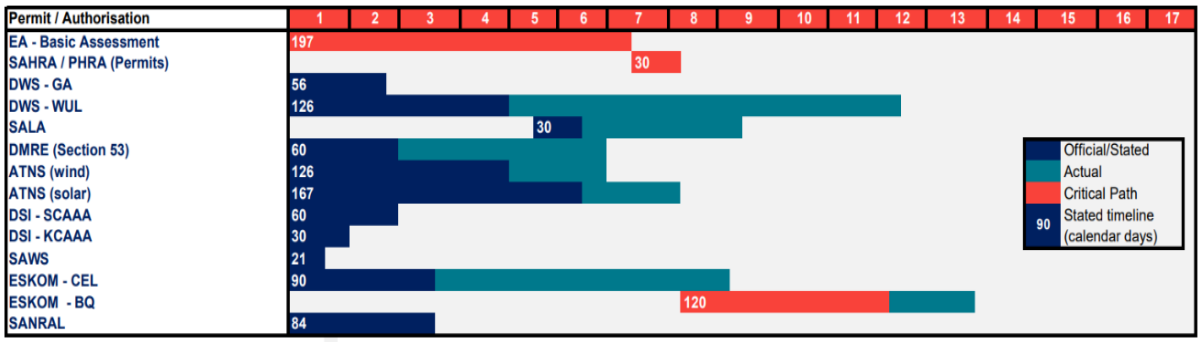

Figure 3: Example of Authorisations and Timelines
Source: CPCS

As can be seen in Figure 3 numerous applications can run in parallel; however, some are dependent on the other approvals before starting. The system should enable sufficient information to be captured so that an assessment can be made of whether the end-to-end approval cycle will be affected by delays in any authorisations. This must not only occur from a high level, i.e. it must be only after 197 days that the developer of EOSS should realise that the EA-basic Assessment is late and the overall process is thus delayed. By being able to input data related to the internal approval process (typically 6-8 steps with individual OLA times configured on system) the system should be able to detect delayed processes before the official timeline has expired and should also be able to calculate the overall time impact.

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2 System Concept

2.1 Critical Requirements

The key requirements for the project are:

- **Single point of contact**: From a developer perspective, the system must provide, as close to a single point of contact as possible, for any projects that they are involved in. This means that the developer should not really need to leave the system in order to complete applications, upload documents, provide feedback and comments, understand where the process is in terms of completion, understand whether there are likely delays, and be warned of additional information required from them that is becoming due. They should also be able to see when various applications or processes would expire and should be prompted sufficiently early to be able to resolve these in time.
- **Reduced or eliminated duplication of work:** The system should reduce to the bare minimum the duplication of work that is needed in order to respond to sometimes similar but sometimes different requirements from the different departments. To enable this, the system should allow the upload of the common information that is required across all applications at the start of the project registration.
- **Developer guidance:** The system should provide guidance to the developer of all the applications that are required based on the information that they have provided. The system should also be able to assess, to a predefined degree of accuracy, whether the application is going to be unsuccessful with the current project type as well as location. This will partially duplicate the information found in the screening tool; however, this is felt to be important as things may have changed from when the developer first utilised the screening tool. In order to provide this guidance, there needs to be a regular upload of new information into the GIS system to enable this.
- **User Management**: A variety of different stakeholders will be able to access the system, and they should only be able to see the information that is pertinent to them. The module that manages users, the groups they belong to, permissions those groups have access to as well as the subset of the data which each individual user is allowed to access, is thus critical.
- **Workflow management**: The system should be able to support the flow of work from the developer or their agent, including environmental impact assessment and other relevant consultants, through all the different departments and competent authorities involved. From the perspective of the departments, the system should also enable the flow of work within the department if such a system does not already exist within the department. Only a simplified workflow engine is required initially.
- **Security:** Due to the sensitive information that is contained within the system, including personal information, having a system that has been designed to be secure from the beginning (defence in depth) is essential, as is the necessary testing throughout the process to ensure that security remains tight at each stage as well as with the finished product.

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- **Integration to other EOSS systems:** It will be critical for this system to integrate with the decision tree in order to enable the developer, at the time when they're submitting the project, to be able to see which applications are necessary and what the overall timelines are likely to be. It is ideal that this information come from the decision tree so as to not duplicate work and create potential data integrity problems where the developer gets a different answer from different systems.
- **Iterative Development/MVP:** It is required that a software development process that delivers a working and live production system as rapidly as possible and then delivers updates with additional functionality, is undertaken. The 1st iteration will have limited functionality but should provide a single window for developer interaction and feedback. The software development methodology and team must be optimised for this delivery model.
- **Municipality Integration:** A key requirement for overall project approval is obtaining the necessary authorizations and land use changes that are necessary from the relevant municipality or municipalities. Addressing municipal requirements is key to achieving end-to-end approval efficiency. Early engagement with the municipality is important to reduce the overall timelines to the minimum possible. Failure to involve municipalities at an early stage can significantly affect the overall approval process, potentially adding more than 1 year to the total timeframe. Most municipalities do not have workflow management systems. Alerts that inform the developer of the need to engage with the municipality at an early stage is a key requirement within the system. This is a subsection of an overall alerting / notification module that provides both early warnings and timeline failures to any involved stakeholder for a project.

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2.2 Department Data/Document Configuration

The system must allow flexible configuration of both the data as well as documentation that needs to be collected from each department as part of the application process. The reason for this is that it is expected that the process will change and evolve over time, ideally to optimise the process and reduce timelines, thus needing the system to be adaptable. New structured data as well as new documentation can be handled differently as follows:

- **Structured data**: Since structured data would result in both a change to the database as well as a change to the front end, and potentially also changes to the business logic, it is NOT required that these can be configured by a system administration user on the front end. The system should, however, allow this to be quite flexibly configured by the software service provider such that risk is reduced and simplified. A modular service-orientated architecture will be essential for this to be possible.
- **Documentation (unstructured data)**: The ability to add new documentation that needs to be uploaded at different points in the process must be fully supported within the front-end admin interface. No software changes or versions should be necessary to add additional documents, as well as document types, e.g. analysis reports, corporate support documents.

2.3 Department Activities and Statuses

The configuration of the majority of the department activities as well as different statuses should be possible on the front end. This also includes parameters related to each activity such as the expected or mandated completion time, the operational level agreement (OLA) etc. This should provide full support for a linear process with no branching at decision points. It is expected that a very simple generic set of activities will be supported, and these should be flexibly implementable on the front end by a System Administrator. The system also needs to support an overall service level agreement for the entire assessment process end-to-end.

2.4 Workflow Management System

For the various departments, a workflow management system that allows the flexible configuration of the flow of work, including any decision points, branching, requests for information, responsibilities, service level agreements and escalations, is necessary. The actual workflow must be configurable using a graphical user interface and should be able to support BPMN diagrams as a configuration source. The system must be fully integrated with the overall system. Depending on the nature of the “department activities and statuses”, this functionality could also be included into the workflow management system configuration.

Only a very simplified linear Workflow “Display” system is needed in the initial version of the system (minimum viable product).

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2.5 Interfaces

The system needs to interface to several different departments systems that are used to manage the application process. Many departments do not have a system, and some departments have systems that are in the process of being replaced or enhanced. It is thus essential that the system be developed in a service oriented manner, that is modular and that follows best practises such as separation of concerns and loose coupling. This should allow the system to change to support new requirements without undue risk and effort. The system should be architected to avoid the need to change fundamental components of the existing code base when these changes occur and new integrations are required.

2.6 Security

In order to enhance the security of the system, the following are required as a minimum:

- **Identity and Access Management (IDAM)**: A separate and specially designed system should be implemented for security. No developer built, home-grown IDAM should be allowed. This system needs to be well supported and include the implementation of standards such as OpenID Connect or SAML. At no stage should an encrypted text password be sent within the system.
- **API (Application Programming Interface) Security**: It is expected that the system would be modular (rather than monolithic) and that APIs would thus be an integral part of the system architecture. The system would also need to be web facing to support the developers and their representatives. It is thus essential that all good practises in terms of security for API's be followed. This will include the use of token-based authentication for the validation of every API call that is made, without exception. The token-based authentication should follow standards such as OpenID connect or SAML fully. It is also expected that an API gateway, or surface hub, would be included and that this could be used to monitor the different API calls and implement rate limiting, if necessary. All API calls should be encrypted.
- **Database Security**: Information in databases that is sensitive must be encrypted and access must be restricted such that persons who should not have access to the database do not have access, e.g. network administrators.
- **Penetration Testing**: This needs to be performed by the developer. However, the final checks and validation of the system security should be conducted by an independent party.

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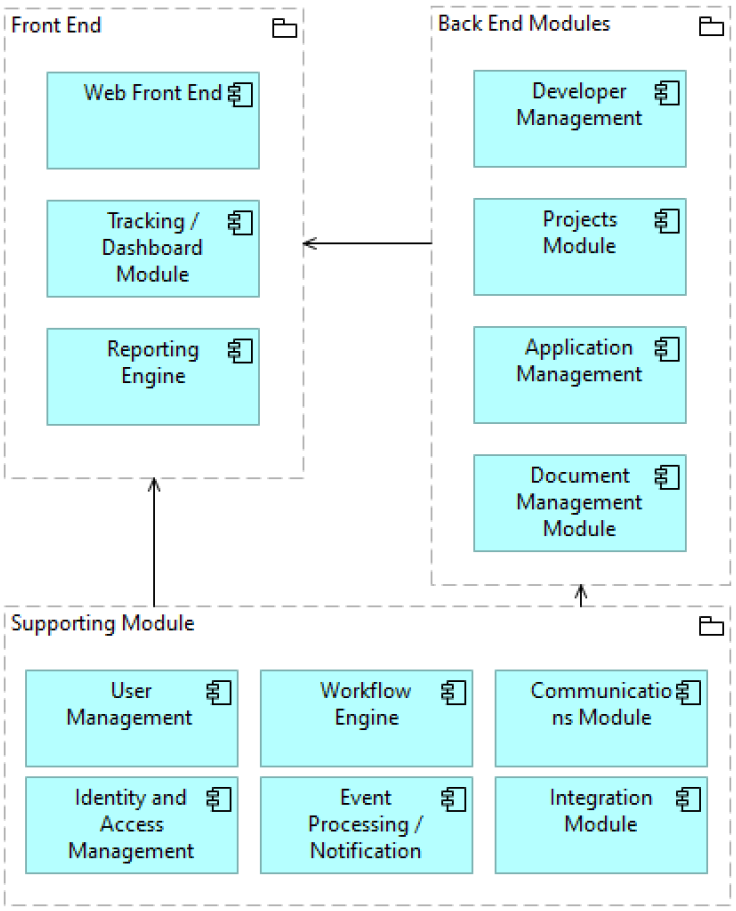
2.7 System Modules



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2.8 Possible Systems Architecture

This system architecture (shown in Figure 4) is a proposed architecture but could, however, be impacted by the software development methodology and best practices that the software service provider follows. The service-orientated architecture below is an accepted method of achieving a number of critical areas in software development:

- **Flexibility**: By having no front-end or back-end modules directly communicating with each other, but only via the Service Bus/API Gateway, software changes are made significantly easier. If there is no change with the interfaces, then a new module can be implemented without needing to change or recompile existing modules. This supports the principle of *Loose Coupling*, where applications are not tightly dependent on each other. A simple example of this is if one of the department systems, e.g. SAHRIS, changes. Only the SAHRIS integration module would need to change to accommodate this change.
- **Reduce Risk**: By having the minimum possible dependencies between different modules (as above), a change needed on one module is not likely to break another module. This modular structure also supports the implementation of each module on separate “containers” (or mini virtual machines) thus reducing even any operating system impacts.
- **Simpler Fault-finding and Maintenance**: Since the modules are not highly dependent on each other and all communications is via the Service Hub/API Gateway, fault finding and maintenance of the system become simpler.
- **Testability**: The service-oriented architecture means that when changes are made to one part of the overall system, not all parts need to be completely retested. Only those modules that change would need to be tested, and only once fully functional, will integration and user acceptance tests need to take place across the system.
- **Interface between disparate components**: By having the architecture pattern similar to what is shown below, it is possible for modules that have completely different technology (coding languages and frameworks) to interact effectively.

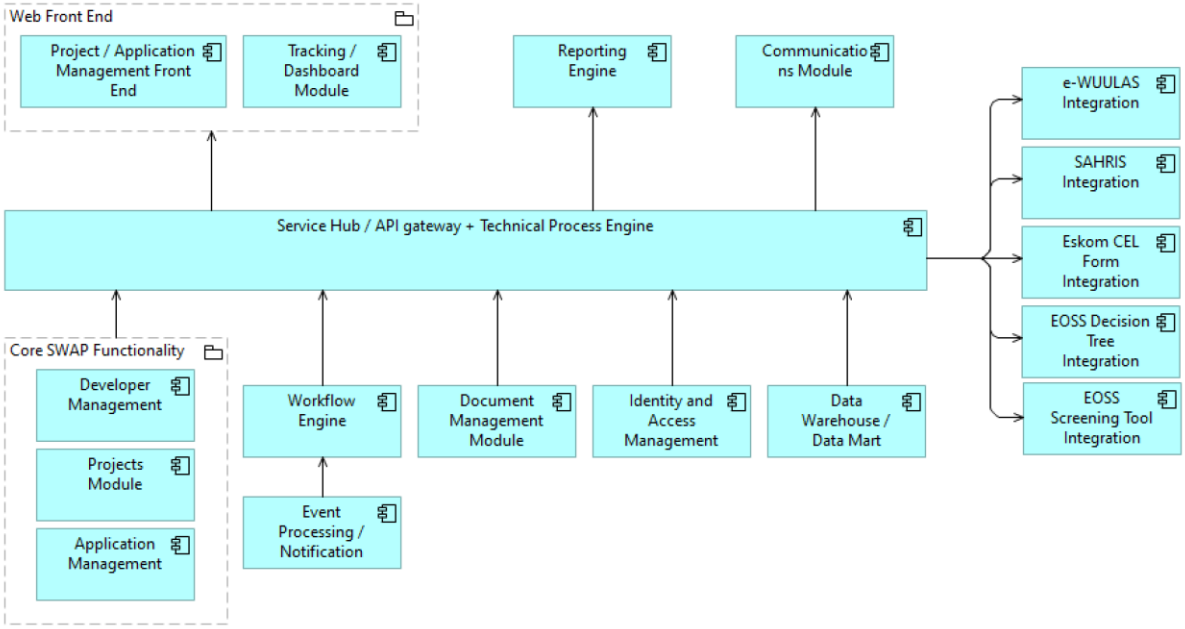

Figure 4: Possible System Architecture

The purposes of the different components are as follows:

Name	Documentation
Workflow Engine	This is a complete workflow management engine with all functions expected from a workflow engine including control of the flow of work between different persons, the management of the response times for each activity, branching and merging of workflow tasks and reporting related to workflow statuses across the system. This module should also allow the configuration of new workflows using either a table format or via a graphical interface that comes up with the ability to utilize BPMN 2.0 diagrams as a workflow source.
Identity and Access Management Module	This module, which should be quite isolated from the rest of the system, manages all authentication of user identity as well as controlling access to different resources, data and systems. This module must implement best practices standards for identity and access management using concepts such as OpenID Connect or SAML. It is expected that this product will be acquired from a specialist company rather than being developed internally. At a later stage, integration to the Department of Home Affairs may be useful to validate the identity of those registering on the system.

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Document Management Module	This module manages all documents that are provided in support of projects or applications that come up but also manages documents that have been submitted by the departments including request-for-information requests for further assessment and analysis, and reports indicating the outcome of the application's process.
Communications Module	This provides communication on the user's preferred communications channel, including E-mail, SMS, IM, etc
Event Processing / Notification Module	This module generates alerts and notifications such as activities that are not complete after the deadline time has passed. It could be a component of the overall workflow engine that generates events and notifications based on conditions related to the workflow, or a completely separate module.
Reporting Engine	This is an engine that generates a variety of reports that are presented to the user on the web front end. Reports should be configurable and possible to add to the GUI without needing software development to take place.
Service Hub / API gateway + Technical Process Engine	The service hub is crucial to the architectural pattern, as it enables the principles of loose coupling and separation of concerns. It also enables the entire environment to be service orientated, in compliance with the architectural principle that all applications should be written as a set of services. The service hub enables any part of the overall system to be replaced without impacting any other part of the system. An existing, already developed service hub should be used rather than attempting to develop one as part of the project.
Projects Module	This module manages all projects that belong to a developer. This includes the registration of the project, the creation of a project ID, the update of any information related to a project and the management of all supporting documents.
Application Management	This module performs all actions related to applications that are necessary for projects. The module captures all information and supporting documents necessary for different types of applications and displays and keeps track of all the different steps within an application process including the display of the current progress status. This module also allows the application process with all activities as well as statuses, including the OLAs and SLAs related to each individual activity and the overall process to be configured onto the system by a system administrator. This module also checks for any activities that are slower than the defined timeline and creates notifications via the notifications module.
Developer Management	This module manages all information - all information gathered and managed related to the developer, their staff and representatives.

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e-WUULAS Integration	This is the API integration to e-WUULAS. Generic APIs from the service hub would be translated into the correct format to communicate to the department system.
SAHRIS Integration	This is the API integration to SAHRIS. Generic APIs from the service hub would be translated into the correct format to communicate to the department system.
Eskom CEL Form Integration	This is the API integration to Eskom (for Cost Estimate Letter). Generic APIs from the service hub would be translated into the correct format to communicate to the department system. The Eskom CEL form is Microsoft Form based, and Microsoft Form API of Graph API will need to be used.
EOSS Decision Tree Integration	This is the API integration to the EOSS decision tree application. This will enable the decision tree rules to be queried to enable the developer to be accurately informed of all applications needed.
EOSS Screening Tool Integration	This is the API integration to the EOSS screening application. This will enable the location of the project to be used to determine the licenses needed and the identification of possible issues with obtaining these licenses.
Project / Application Management Front End	This is the web front end for all users.
Dashboard Module	This presents a user-specific dashboard with key metrics and trends. For developers, this would be the status of their projects and applications. For departments, this would be all applications (or a subset thereof) that are relevant to that department and the specific user who is logged on. For EOSS, this would be consolidated and trends extracted that can be used to detect problems and improve effectiveness.
Data Warehouse / Data Mart	As the system grows there could be a point when, having a reporting database that is separated from the operational database, would be prudent. This will be especially true if the system is used for purposes aside from renewable energy applications.

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3 Interfaces

Interfaces between the SWAP system and other department / agency systems is meant to have the following benefits:

- **Reduced Rework for Developers**: By enabling developers to capture the information once in the SWAP system and then sharing this information with the other systems, the level of rework by the developers would be reduced.
- **Improves Data Integrity / Consistency**: By reducing the recapture and multiple different versions of the same data objects the SWAP system interface is intended to reduce the possibility of differing information in different systems. This will be especially important and any updates to this information could be shared across all systems.
- **Tracking**: By sharing the process status in a near real-time manner, the developers would be able to track their application and determine the likely impediments and the likely approvals completion dates.

For the two-way interface and integration to take place, the following will be critical to ensure a seamless process:

- **Business logic**: Any web services APIs need to have the business logic within the API back-end code. This will prevent data integrity issues by ensuring that all business rules and data validation are executed even if called via an API rather than via the Department / Agency system front end GUI.
- **Search Capability**: The ability to find matching information for a developer or project will be essential to prevent duplication occurring within the system and across different systems owned by different departments. The minimum criteria required to determine whether a new entry matches an existing entry needs to be understood through consultation with the relevant technical teams in each department.

The following is a list of departments with the interface options for each:

Dept.	Existing System	Integration Requirement
DFFE	None	It is possible that DFFE would utilise the SWAP system as its workflow management tool for all applications (This is a possible future requirement, thus not in the current scope). This would not only include renewable energy applications, but any other applications for environmental approval from DFFE. To enable this to occur, it is essential that SWAP be designed in a modular fashion, allowing the capturing of different information for renewable energy applications than for other applications. The workflow component must be usable without having to enter any other Renewable-Energy-

		specific information, nor should there be a dependence between this and other departments, where not necessary.
DWS	e-WUULAS	This is an online platform based on Javascript and ASP.NET. Since e-WUULAS should be able to provide web services for data capture to the SWAP system, full integration should eventually be possible. The necessary APIs to register users, submit applications and track progress would need to be written by the e-WUULAS development team (as per the SWAP specifications).
SAHRA	SAHRIS AMAFA ECPHRA HWC(FUTURE)	This is a well-used platform for heritage approvals SAHRIS will be able to provide APIs for usage by SWAP. The necessary APIs to register users, submit applications and track progress would need to be written by the SAHRIS development team (as per the SWAP specifications).
DALRRD	AGRILAND	This is an internal-facing system that is used for the management of land-related applications within the department. A user interface for online applications is currently being developed. Applications need to be submitted as physical hardcopy. AGRILAND will be able to provide APIs for usage by SWAP. The necessary APIs to register users, submit applications and track progress would need to be written by the SAHRIS development team (as per the SWAP specifications). However, the processes within the department would need to change to accommodate electronic applications.
SANRAL	SCOM	There are currently no integration possibilities available. SANRAL currently has the SCOM system, but the workflow components are not yet developed, and applications need to be sent via E-mail (or physical delivery).
DMRE	SAMRAD	This system is currently in the process of being replaced. No integration will be possible until the new system has been implemented. The SWAP system can pre-populate all forms required for the applications for submission via E-mail, or the Department could use the system to manage and track the applications.
DSI	None	There are currently no integration possibilities available. All applications need to be sent by E-mail or physical. Various forms need to be completed for this. The SWAP system needs to include a simple method for users to lodge applications and for these to be sent to DSI. The same workflow system implemented for DFFE can be

		used for this purpose. DSI can choose to either use this system as their workflow management system, or can receive an e-mail sent by the system together with the necessary attachments. The system would be able to automate the generation of no-objection letters for all sites outside of the Northern Cape, the only province where approval is needed from DSI.
Metros and Municipalities	Varied	Most metros have systems implemented. A few municipalities have systems implemented, whilst the majority have no system. The ability to extract the current status of the application from those with systems will be important. In certain cases there is the possibility of pushing application related information to the Metro or Municipal systems.
SAWS	None	There are currently no integration possibilities available. There is no system within SAWS and all applications need to be sent by E-mail. This needs to include the location and physical details of all wind turbines and must be supplied both as a KML file and as an excel spreadsheet. Specialist scientific systems are used internally to analyse the information received. The SWAP system needs to include a simple method for users to lodge applications and for these to be sent to SAWS. The same workflow system implemented for DFFE can be used for this purpose. SAWS can choose to either use this system as their workflow management system, or can receive an e-mail sent by the system together with the necessary attachments.
ATNS/ CAA	None	There are currently no integration possibilities available. There is no system within SAWS and all applications need to be sent by E-mail. Data from various studies (such as the glint and glare study for solar farms) would be needed. The SWAP system needs to include a simple method for users to lodge applications and for these to be sent to SAWS. ATNS can choose to either use this system as their workflow management system, or can receive an e-mail sent by the system together with the necessary attachments.
Eskom	Yes	Eskom has a website (Microsoft Forms Based) for the request for a (CEL) cost estimation letter. Some of the information required here is the same as for other applications, but there are also significant differences.

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		The ultimate solution should allow most of the fields to be automatically populated within the Forms. This will be possible by enabling access on Azure and using Microsoft Forms API/ Graph API.

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3.1 Proposed APIs

The following APIs are expected to be required for integration of the SWAP system to Department Systems. Since the software development process is required to be iterative, these are not expected to be delivered immediately. (This is not a comprehensive list and needs to be validated and enhanced by the software developer). All APIs must use token-based authentication that ensures that the requesting application has the necessary rights to call the API, but also has the necessary rights to access the information being requested.

No.	API	Description
1	Request Current Application Status	This service enables the system to obtain the current state of any individual application by providing the department's system with the Application ID (unique ID from within the department). Only the current application step within the departments, process, and the associated status should be returned. The API could also return the completion information (either number of days completed in comparison to the total number of days for that specific activity, or a percentage). This must also include data related to applications that may have been cancelled or expired.
2	Request Document Status	This service enables the SWAP system to check if all documents have been submitted, if any additional documents are needed and whether the documents uploaded are correct or need to be changed/improved/updated. The reason for the rejection of documents uploaded must also be provided. Complete new documentation requests should also be supported.
3	Request Application Registered	This service enables SWAP to request whether an existing application exists on the departments system. The input data would be the developer identifier (company registration number), project name, location of project, E-mail address, contact person, contact person's ID. The API should return a list of any applications that match more than one of the inputs. The SWAP system would then use a probability-based system to determine the closest or any match. This information would be presented to a front-end user (the developer or EOSS) who would undertake final confirmation of the match. The API should also return the unique Department Application ID number which should then be mapped to the project number within SWAP.
4	Request Responsible Persons from Department	This service enables the SWAP system to request the responsible persons (with their E-mail addresses) for a specific application from the department's systems. This would be used to provide contact information for the use of the developer as well as EOSS for the management of applications that are not on track.

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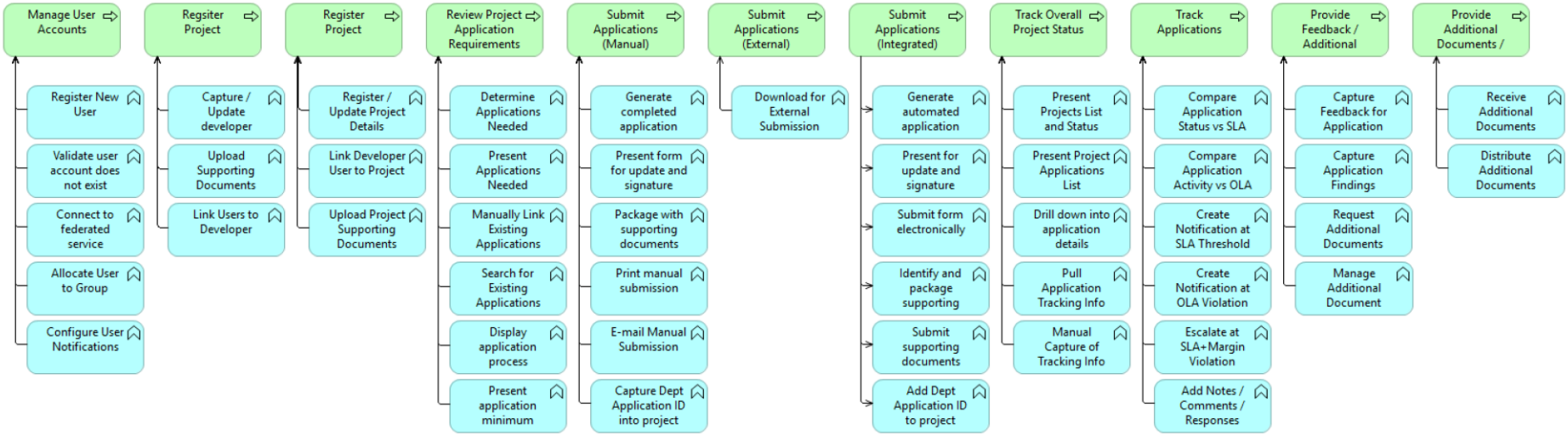
5	Register Developer on Department System	This service allows the creation of the developer profile on the Department system. All required fields and supporting documents would need to be supported by this application. It is expected that a JSON format would be used for this data transfer thus meaning that the Department's system can make a decision as to which information to use and which to ignore. This would simplify the API call on the SWAP system as the data sent would not need to change based on the department system. Alternatively, the department system can provide API documentation (e.g. XML or JSON) that specifies the required fields and the SWAP call would be able to remove unnecessary items from the API call payload.
6	Register Application on Department System	This service enables the SWAP system to create a completely new application on the Department system. This should also involve the creation of the developer company within the Department system (separate API that needs to be called first). The API would return the unique Department Application ID which would be used thereafter to match projects to applications thereafter.

It is expected that all APIs will be authenticated web services calls (REST) with encrypted (HTTPS) message streams.

4 Functional Decomposition

4.1 Core Functions



Category	ID	Name	Description
Manage User Accounts	1.1	Register New User	This is a facility that allows new users to create a login for themselves. In order to register as a user certain company/developer related information needs to be captured. (Unless we would like the interested public to have access to limited information in the system also). At the very minimum the user would need to provide their SA ID Number (if the system is only intended for use by South Africans) or their passport number, business and cellphone telephone number (including for 2 factor authentication) and business E-mail address. Note that at this stage there is no need for full business information - that would be required later. The password will meet minimum standards for complexity, but could even be passwordless - using an authenticator application.
	1.2	Validate user account does not exist	This is checking of the identity and access management system to ensure that this user has not already been registered on the system. The system must allow users who work with multiple developers and on multiple projects to be possible. This is specifically geared for situations where a consultant works across multiple different projects.
	1.3	Connect to federated service	This is the connection of the identity and access management system within the system to other authentication service providers such as Microsoft and Google in order to simplify the user permissions and login process for developers and their representatives.
	1.4	Allocate User to Group	This is the allocation of users to different groups where these groups have different privilege levels within the system. Note that users will always be restricted to the data that they can see based on which developers, projects, and applications that they have been linked to.
	1.5	Configure User Notifications	This is a facility that allows the user to configure their notification setting for a range of events. Users will be able to choose the notification type (within system, E-mail, WhatsApp, SMS or a combination), the frequency of notifications (once per day/ once per week/ immediately after the event occurs).
Register Developer Company	2.1	Capture / Update developer details	The creation of the developer within the system is a once-off activity. The system will allow the developer to update their information subsequently without changing the core details of the developer such as the developer ID number.
	2.2	Upload Supporting Documents	This is a function to allow developer/customer to select, categorise and upload documents to the EOSS system. The documents are checked to ensure they are in the correct format (only PDF allowed) and do not exceed the maximum file size (5MB) each. Each document that is uploaded needs to be categorised (e.g. Certificate of Registration) before being uploaded.
	2.3	Link Users to Developer	This is a function to allow administrator users at the developer to allocate other existing users to the developer / company. This does not allow the users to be able to access any specific projects until such time as those projects have been allocated to those users. Also gives the users who have been linked to the developer, specific roles as required.
Register Project	3.1	Register / Update Project Details	This is the creation of the renewable energy project in the system. This includes the creation of a unique project reference number (auto-generated by the SWAP system and then mapped to existing or new

			applications). The same function is also used to allow the user to update information about the project. The time and date of any change, the user who implemented the change and the old and new values need to be stored into the Audit Log.
	3.2	Link Developer User to Project	This is the linking of different system users who are associated with the developer, to the project.
	3.3	Upload Project Supporting Documents	Function to allow developer/customer to select, categorise and upload documents in support of the project to the EOSS system. The documents requested (system must provide this list on the basis of the type of project and GPS location) would be listed onscreen for this function. The documents are checked to ensure they are in the correct format (only PDF allowed) and that each do not exceed the maximum file size (10MB or other agreed maximum size which needs to be configurable by a system administrator). Each document that is uploaded needs to be categorised (e.g. GPS Location) before being uploaded.
Review Project Application Requirements Review Project Application Requirements	4.1	Determine Applications Needed	This is the determination of the different applications that are required and those that are not required. This will inform the developer of what documents need to be uploaded as well as which applications are needed and by when.
	4.2	Present Applications Needed	This is the presentation of all applications that need to be applied for together with other important information such as the normal time frames for completion and dependencies between the different applications.
	4.3	Manually Link Existing Applications	This is the manual linking of existing applications by the developer or their representative by entering the application ID or number for each specific competent authority that they have already applied for. Once the application ID number has been entered for any specific competent authority, this should be validated by checking with their online systems whether the application is linked to the same developer, if possible.
	4.4	Search for Existing Applications	This is the searching for any existing applications that have already been submitted by the developer to the different competent and commenting authorities. This will initially consist of asking the user whether they have made any applications already prior to registering on the EOSS system. Subsequently, different criteria such as the developer ID and company registration number as well as other project details such as the name and location will be used to try and identify any linked applications within other systems.
	4.5	Display Application Process	This is the display of the predefined and high-level application processing procedure that takes place within the competent or commenting authority. Other useful information such as the prerequisites for each stage as well as the timelines for the implementation of each phase will be noted as well. This is a purely visual display with no user input required or data created, captured, or changed.

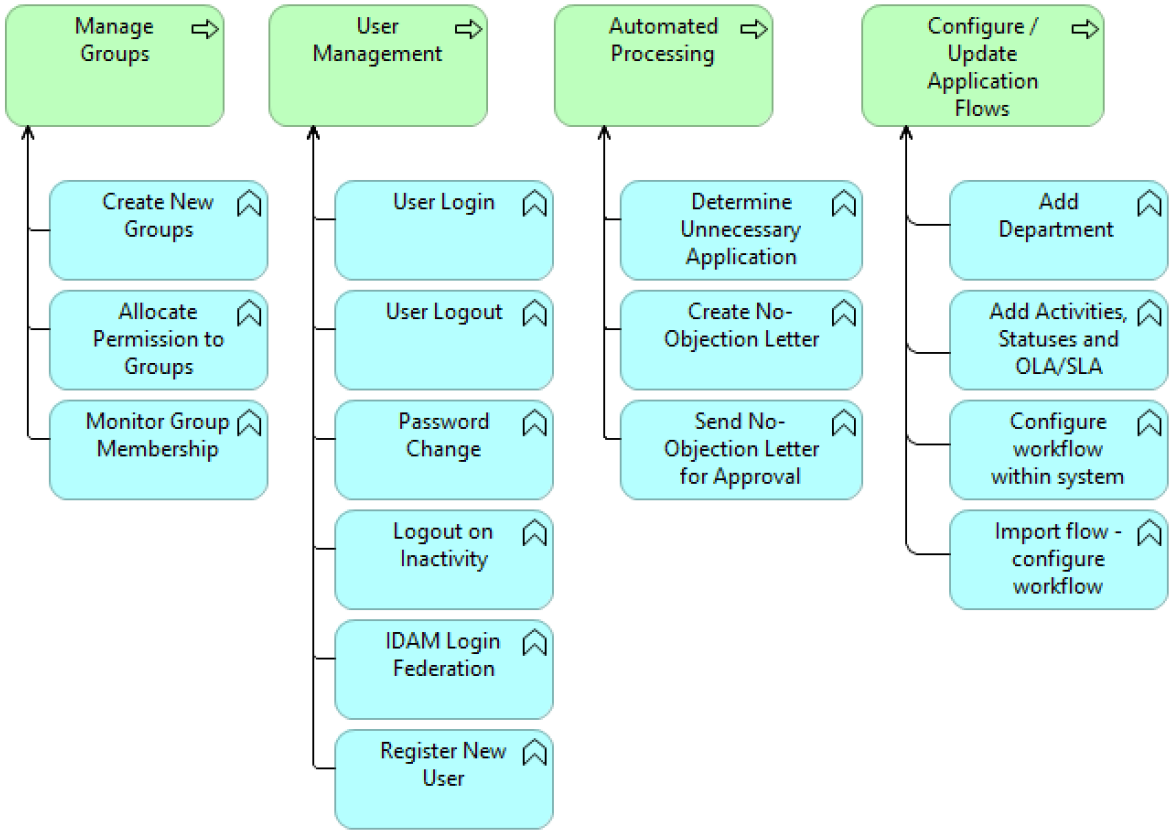
	4.6	Present Application Minimum Requirements	This is the presentation to the developer of the minimum requirements in terms of the applications for each different application that has been assessed as being required. This includes data assessments, investigations, reports, and other documents.
Submit Applications (Manual)	5.1	Generate Completed Application Form	This is the generation of completed application forms for those competent and commenting authorities where electronic systems are not available. This applies both to the situation where paper documents need to be delivered to the authority, as well as where these documents are emailed to specific mailboxes within the competent authority. The information that has already been gathered will be used to complete the application form.
	5.2	Present Form for Update and Signature	This is the presentation of the completed application form to the developer or their representative for this to be reviewed, corrected if necessary, and signed if needed. Once this has been completed and signed, a version of this will be stored within the system. If any changes need to take place, then a separate new version will be kept together with the time and date stamp of when this version was created.
	5.3	Package with Supporting Documents	This is the consolidation and packing of all necessary documentations, forms and checklists that are needed for an application at a single competent authority. All information will be stored in an accessible location within the EOSS system repository and will be version controlled with date and time for each document.
	5.4	Print Manual Submission	For those competent authorities that require paper submissions, the system will facilitate the printing out of these documents such that the user can then manually deliver them to the necessary competent authority.
	5.5	E-mail Manual Submission	This is the emailing within the system, of all application forms and necessary supporting documents to the competent authority as they have been configured within the system. This also consists of the end-to-end management of the E-mail - including the tracking of acknowledgement-of-delivery of any received confirmation or other messages.
	5.6	Capture Dept Application ID into project	This is the saving of the application id at each competent authority such that it is linked to the project from the developer and can be used to track the status of the application thereafter. In sudden situations where this information is manually uploaded either as a physical file or as an email the information will need to be captured onto the project by a user. This user could either be the developer, their representative or the EOSS staff.
Submit Applications (External)	6.1	Download for External Submission	This is a function which allows applications that cannot be electronically submitted from the EOSS system directly into the department system to be downloaded by the user and then submitted by logging onto their online system. This is only required for those systems where it is not possible to interface electronically to.

Submit Applications (Integrated)	7.1	Generate Automated Application	This is a consolidation of all information that is necessary to be submitted electronically directly from the EOSS system into the competent authority system. This includes having all of the necessary structured data that needs to be submitted directly via APIs or other methods.
	7.2	Present for Update and Signature	This is the presentation of the application form for any updates and signatures that are required where the application has to be either manually or electronically signed by the user before being submitted to the competent authority. This also applies to any other documents that need to be signed off either manually or electronically by the developer before being submitted.
	7.3	Submit Form Electronically	This is the submission of the application form directly into the competent authority systems via an electronic interface.
	7.4	Identify and Package Supporting Documents	This is the identification and packaging of all material that is required in support of the application (This appears to be similar to package with supporting material that is used for the manual submission of applications and may thus not need to be a separate function on the system).
	7.5	Submit Supporting Documents	This is the uploading of the supporting materials using the electronic interface directly into the competent authority's systems.
	7.6	Add Dept Application ID to Project	This is the electronic and fully automated addition of the application ID at the company authority into the project information.
Track Overall Project Status	8.1	Present Projects List and Status	This is a facility for the presentation to the user of all projects associated with that user as well as the current status of those projects. This will be context-sensitive with different users having different projects visible to them, based on whether they have authority for that project or not. In the case of a developer, they would be able to see only the projects which that user has been assigned to within the developer. In the case of the competent authority, this will be all projects as well as the applications only for those projects that need to be submitted to that particular competent authority. In the case of EOSS users, this will be the subset of projects which the EOSS staff have been allocated to within the system. In some cases, this could be the entire project list and in other cases, this could be a *subset* of the entire project list.
	8.2	Present Project Applications List	This is a facility to present to the user all applications that are linked to a specific project which the user has access rights to see. The high-level status of the application will be shown. If the user needs to see greater detail, they will be able to drill down from this into another function which will then provide this information.
	8.3	Drill Down into Application Details	This is a facility for the user to do drill-downs from the application list in order to see details of a single application. This will include the current state within the competent authority in terms of processing as well as any additional information or work that needs to be conducted by the developer.
	8.4	Pull Application Tracking Info	This is the automated pulling of current application tracking information from within the competent authority system. This could take place via a number of different connectors, all of which need to be supported by the system. Authenticated APIs should ideally be the method used; however, database

			integration as well as push systems which allow the computer authority to push information into the system as well as the processing of messages such as email messages which are sent through to predetermined mailboxes could be methods used to obtain this information.
	8.5	Manual Capture of Tracking Info	This is a facility that allows the update of the application status to be manually captured in the case where it is impossible to obtain information from within the competent authority systems, either because of technical issues or administrative issues. EOSS staff would be able to update the status. Staff with competent authority would also be able to update this status by manually capturing it onto the EOSS system.
Track Applications	9.1	Compare Application Status vs SLA	This is the comparison of the overall application processing status with the agreed service level agreements for end-to-end processing of an application. This will take into consideration that the clock could (but not always) stop if there is any additional information that is required from the developer. The facility also needs to support the situation where the clock would restart from the beginning if the developer has not provided complete and correct information.
	9.2	Compare Application Activity vs OLA	This is the comparison of the time taken within activities that are part of the overall application process at a computer authority with the agreed operational level agreements which have been configured into the system for the specific competent authority. Based on this, it will be visible whether a project or activity is on track as expected, is close to the deadline time, or has exceeded the deadline time. This information will be used in other services to notify different persons based on the current state of that specific application activity.
	9.3	Create Notification at SLA Threshold	This is the creation of a notification when a preset threshold has been breached (before the SLA has expired). This could be that either 75% or 80% of the predetermined time before SLA breach, SLA breach (100%), or when the SLA time has been exceeded by a predefined percentage such as 25%. All of these need to be configurable per application (and application subsection within the process). Based on this information, different notifications will be created for different responsible persons to deal with the issue within the competent authority, the developer so that they can understand the current status of the application, or an escalation to higher level staff within the competent authority and within EOSS.
	9.4	Create Notification at OLA Violation	This is the creation of a notification when the OLA time has expired for any activity.
	9.5	Escalate at SLA+Margin Violation	This is an escalation (typically to a line manager) when an SLA violation has occurred.
	9.6	Add Notes / Comments / Responses	This is a facility to allow notes to be added to different components within the system including any project or application supporting documents, any application processing activity, or the overall project. This facility will allow users to respond to comments. The time and date of such comments shall be kept together with the user who entered the comment, as well as any users who responded to the comment. No comments shall be overwritten or deleted.

Provide Feedback / Additional Information	10.1	Capture Feedback for Application	This is the capturing of feedback specifically related to an application, typically the end result, which is a formal process. The date and time of the feedback as well as the user who made the feedback must be included. It will be possible to add a document to this feedback, thus enabling further information to be provided as supporting material.
	10.2	Capture Application Findings	This is the capture of the overall findings related to an application, including whether it is accepted, provisionally accepted, returned for new information, or rejected. Supporting commentary and documentation will be possible to link to the finding.
	10.3	Request Additional Documents	This is the requesting of additional documentation from the developer to further clarify their application. The time and date of the request as well as the user and department that requested this information shall be kept together with the request. The system could either stop clock and send notification once this occurs and only restart when the document or information is correctly received.
	10.4	Manage Additional Document Requests	This is the management of the additional documents that have been requested to ensure that they are received within a reasonable time frame. This shall include tracking the additional document requests to ensure that it is received timeously, including escalation to the developer's staff or department staff if timelines are not being met. This includes the uploading of additional documentation that has been received as specified as well as notification of all responsible persons when the document has been uploaded.
Provide Additional Documents / Reports	11.1	Receive Additional Documents	This is the receiving of the additional documentation, storage of this documentation with the associated metadata and allowing access to the documents based on the users having access to that project and that application.
	11.2	Distribute Additional Documents	This is the distribution of the additional documents to the staff that requested that document. This includes either restarting the clock or starting the clock for the service level agreement (SLA).

4.2 Administration Functionality



Category	Name	Description
Manage Groups	Create New Groups	This is the creation of new groups for access control purposes.
	Allocate Permission to Groups	This is the allocation of permissions to new or existing groups.
	Monitor Group Membership	This is the monitoring of the group membership to ensure that there are no unexpected changes to the permissions allocated to groups.
User Management	User Login	This is facility to allow normal use login, using methods to reduce robotic login attempts. Two factor authentication will be essential using one of several authenticators (Google. Microsoft, SMS - not ideal, and E-mail). A number of password attempts before lockout (for defined time period such as 1 day) needs to be globally configurable on the system. The user login must use an existing and well-respected authentication engine such as Microsoft Entra ID, Google, Okta. Note that the same authentication engine will be used for internal and external users. User federation with specified identify and access management engines will be allowed.
	User Logout	This is a facility allowing a user to log out of the system manually.
	Password Change	This is a facility that allows a user to securely change their password. As per current best-practice guidelines the resetting of passwords is not enforced.
	Logout on Inactivity	This is a facility that automatically logs the user out of the system after a predetermined and configurable amount of time.
	Register New User	This is a facility that allows new users to create a login for themselves. In order to register as a user, certain company/developer-related information needs to be captured. (Unless the interested public is also allowed to have access to limited information in the system). At the very minimum the user would need to provide their SA ID Number (if the system is only intended for user by South Africans) or their passport number, business and cellphone telephone number (for 2 factor authentication) and business E-mail address. Note that at this stage there is no need for full business information but may be required later. The password will meet minimum standards for complexity, but could even be passwordless - using an authenticator application.
	IDAM Login Federation	This is a back-end service that allows users to use their logins in other platforms (typically Google or Microsoft) to login to the system. EOSS internal users and users from the approval departments will not be allowed to use their social media logins. However, they could use their department's login if allowed.

Automated Processing	Determine Unnecessary Application	This is the determination that an application is unnecessary based on characteristics of the initiative.
	Create No-Objection Letter	This is the creation of a no-objection letter where it is certain that no issues will arise due to the project.
	Send No-Objection Letter for Approval	This is the sending of the no-objection letter for authorization and signature before it is sent to the developer.
Configure / Update Application Flows	Add Department	This is the adding of a new department to the system. This task should be possible to undertake by a system administrator.
	Add Activities, Statuses and OLA/SLA	Once a new department has been added or an existing department needs to change, this is the setup of the high-level activities required, the status once the activity has been successfully completed , the OLA for the activity and the SLA for the overall application process.
	Import flow - configure Workflow	This is the importing of a workflow definition diagram such as a BPMN version 2.0 diagram and the creation of the workflow from this.
	Configure Workflow within System	This is a configuration of a simple version of a workflow system within the SWAP system.

5 System Implementation

The system should be implemented in phases as follows:

Phase	Name	Description
0	Project Initiation and Planning	This consist of: • Project Definition • Stakeholder Liaison / Change Management • Setup Governance Structures
1	MVP (Pilot)	This consists of a minimum viable product (MVP) which must be fully functional but does not include full integration to department / agency systems. The system should have (as a minimum): • Solution Architecture (and Security Architecture). • UI and User Journey Design (wireframes, etc). • DevOps Environment (code builds, automated tests, code branches and merging, static code analysis, release management into test environments). • Ability for developer to login and register a project. • Guidance as to the different applications required and the timelines (taken from the existing decision tree system). • Embedding of all existing online applications within iFrames (this will not have any data level integration with the rest of the SWAP system). • Menu system that supports opening of the necessary external applications within iFrames. • Ability to automatically create and populate documents (with already captured information) for manual or E-mail submissions. • A tracking dashboard that enables the user to see the current status of their application in single window (not within iFrame). This must be updated via APIs for all departments with workflow systems (whether visible to the user or not), or where the departmental users routinely update the status of each application on the SWAP system. (The system must thus support one way integration to update statuses with no integration to update the department systems from the SWAP system). • All security controls needed to protect system availability and data confidentiality, integrity and availability. This includes black and grey box penetration testing (could be implemented by independent organisation). • Appropriate platform which can be enhanced as needed to support new features and integration to existing department systems. • User management including user permissions, 2 factor authentication, etc. • Documentation • Training
2	DFFE Workflow Enablement	In additional to the functionality in Phase 1, this will also include: • Workflow functionality, including the ability for DFFE to manage their applications end-to-end within the system.

		• Reporting (including ability to download information to Excel for further analysis). • Data Migration (limited) for changes from Phase 1. • Single Sign On • Security Testing • Training
3	Final System	In additional to the functionality in Phase 2, this will also include: • Ability for other departments to use workflow functionality for their internal processing and control. • Cross-organisational boundary workflows – to enable requested-for comments from commenting authorities and approvals from others. • Full bi-directional integration to all departments that have online systems. Projects and applications that are registered in SAP are now synced with the Department systems. • Ability of EOSS to create own reports and integrate with system. • Training
4	Enhancements	In additional to the functionality in Phase 3, this will also include: • Integration to other departmental systems that have not yet been implemented. (Dependent on new systems at Departments).

5.1 Minimum Standards for Systems Implementation

It is essential that a best-practises-based systems implementation methodology be followed. It is expected that this would include adherence to DevOps or DevSecOps principles. A key principle is to "fail fast" thus allowing any errors to be detected and rectified early in the process, thus saving time and effort.

- **Phased Implementation**: The system should be planned to be implemented in a phased manner. This will make allowances for departments that do not have systems or that are currently updating or implementing new systems.
- **Solution Architecture**: The solution architecture must follow best practices for modern applications including service orientation, loose coupling and separation of concerns. The judicious use of microservices is also recommended.
- **DevOps Environment and Process**:
    - *Automated Unit and Integration Testing***:** Automated testing is essential in order to create maintainable and flexible systems. This must be built into the DevOps tool and all code must be tested as a minimum (unit tests) before being merged into the main code branch.
    - *Static Code Analysis*: Automated static code analysis should be performed to detect issues in the manner in which the requirements are coded.
    - *Versioning, Branching, Merging***:** The DevOps tool needs to be configured to allow string control of codebase versions, and should have well defined branching and merging processes.

- **Environments:** A full set of environments to ensure that system and data related risks are minimised. This should include, as a minimum; a development, integration, user testing and production environment. The DevOps platform environment is typically also needed as a separate protected environment.

6 User Journeys

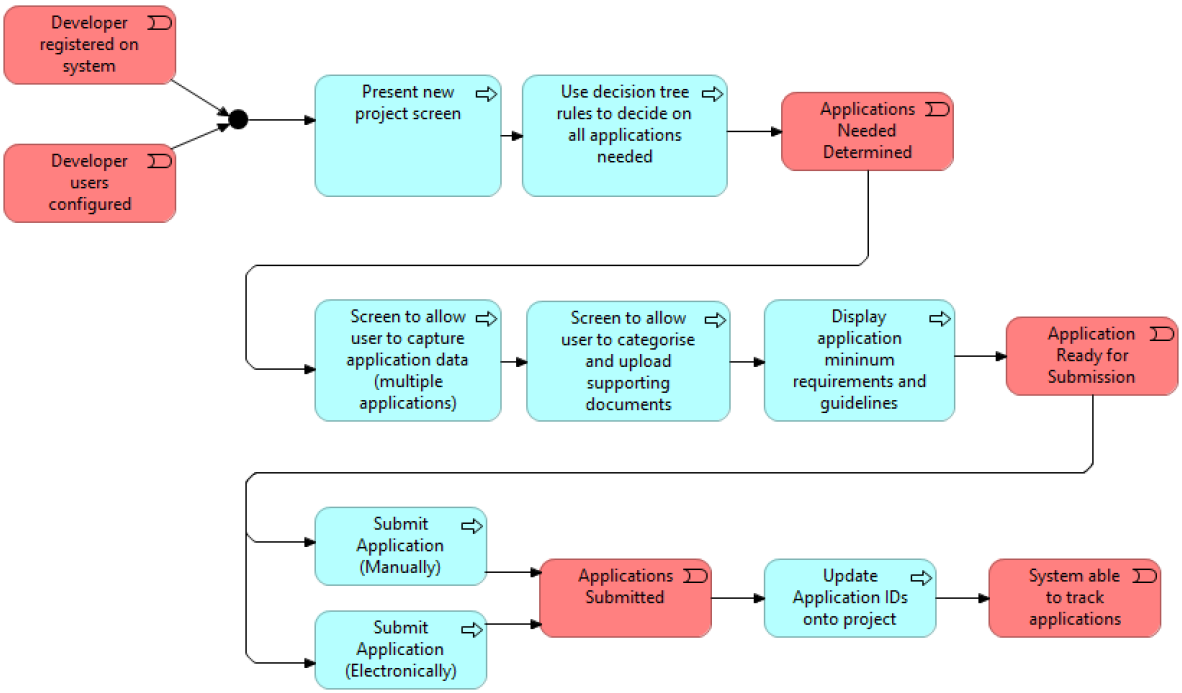
Note that these user journeys are samples and all user journeys will need to be understood in detail by the software developer. These should be validated with the business prior to being implemented.

6.1 Journeys List

User	Journeys	Notes
Developer	1. Register project	This includes the allocation of staff who shall work on the project, their roles, capture do project details and upload of supporting documents. Based on the project details, the full list of applications required will be provided once the initial data has been captured.
	2. Manage application	This includes the providing of updates, reports, assessments, etc. as required, as a part of the application process.
	3. View and track all projects and related application progress	This includes a dashboard that displays the current state of each application related to the project and whether there is any additional input that needs to be provided by the developer.
	4. View any notifications or alerts	These could be comments, feedback or requests for information provided by the Department.
Department / Agency	1. Create user account	This includes creation of different users with different responsibilities for any department related applications.
	2. View all applications	This includes being able to view the progress of each application in terms of adherences to timelines (OLA and SLA). This includes being able to view any applications that are not tracking as well as expected to those that have exceeded the deadlines.
	3. Process application	This includes the management of the application process within the SWAP application (workflow system). This includes any request for additional information or provision of commentary and reports.
	4. Update Application Status	This is the update of the application status on the SWAP system or internal systems that are integrated to the SWAP system.
Competent /Commenting Authorities	1. View all application that needs the Authority feedback	This is any provinces, municipalities that need to provide input to the application. Only those applications that are relevant to the specific organisation should be visible.

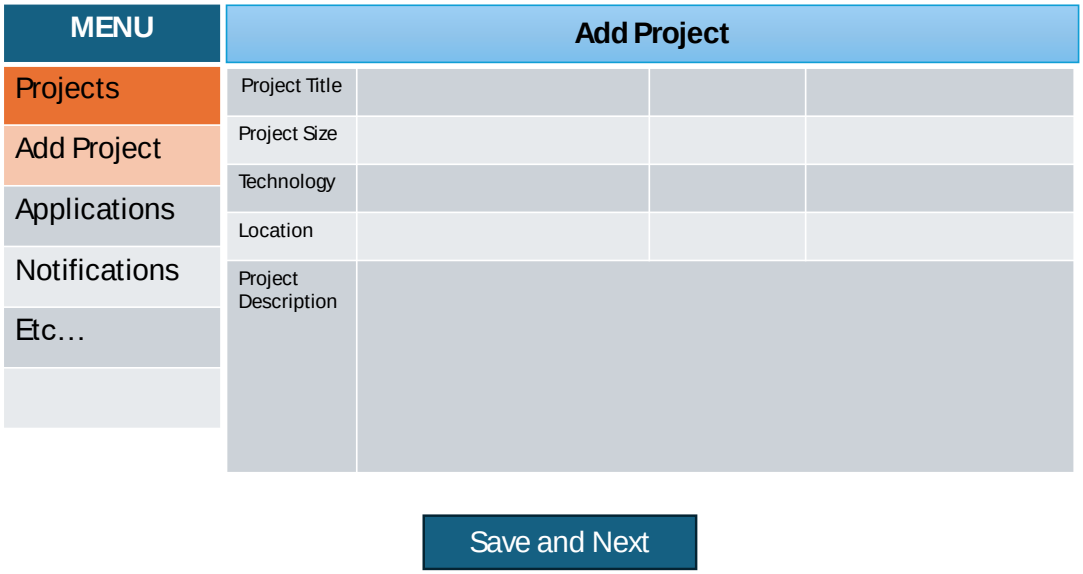
	2. Provide feedback and update application status	This is the update of the data related to an application either by the department / agency or directly by the authority.
All users	1. Create account	This is the creation and management of user accounts.

6.2 Submit new project

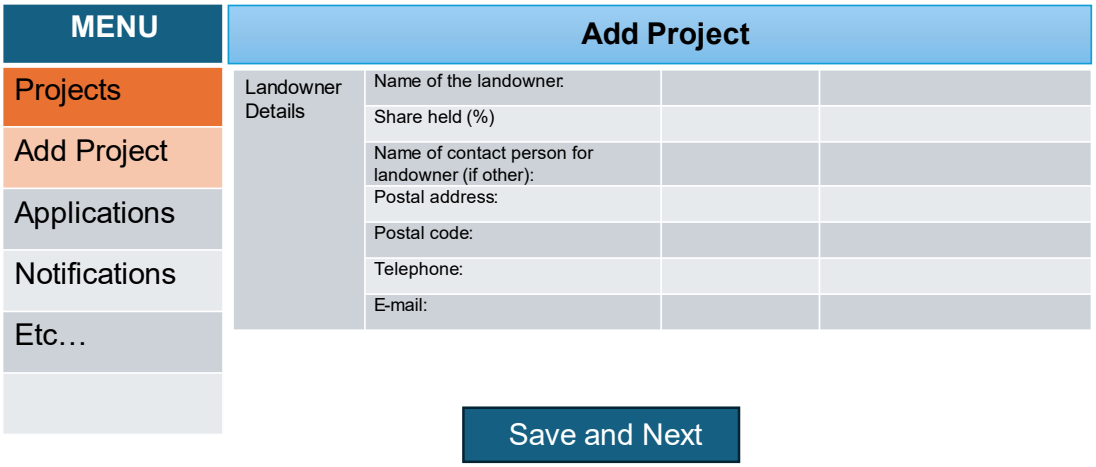


6.3 Add New Project

6.3.1 Initial Project Information

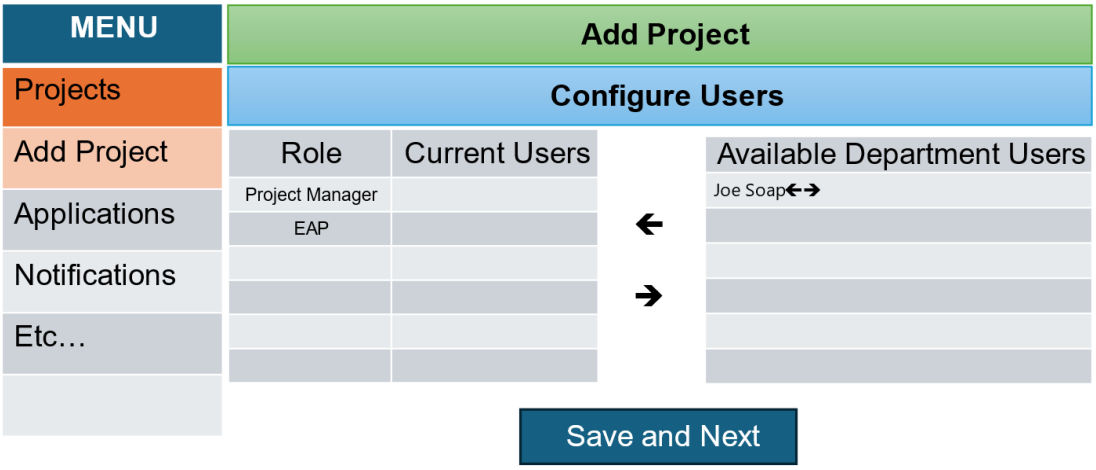


6.3.2 Enter Landowner Information

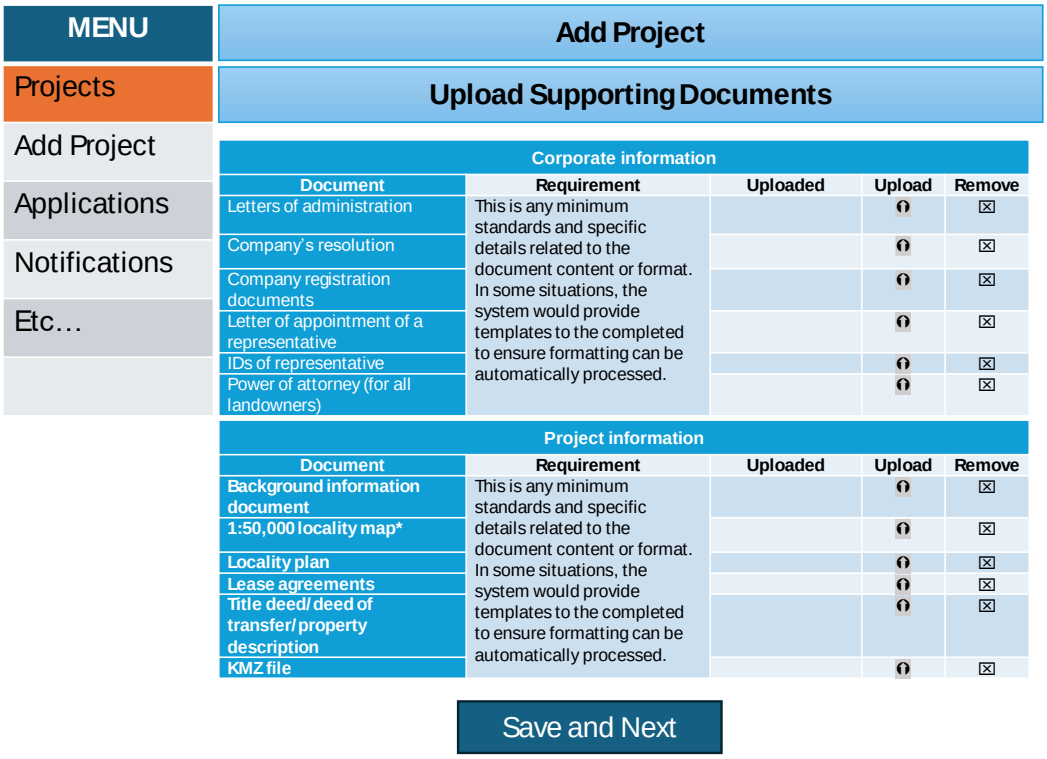


Once this information is collected other similar screens will allow the entry of other project details. Once done with information capture the user will be required to upload the required documents.

6.3.3 *Allocate Developer Users to Project*



6.3.4 *Upload required Project documents*



- Note that additional documents will be requested if this is a wind power project. The screen will change dependent on the nature of the power generation.
- The upload file facility must use the normal operating system tools for file selection.

6.3.5 Present Developer with Required Applications

MENU
Projects
Add Project
Applications
Notifications
Etc…

Add Project

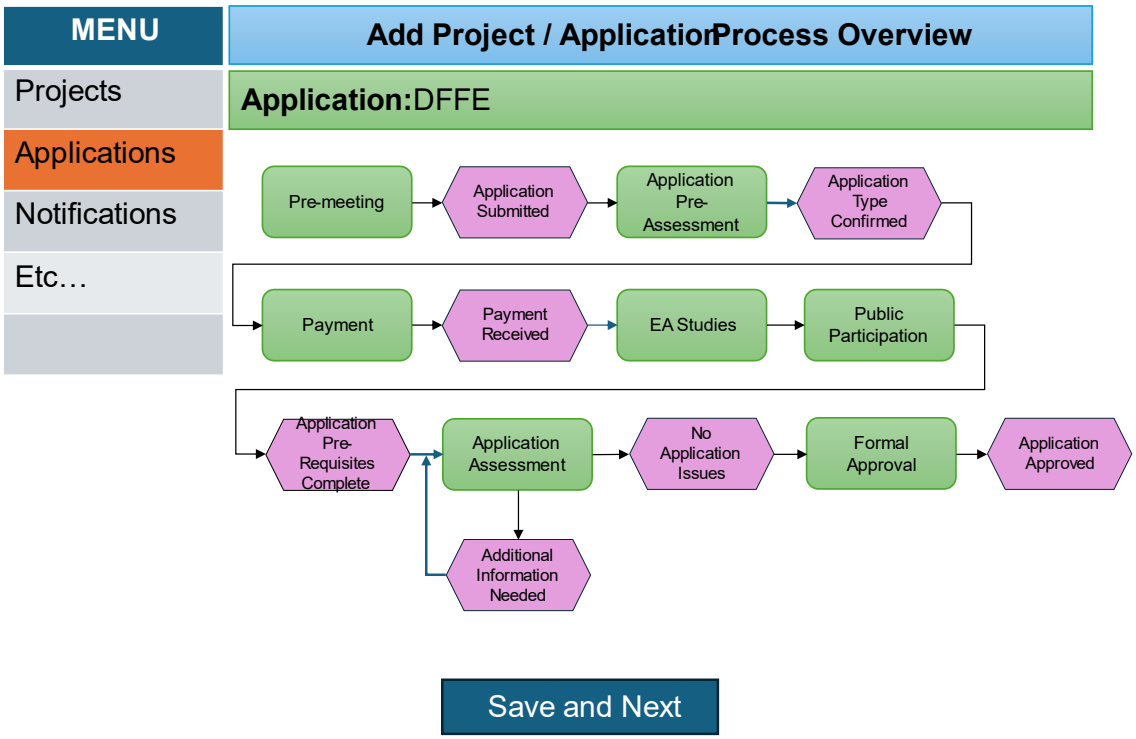
Applications Needed

No	Department / Authority	Type	Details	Comment
1	DFFE	Scoping and Environmental Assessment	This is needed where the electricity output is 20 megawatts ormore, and is not in a designed PV site. The applicable listing is Notice 1	e.g. Yes comment from the developer
2	SAHRA	…	… this can only occur EA completion however it is recommended that the HIA takes place even earlier as SAHRA would be a commenting authority for the EA …	No
3	DWS GA/WUL	GA or WUL		
4	SALA/DALRRD			
5	DMRE		Only if impacting mining land	
6	ATNS/SANDF			
7	DSI/AMA			
8	SAWS			
9	ESKOM CEL			
10	ESKOM BQ			
11	SANRAL			

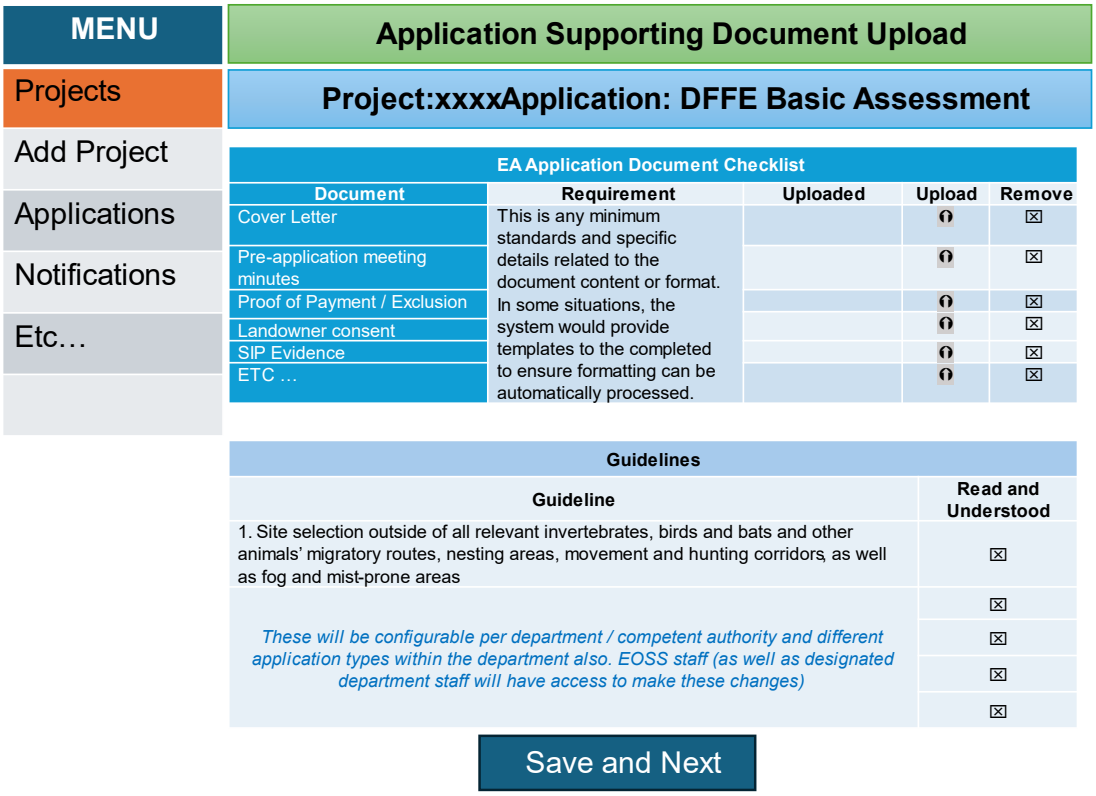
All required application as well as the sequence of each can be displayed (for this particular project) with motivation for inclusion (note that there are some general notes above).

6.3.6 Application Process Overview

This will vary depending on the Department / Agency:



6.3.7 Supporting Documents for Applications



6.4 Review Existing Project (Developer Perspective)

6.4.1 Project Lists Dashboard

MENU	Projects List				
Projects	Project ID	Name	Start Date	Days Completed	Days Remaining
Applications	DEVX-001	Project 1	1 Mar 2023	290	45
Notifications	DEVX-002	Project 2	1 Jan 2024	130	260
Etc…					

User can drill down into any project to see further details

6.4.2 Project Applications Dashboard

MENU	Applications List				
Projects	**Project Name:** Project 1				
Applications	Appl ID	Department	Current Status	Days Completed	Days Remaining
Notifications	XRF354	DFFE	Assessment	100	147
Etc…					

User can now drill down into different applications to see the current position within the overall (high level) process.

6.4.3 *Applications Details*

MENU	Applications Details
Projects	**Project Name:** Project 1
Applications	**Application:** DFFE / XRF354
Notifications	
Etc…	

Stage	Activity	Resp	Current State	OLA Days Planned	OLA Days Actual	Action Needed
1	Pre-meeting	Dev	Complete	-	-	-
2	Pre-assessment	DFFE	Complete	10	5	-
3	Payment Confirmation	Dev	Complete	5	10	-
4	Public Participation	DFFE	WIP	30	X	✪
5	Assessment	DFFE	WIP	x	X	✪
6	Approval		Future			

- User is able to review specific application and the progress in terms of the overall process.
- These steps, the responsibilities, as well as the guideline/timeline for completion of each step needs to be configured into system.
- The Action Needed contains any notifications, feedback or comment regarding this specific item.

6.4.4 *Notifications / Action Items/ Feedback / Comment*

MENU	Applications Details	
Projects	**Project Name:** Project 1	
Applications	**Application:** DFFE / XRF354	
Notifications	Type	Notification / Action / Feedback
Etc…	Date/Time	18/07/2024 8h00
	From	Person who send the message or notification
	Message	The KML file supplied only provides the details for 1 wind turbine, whereas your documentation indicates that this is a wind farm with 10 turbines.
	Response	User can enter response information

Respond

6.5 Review Existing Applications (Department View)

MENU	Department / Agency				
Projects	Applications List				
Applications	Appl ID	Department	Current Status	Days Completed	Days Remaining
Notifications	XRF354	Project Name	Assessment	100	147
Etc…					

This is a listof all applications within this department

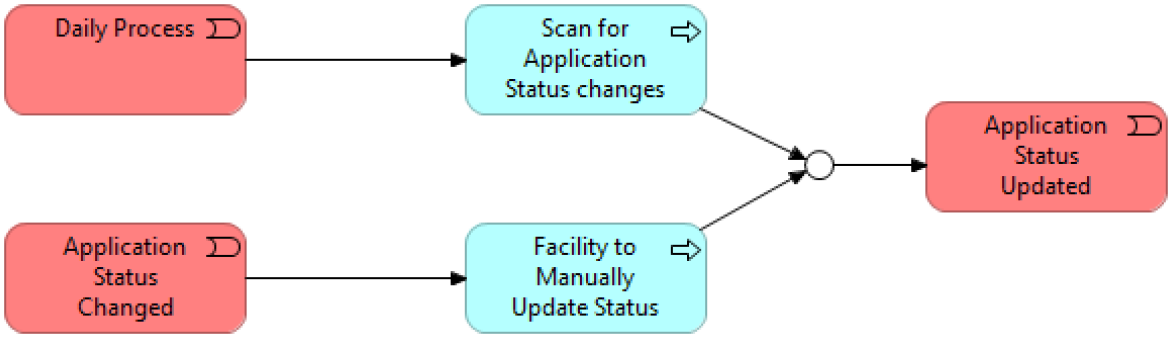
All applications that are within this department (also filtered by the applications that the current user has access to).

6.5.1 Drill Down Into Application Details

MENU	Department / Agency					
Projects	**Project Name:**Project 1					
Applications	**Application:**DFFE / XRF354					
Notifications	Stage	Activity	Resp	Current State	OLA Days Planned	OLA Days Actual	Action Needed
Etc…	1	Pre-meeting	Dev	Complete	-	-	-
	2	Pre-assessment	DFFE	Complete	10	5	-
	3	Payment Confirmation	Dev	Complete	5	10	-
	4	Public Participation	DFFE	WIP	30	X	✪
	5	Assessment	DFFE	WIP	x	X	✪
	6	Approval		Future			

User must be able to change the current state of any activity (or this could be updated automatically form an existing workflow system

6.6 Update Tracking Status of Applications



6.6.1 Scan for Application Status Changes

This is an internal system process that interfaces to existing department/agency systems and obtains the current status. Note that if the department/agency has systems, the SWAP system will have only a simplified version which allows the oversight and management rather than operational management of the process (DFFE would require an operational system).

6.6.2 Configuration of Application Activities and Statuses

MENU
Projects
Applications
Notifications
Admin
Interface

Configure Department / Agency

Name: SAHRA

Process Name	Normal Assessment	
Number of Activities to Add	6	
Overall Service Level Agreement (SLA) (days)	197	days
SAHRA Central Contact Email		
SAHRA Central Contact Number		
Dependencies (Application) – multiple can be added		ADD

Activity	Name	OLA Days	Timeline Start	Status
1	Pre-meeting	N/A		Pre-meeting complete
2	EA Studies	510		EA Study complete
3	Application Submitted / Payment	3	X	Application Received
4	Application Pre-Assessment	22		WIP
5	Public Participation	30		Public Participation
6	Application Assessment	55		Final Assessment
7	Formal Approval	5		Approved /Rejected

All task are assumed to take place sequentially

7 Security Requirements

Due to the publicly-facing part of the system, security will be critical in order to protect both personal as well as business confidential information. A layered and defence in-depth approach to security needs to be included in the system. The system needs to adhere to best-practice guidelines based on ISO27000 and NIST. For this, the expected minimum standard of security is as follows:

- **Network Security**: The solution must implement or recommend minimum standards for security in order to protect the network in which the SWAP system operates.
- **API Security**: The wide use of API's within all modern applications means that this is a critical fault line in the security of a company's applications. The wide and pervasive use of API's in all applications, and the access of these APIs via web interfaces means that this creates a huge surface area for attacks. Firewalls and web application firewalls are not sufficient to protect the organisation's data and systems. Inbound requests (i.e., HTTP/S north-south traffic) are often only the start of a sequence of communication flows. In many cases, a single inbound request generates many internal API calls (i.e., east-west traffic). If those internal API calls aren't properly secured and validated, API endpoints could be left unprotected. It is thus critical that API's are designed and protected in such a manner so as to limit the risk. APIs also need to be designed to reduce the impact of any breach. All API endpoints, both external facing and internal, need to be continuously monitored and secured.
- **Source Code Analysis:** The analysis of source code is a critical step in order to protect applications that are being developed. Such analysis can be used to identify security vulnerabilities and enforce good, secure coding practices. The source code analysis can consist both of manual as well as automated analysis. Both are typically required in an organisation. Automated analysis is able to run at high speed whenever the source code is changed and checked in. Automated analysis is also consistent and will not miss out on any checks.
- **Security Testing**: Application security testing at all stages of the software development process is necessary to protect the software in the most efficient manner possible. This must consist of both black box and white/grey box testing.

8 Functionality Details

In understanding the functionality contained herein, it should be clear that this is based on the best information currently at the time this specification was created. The software development process proposed must confirm these requirements and extend or modify where required to meeting the business requirements. The business requirements could also change before the development starts and changes could also occur thereafter.

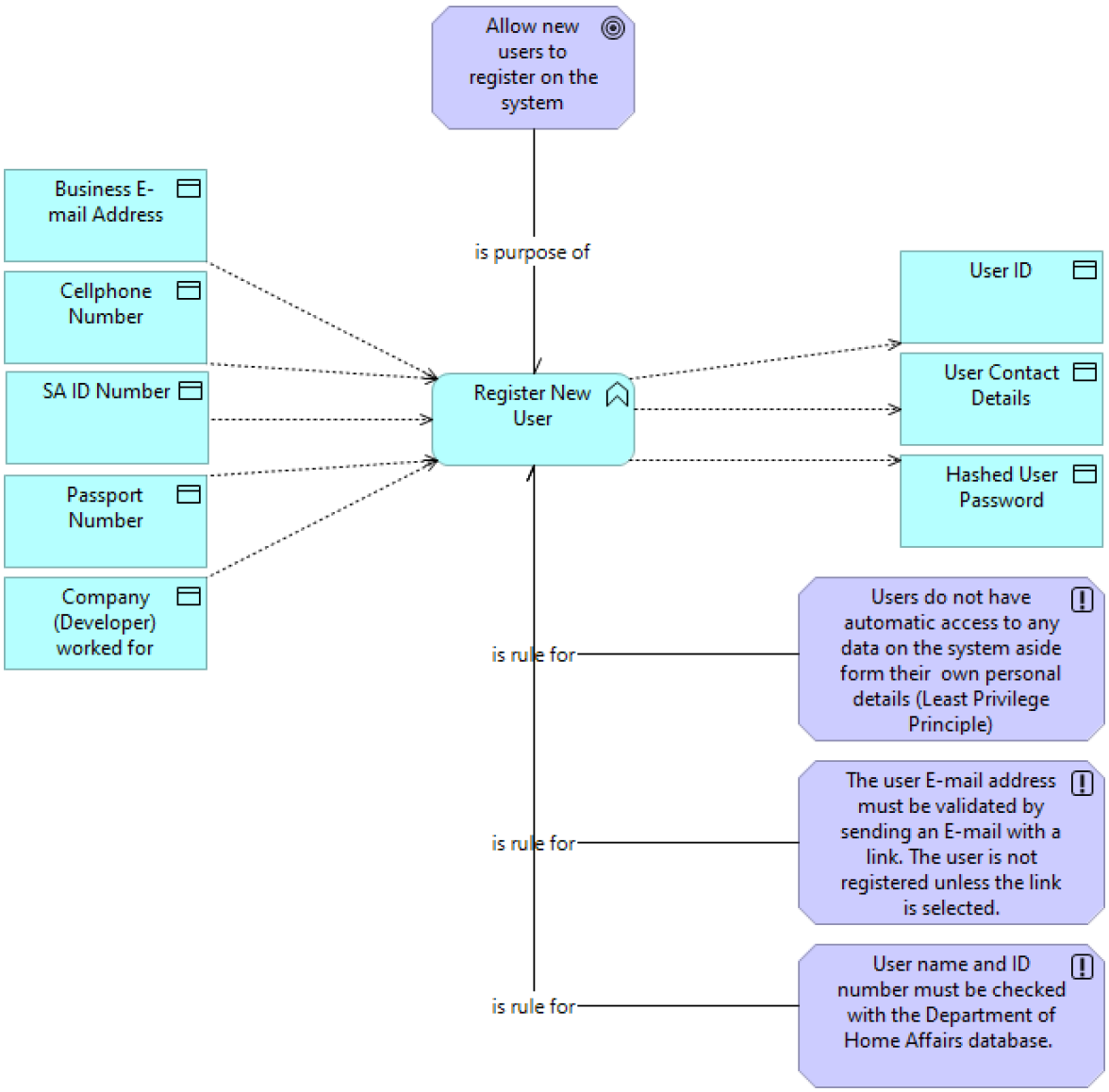
8.1 General Features

The following are the general features required in the system:

- **Process Flows**: The system needs to be architected such that all likely process flows are supported easily. Flows that occur infrequently do not need to be as fluid.
- **Data Validation**: Validation must take place at each data entry block and not only when submitting, e.g., if the text entered is too long, flag this immediately or prevent the entry of the incorrect type or length of input. The validation for each data item (as well as the format of the data item) would be confirmed as a part of the project process.
- **Save Function**: Users should be able to halt entering data at any point on a capture screen and save this in order to revisit it later. The full range of error checks that are conducted for the submission are not necessary at this point. This would be an addition to the Submit function for when the user is completely done and needs to process the information.
- **System Timeouts**: The system timeout of the user should be designed to balance the risk of not signing out of an application with ensuring that the user does not have to re-login unnecessarily.
- **Date and Time stamps**: All information entered in the system must have a date and timestamp. This includes any changes to the participant, queries, or study information, with the user who originally captured the information or made any changes.
- **Deletion of Records**: No record on the system is allowed to be deleted. Where there are features where data is allowed to be “deleted” or disabled, a reason for this is needed, even though the data is never actually deleted. Any data to be deleted should be flagged as disabled and then made not generally available except to be viewed by the System Administrators. This includes any validations or lookups that take place.
- **Offline Mode**: Offline mode is not required. Users' need to have an Internet connection to be able to use the system.
- **User Interfaces**: Only a web interface (not mobile) needs to be supported (>8-inch screen).

8.2 Manage User Accounts

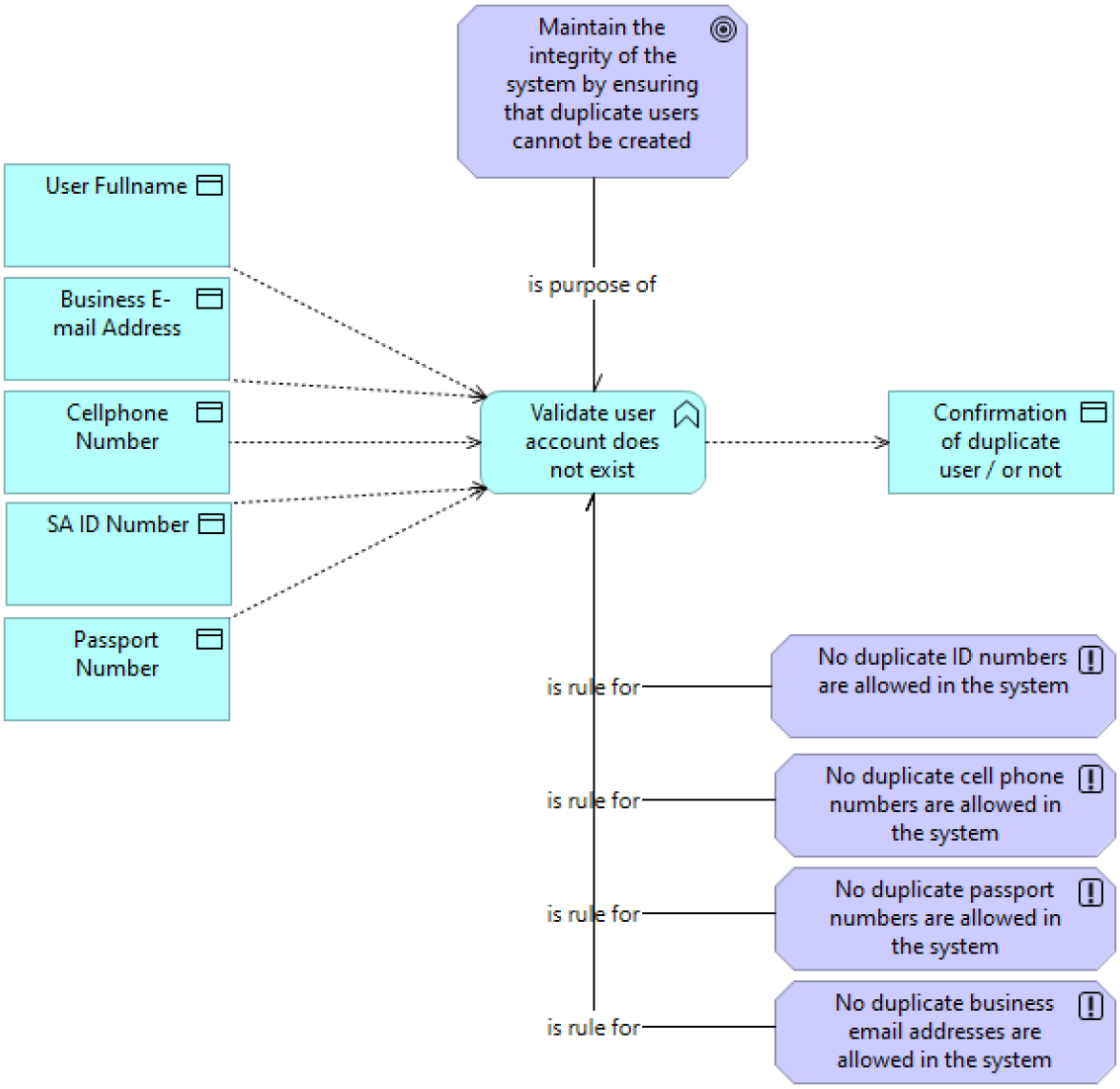
8.2.1 Register New User



Function Name	Register New User
Process ID	1.1
Features	This is a facility that allows new users to create a login for themselves. In order to register as a user, certain company/developer-related information needs to be captured. (Unless the interested public are allowed to also have access to limited information in the system). At the very minimum, the user would need to provide their SA ID Number (if the system is only intended for use by South Africans) or their passport number, business and cellphone telephone number (for 2 factor authentication) and business E-mail address. Note that at this stage there is no need for full business information - that will come later. The password will meet minimum standards for complexity, but could even be passwordless - using an authenticator application.

Location	Identity and Access Management Module
Data Inputs	• Business E-mail Address (Data) • Cellphone Number (Data) • SA ID Number (Data) • Passport Number (Data) • Company (Developer) worked for (Data)
Data Outputs	• User ID (Data) • User Contact Details (Data) • Hashed User Password (Data)
Business Rules	• Users do not have automatic access to any data on the system aside from their own personal details (Least Privilege Principle). • The user E-mail address must be validated by sending an E-mail with a link. The user is not registered unless the link is selected. • Username and ID number must be checked with the Department of Home Affairs database.

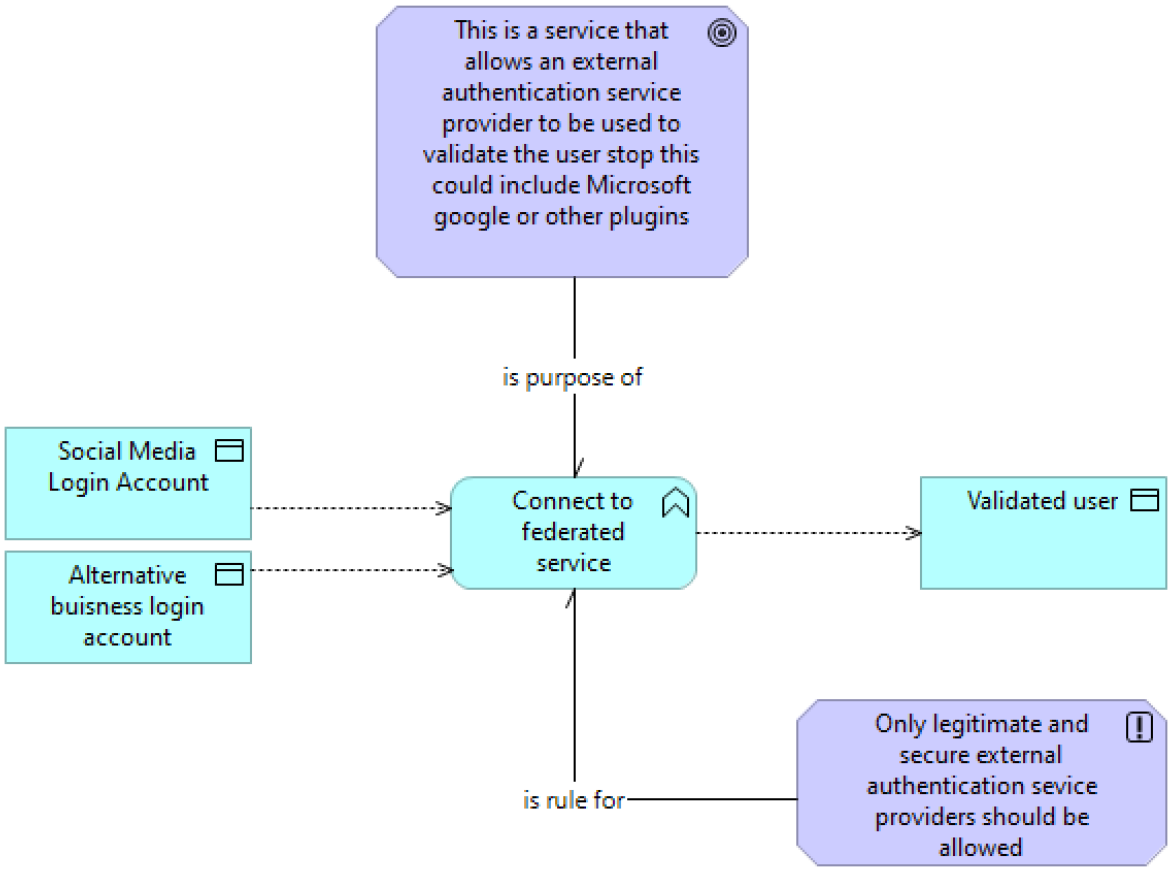
8.2.2 Validate user account does not exist



Function Name	Validate user account does not exist
Process ID	1.2
Features	This is checking of the identity and access management system to ensure that this user has not already been registered on the system. The system must allow users who work with multiple developers and on multiple projects to be possible. This is specifically geared for the situation where the consultant works across multiple different projects.
Location	Identity and Access Management Module
Data Inputs	• User Full name (Data) • Business E-mail Address (Data) • Cellphone Number (Data) • SA ID Number (Data) • Passport Number (Data)
Data Outputs	• Confirmation of duplicate user / or not

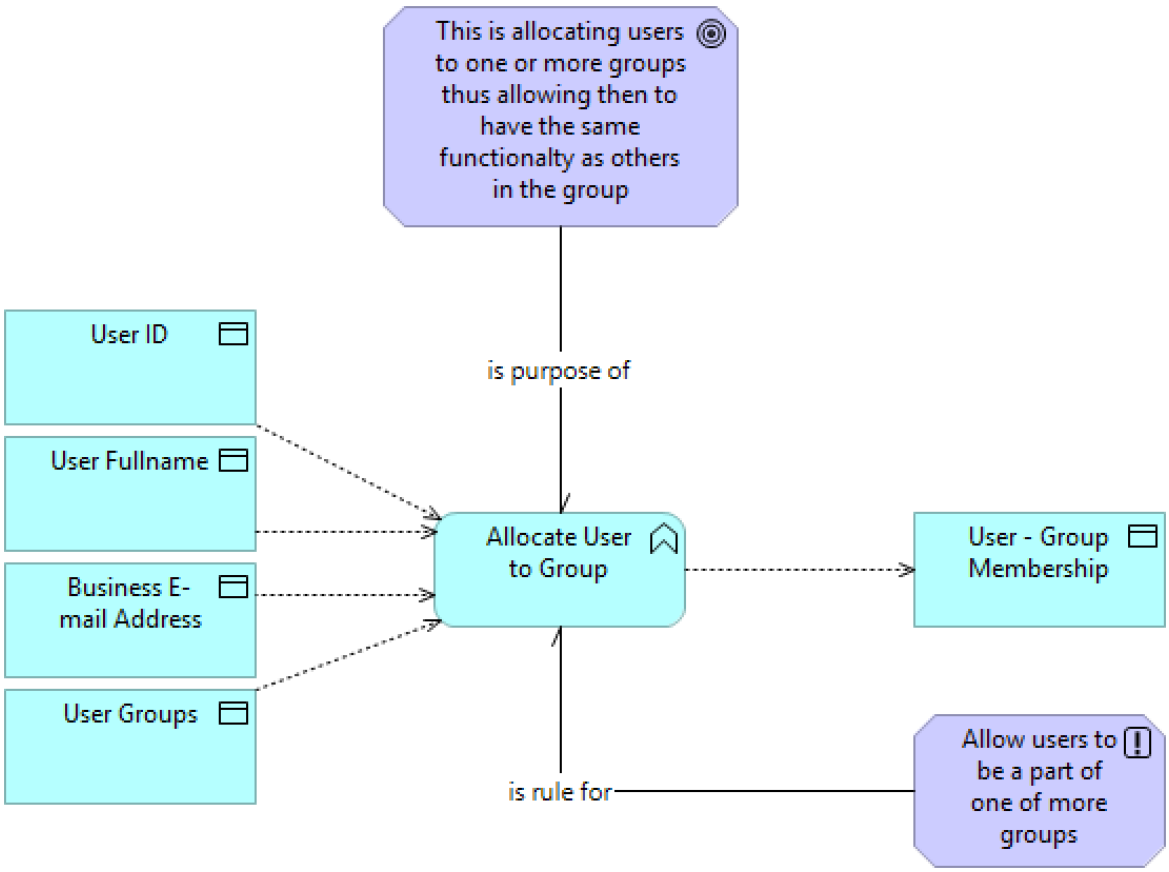
Business Rules	• No duplicate ID numbers are allowed in the system • No duplicate cell phone numbers are allowed in the system • No duplicate passport numbers are allowed in the system • No duplicate business email addresses are allowed in the system

8.2.3 Connect to federated service



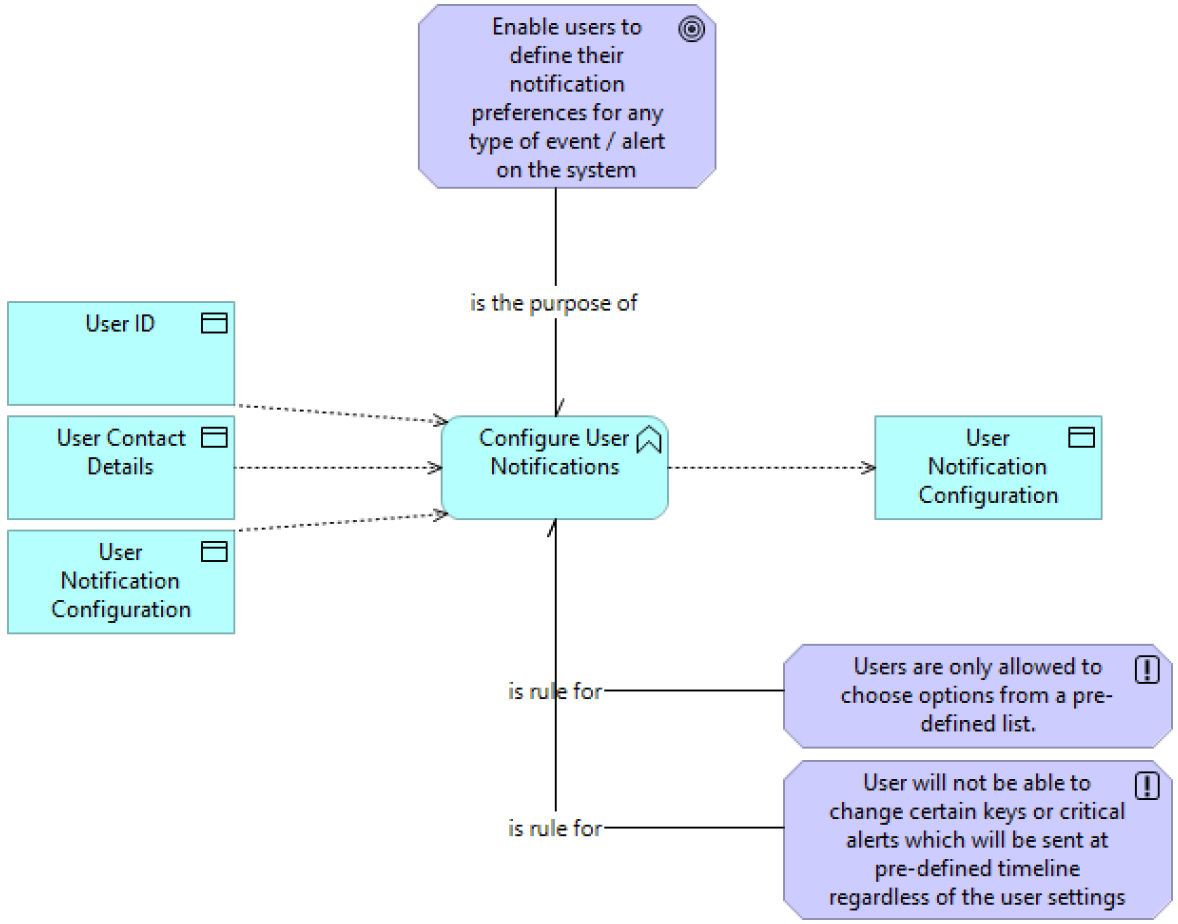
Function Name	Connect to federated service
Process ID	1.3
Features	This is the connection of the identity and access management system within the system to other authentication service providers such as Microsoft and Google in order to simplify the user permissions and login process for developers and their representatives.
Location	Identity and Access Management Module
Data Inputs	• Social Media Login Account (Data) • Alternative business login account (Data)
Data Outputs	• Validated user (Data)
Business Rules	• Only legitimate and secure external authentication service providers should be allowed

8.2.4 Allocate User to Group



Function Name	Allocate User to Group
Process ID	1.4
Features	This is the allocation of users to different groups with different privilege levels within the system. Note that users will always be restricted to the data that they can see based on which developers, projects and applications that they have been linked to.
Location	Identity and Access Management Module
Data Inputs	• User ID (Data) • User Fullname (Data) • Business E-mail Address (Data) • User Groups (Data)
Data Outputs	• User - Group Membership (Data)
Business Rules	• Allow users to be a part of one of more groups

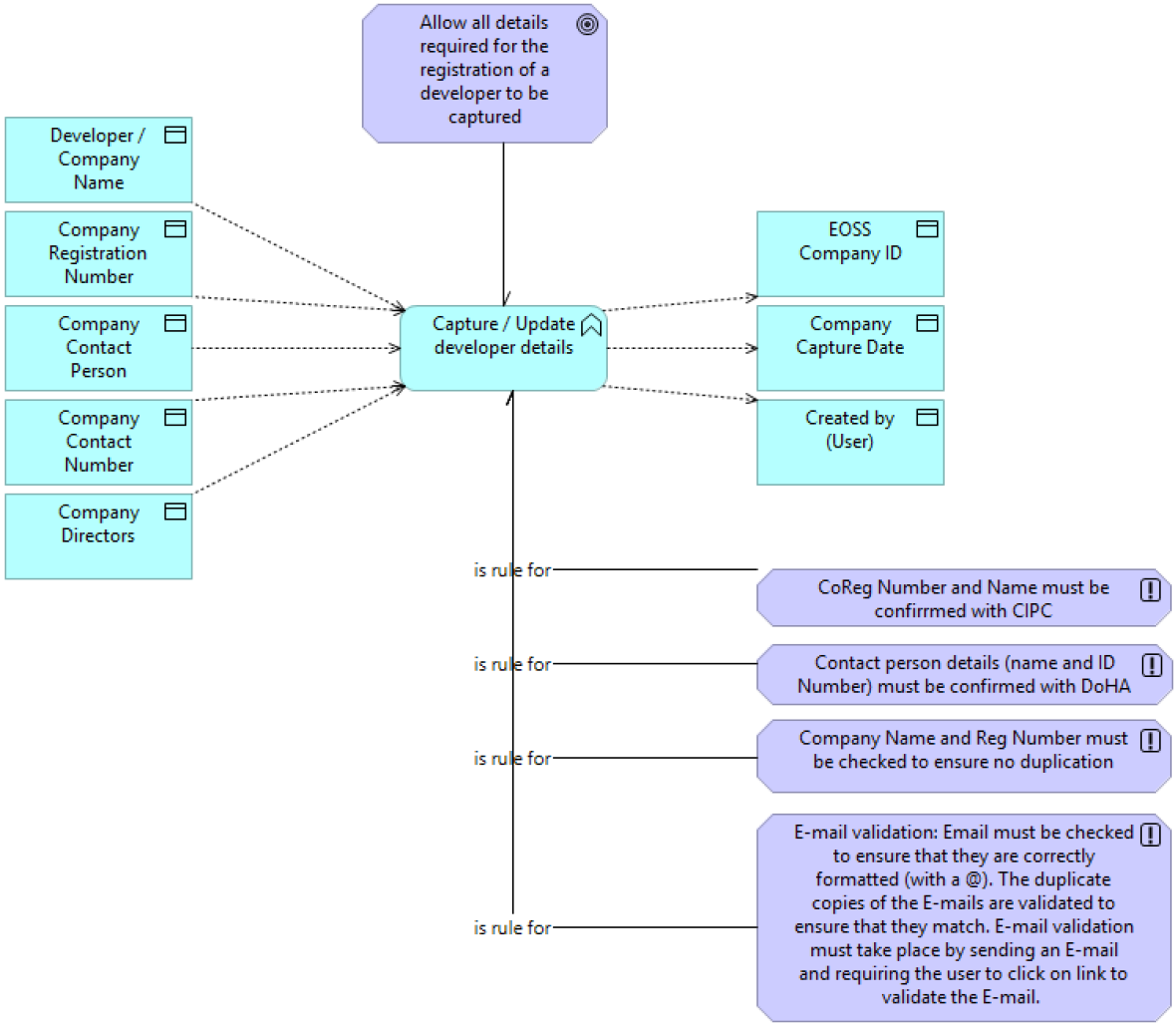
8.2.5 Configure User Notifications



Function Name	Configure User Notifications
Process ID	1.5
Features	This is a facility that allows the user to configure their notification setting for a range of events. Users will be able to choose the notification type (within system, E-mail, WhatsApp, SMS or a combination), the frequency of notifications (once per day, once per week or immediately after the event occurs).
Location	Notifications Module
Data Inputs	• User ID (Data) • User Contact Details (Data) • User Notification Configuration (Data)
Data Outputs	• User Notification Configuration (Data)
Business Rules	• Users are only allowed to choose options from a pre-defined list. • User will not be able to change certain keys or critical alerts which will be sent at pre-defined timeline regardless of the user settings.

8.3 Register Developer Company

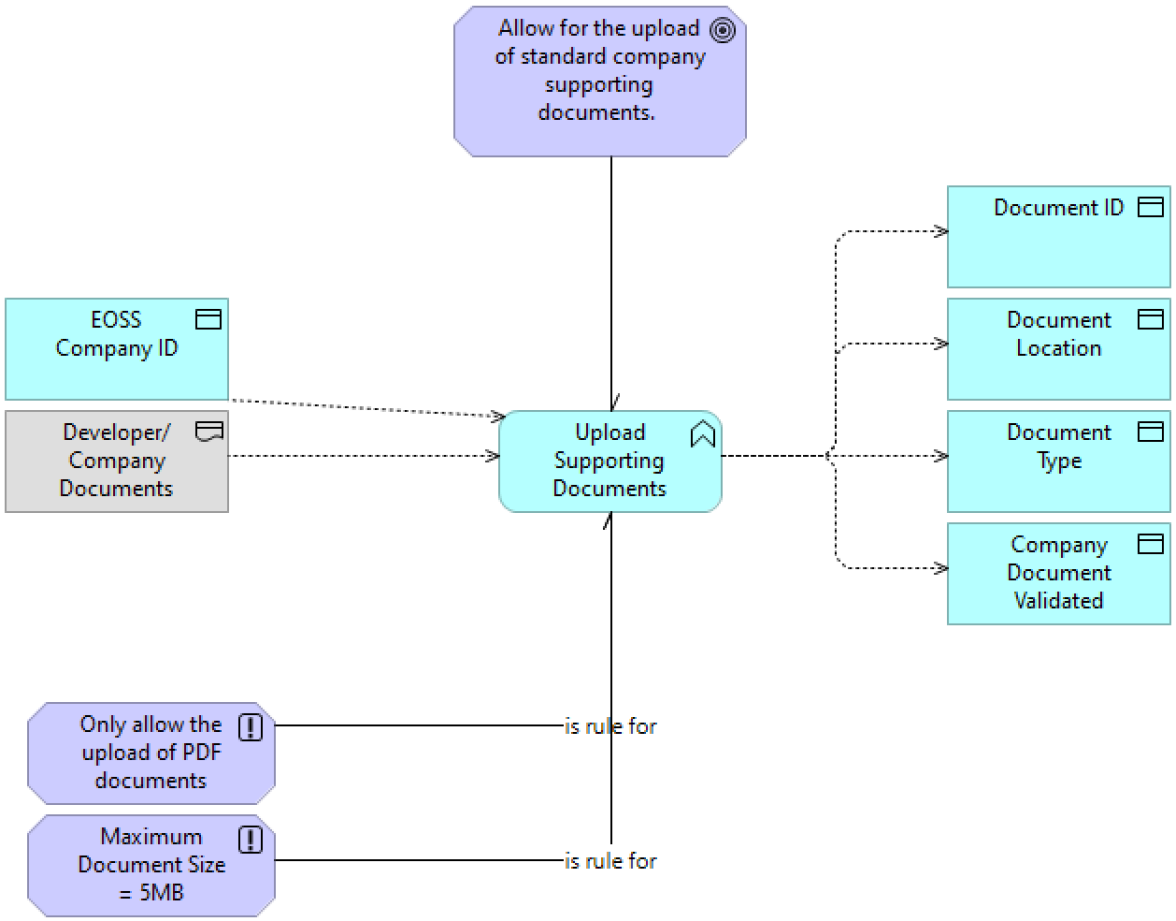
8.3.1 Capture / Update developer details



Function Name	Capture / Update developer details
Process ID	2.1
Features	The creation of the developer within the system is a once-off activity. The system will allow the developer to update their information subsequently without changing the core details of the developer such as the developer ID number.
Location	Developer Module
Data Inputs	• Developer / Company Name (Data) • Company Registration Number (Data) • Company Contact Number (Data) • Company Directors (Data) • Company Contact Person (Data)
Data Outputs	• EOSS Company ID (Data) • Company Capture Date (Data) • Created by (User) (Data)
Business Rules	• CoReg Number and Name must be confirmed with CIPC

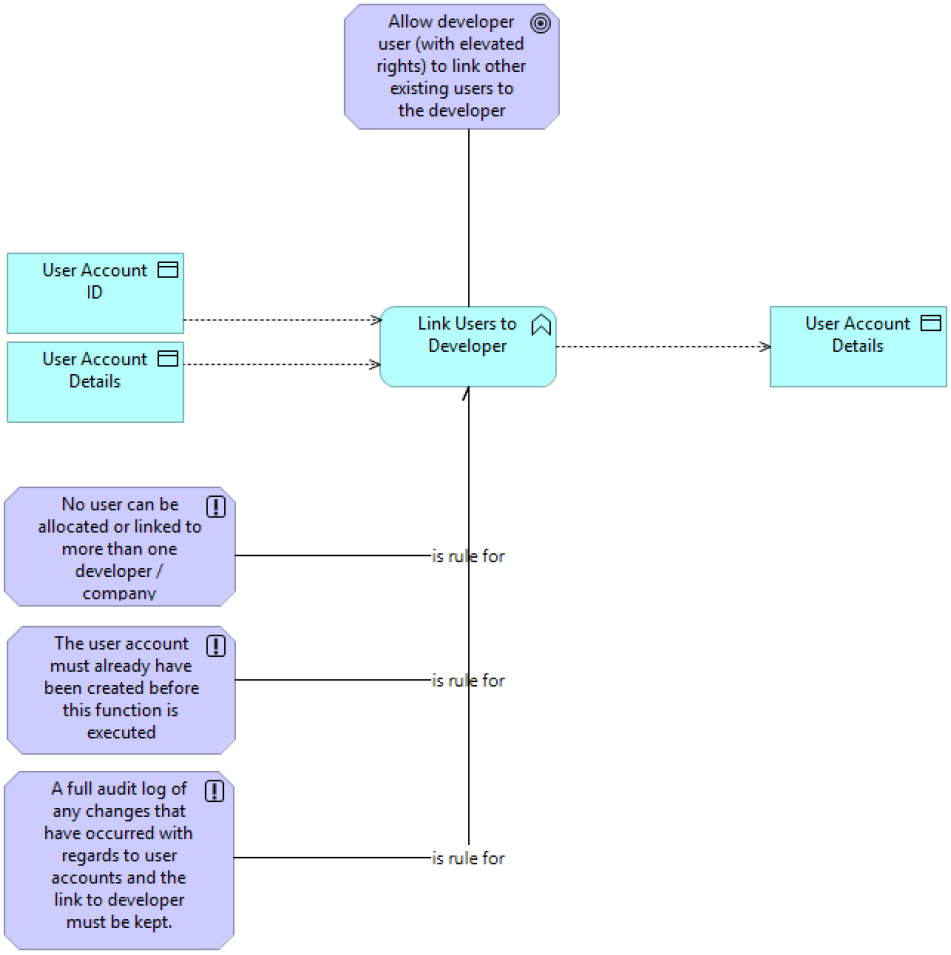
	• Contact person details (name and ID Number) must be confirmed with DoHA • Company Name and Reg Number must be checked to ensure no duplication

8.3.2 Upload Supporting Documents



Function Name	Upload Supporting Documents
Process ID	2.2
Features	Function to allow developer/customer to select, categorise and upload documents to the EOSS system. The documents are checked to ensure they are in the correct format (only PDF allowed) and do not exceed the maximum file size (5MB) each. Each document that is uploaded needs to be categorised (e.g. Certificate of Registration) before being uploaded.
Location	Developer Module
Data Inputs	• Developer/ Company Documents (Document) • EOSS Company ID (Data)
Data Outputs	• Document Location (Data) • Document Type (Data) • Company Document Validated (Data) • Document ID (Data)
Business Rules	• Only allow the upload of PDF documents • Maximum Document Size = 5MB

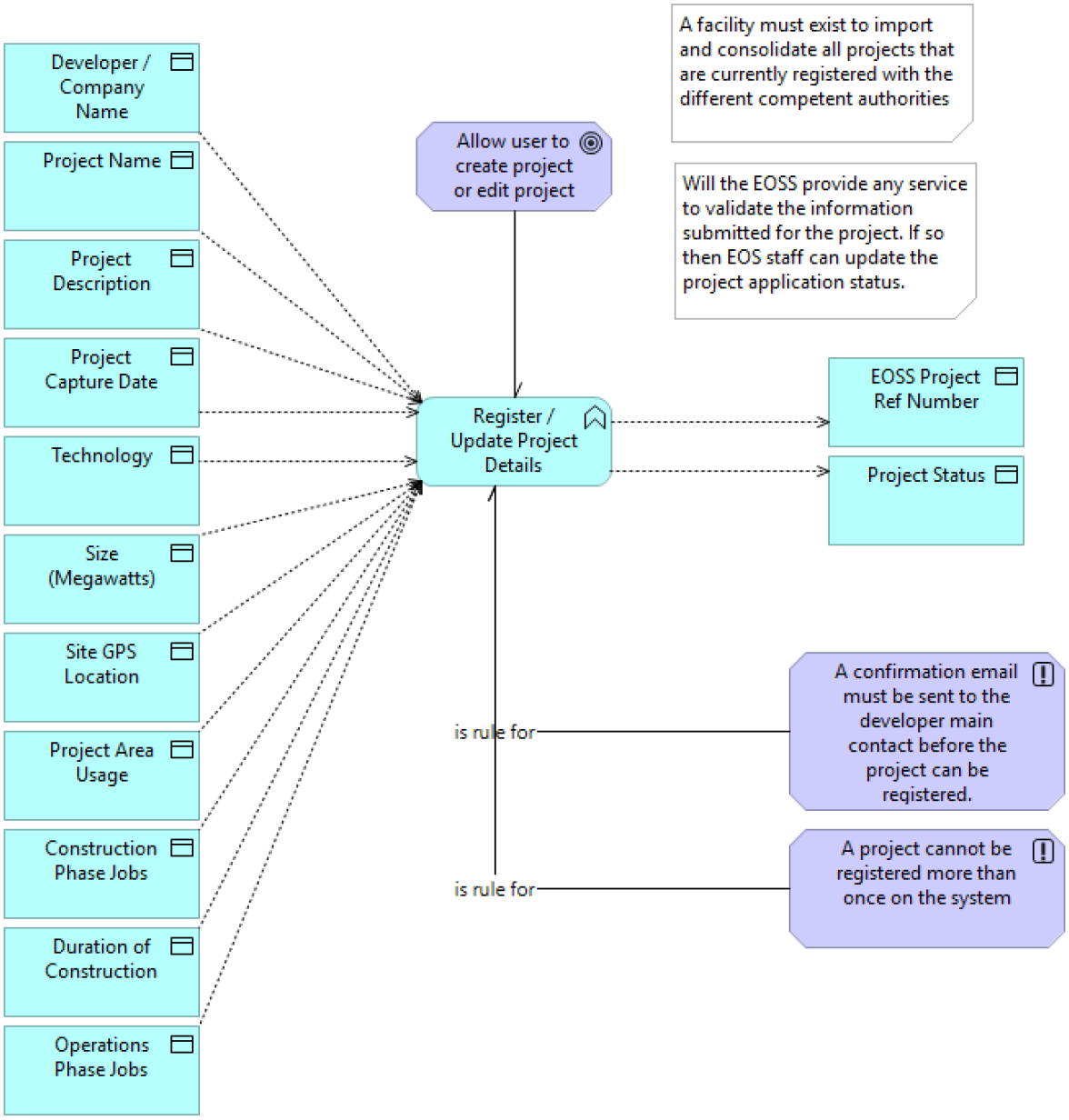
8.3.3 Link Users to Developer



Function Name	Link Users to Developer
Process ID	2.3
Features	Function to allow administrator users at the developer to allocate other existing users to the developer / company. This does not allow the users to be able to access any specific projects until such time as those projects have been allocated to those users. Also give the users who have been linked to the developer specific roles as required.
Location	Developer Module
Data Inputs	• User Account ID (Data) • User Account Details (Data)
Data Outputs	• User Account Details (Data)
Business Rules	• No user can be allocated or linked to more than one developer / company. • The user account must already have been created before this function is executed. • A full audit log of any changes that have occurred with regard to user accounts and the link to developer must be kept.

8.4 Register Project

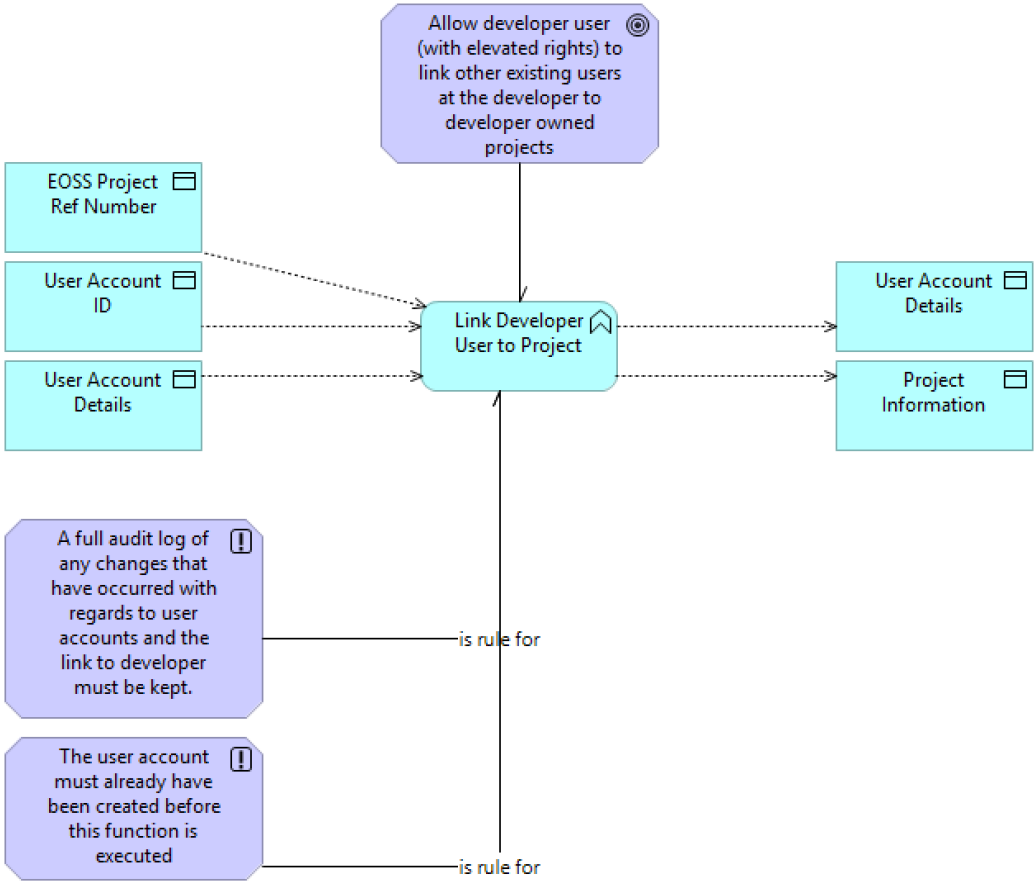
8.4.1 Register / Update Project Details



Function Name	Register / Update Project Details
Process ID	3.1
Features	This is the creation of the renewable energy project in the system. This includes the creation of a unique project reference number. The same function is also used to allow the user to update information about the project. The time and date of any change, the user who implemented the change and the old and new values need to be stored into the Audit Log.
Location	Application Module
Data Inputs	• Developer / Company Name (Data) • Project Name (Data) • Project Capture Date (Data)

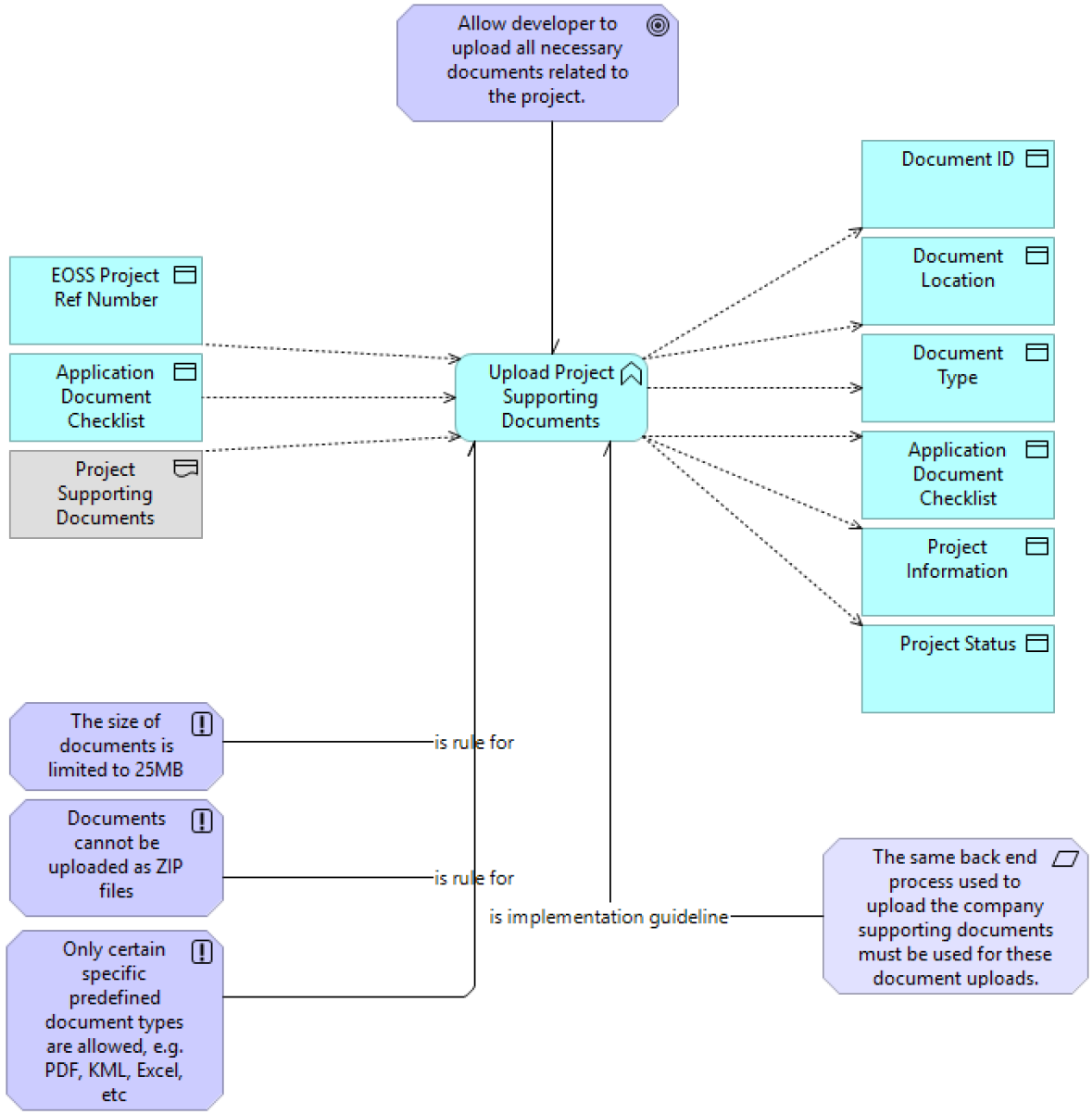
	• Technology (Data) • Size (Megawatts) (Data) • Operations Phase Jobs (Data) • Construction Phase Jobs (Data) • Project Description (Data) • Duration of Construction (Data) • Site GPS Location (Data) • Project Area Usage (Data)
Data Outputs	• EOSS Project Ref Number (Data) • Project Status (Data)
Business Rules	• A confirmation email must be sent to the developer main contact before the project can be registered. • AA project cannot be registered more than once on the system

8.4.2 Link Developer User to Project



Function Name	Link Developer User to Project
Process ID	3.2
Features	This is the linking of different system users who are associated with the developer to the project.
Location	Application Module
Data Inputs	• User Account ID (Data) • User Account Details (Data) • EOSS Project Ref Number (Data)
Data Outputs	• User Account Details (Data) • Project Information (Data)
Business Rules	• A full audit log of any changes that have occurred with regard to user accounts and the link to developer must be kept. • The user account must already have been created before this function is executed

8.4.3 Upload Project Supporting Documents

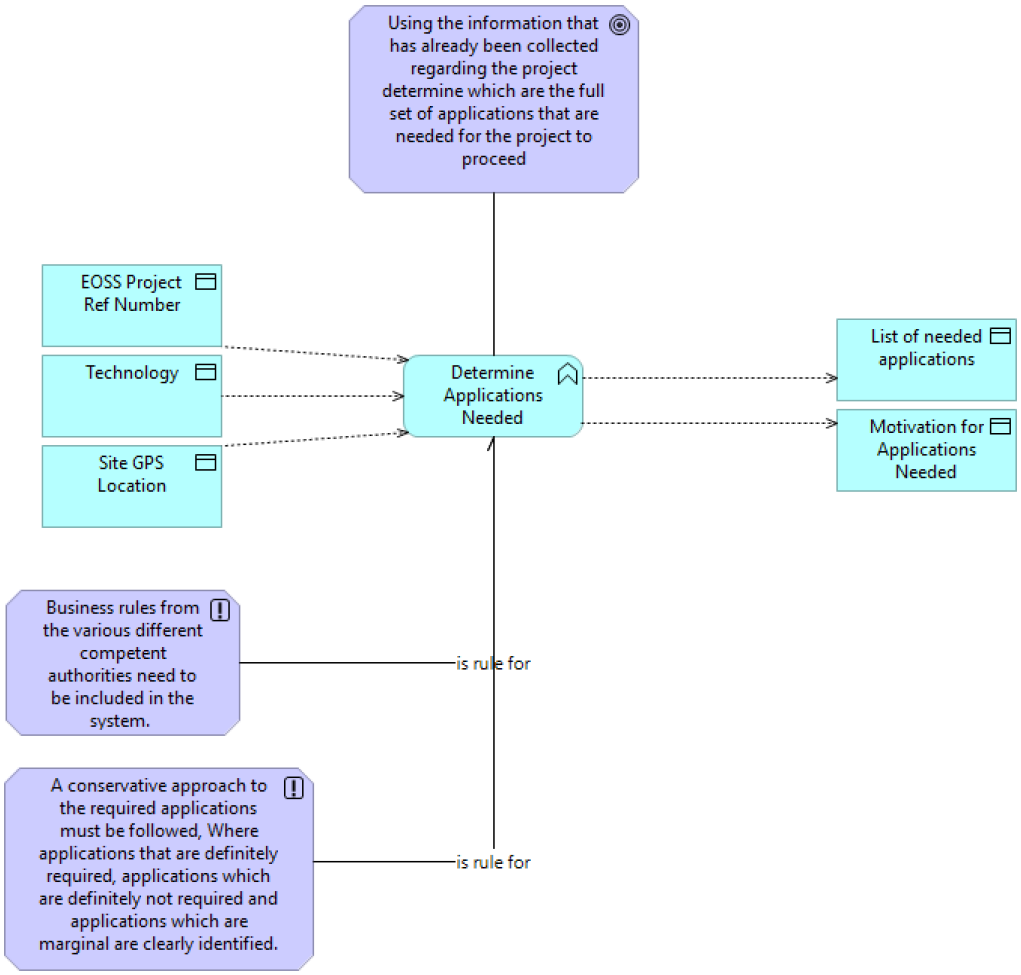


Function Name	Upload Project Supporting Documents
Process ID	3.3
Features	Function to allow developer/customer to select, categorise, and upload documents in support of the project to the EOSS system. The documented requested (system must provide this list on the basis of the type of project and GPS location) would be listed onscreen for this function. The documents are checked to ensure they are in the correct format (only PDF allowed) and do not exceed the maximum file size (5MB) each. Each document that is uploaded needs to be categorised (e.g. GPS Location) before being uploaded.
Location	Application Module
Data Inputs	• EOSS Project Ref Number (Data) • Application Document Checklist (Data)

	• Project Supporting Documents (Document)
Data Outputs	• Project Status (Data) • Document ID (Data) • Document Location (Data) • Document Type (Data) • Application Document Checklist (Data) • Project Information (Data)
Business Rules	• The size of documents is limited to 25MB • Documents cannot be uploaded as ZIP files • Only certain specific predefined document types are allowed, e.g. PDF, KML, Excel, etc

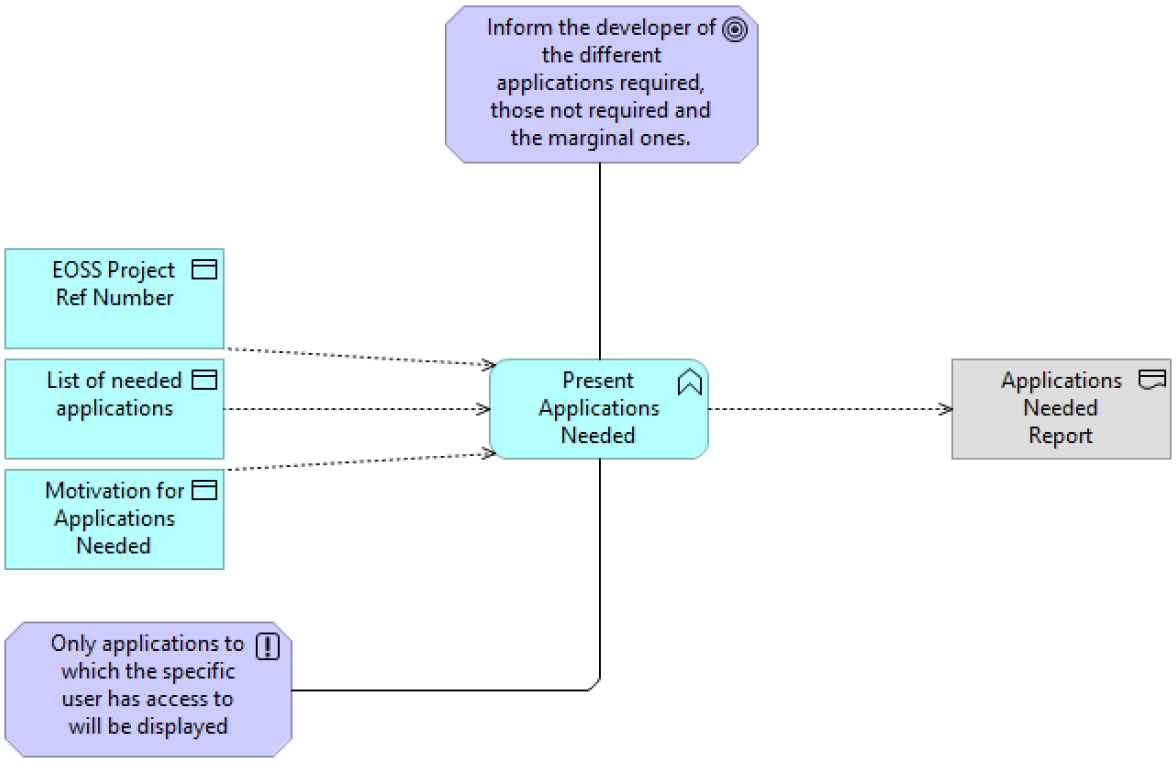
8.5 Review Project Application Requirements

8.5.1 Determine Applications Needed



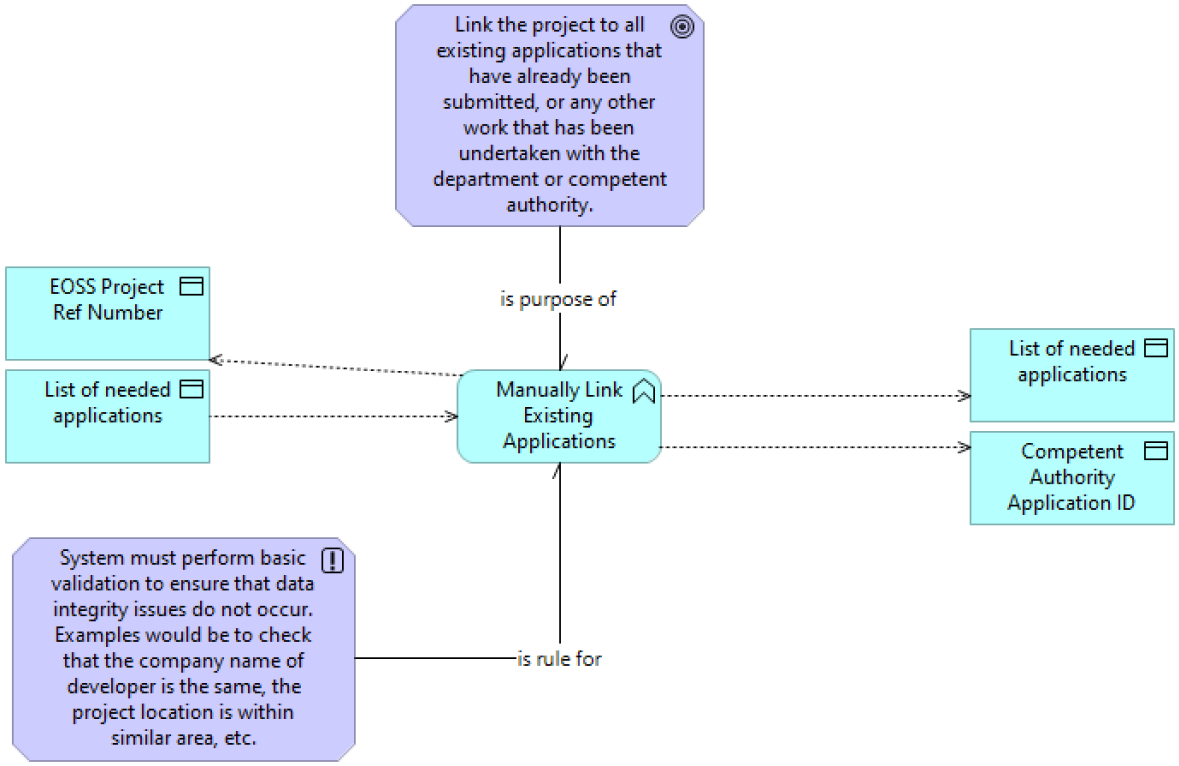
Function Name	Determine Applications Needed
Process ID	4.1
Features	This is the determination of the different applications that are required and those that are definitely not required. This will inform the developer of what documents need to be uploaded as well as which applications are needed and by when.
Location	Application Module
Data Inputs	• EOSS Project Ref Number (Data) • Technology (Data) • Site GPS Location (Data)
Data Outputs	• List of needed applications (Data) • Motivation for Applications Needed (Data)
Business Rules	• Business rules from the various different competent authorities need to be included in the system. • A conservative approach to the required applications must be followed, where applications that are definitely required, applications that are definitely not required and applications that are marginal, are clearly identified.

8.5.2 Present Applications Needed



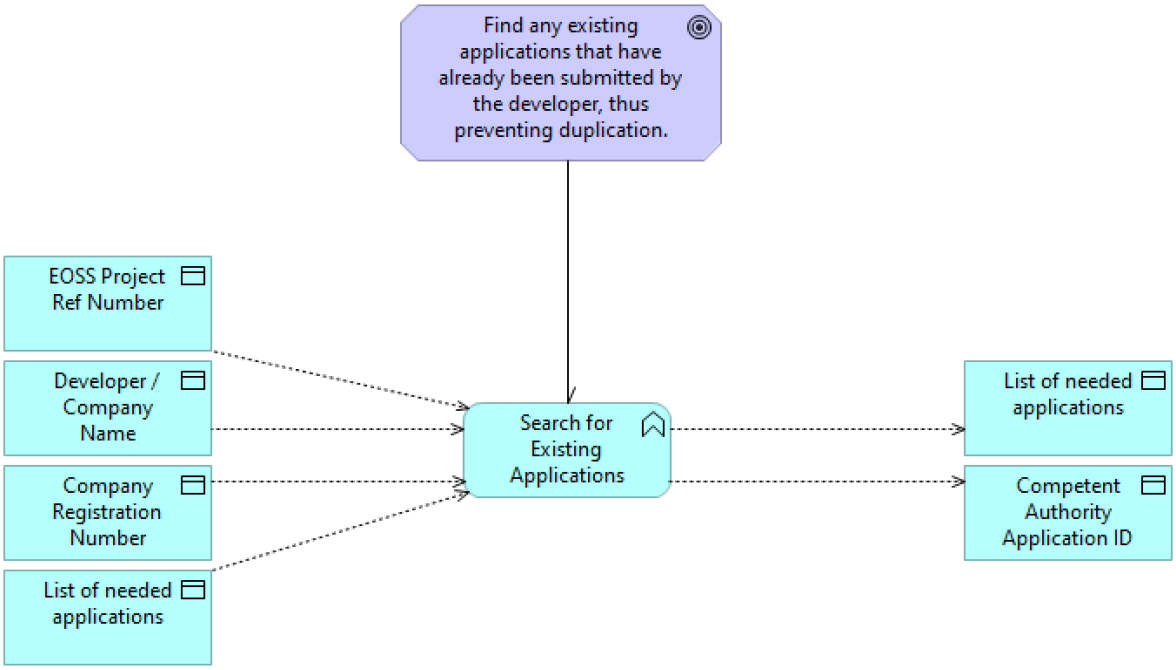
Function Name	Present Applications Needed
Process ID	4.2
Purpose	Using the information that has already been collected regarding the project determine which are the full set of applications that are needed for the project to proceed
Features	This is the presentation of all applications that need to be applied for together with other important information such as the normal time frames for completion and dependencies between the different applications.
Location	Application Module
Data Inputs	• EOSS Project Ref Number (Data) • List of needed applications (Data) • Motivation for Applications Needed (Data)
Data Outputs	• Applications Needed Report (Document)
Business Rules	• Only applications to which the specific user has access to will be displayed.

8.5.3 Manually Link Existing Applications



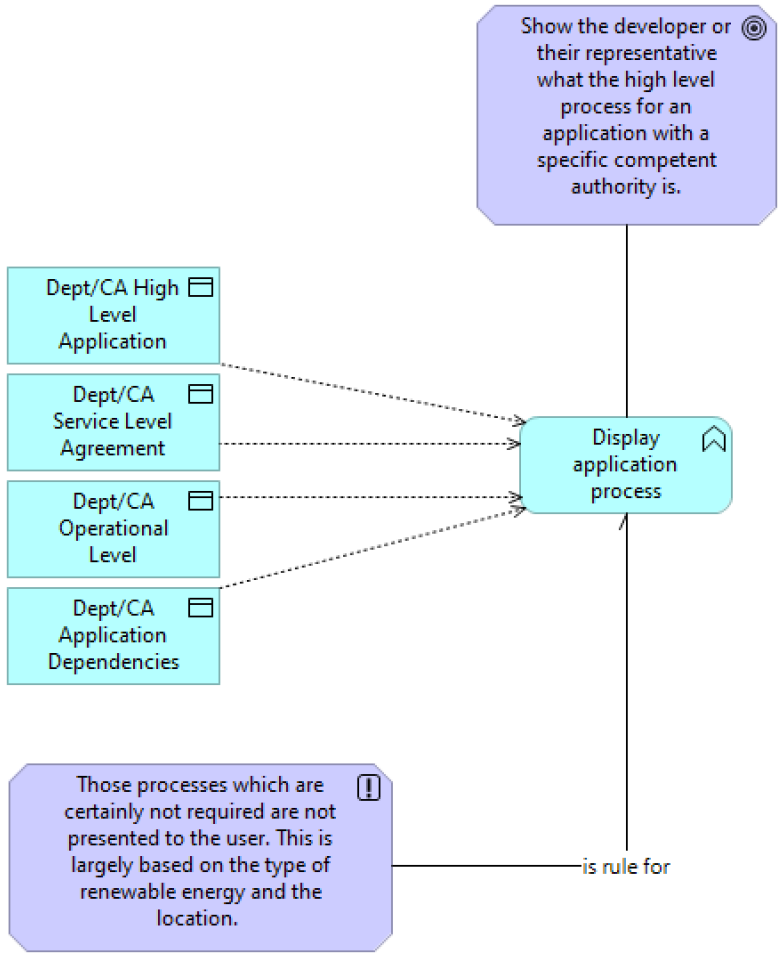
Function Name	Manually Link Existing Applications
Process ID	4.3
Purpose	Link the project to all existing applications that have already been submitted, or any other work that has been undertaken with the department or competent authority.
Features	This is the manual linking of existing applications by the developer or their representative by entering the application ID or number for each specific competent authority that they have already applied for. Once the application ID number has been entered for any specific competent authority, if possible, this should be validated by checking with their online systems whether the application is linked to the same developer.
Location	Application Module
Data Inputs	• List of needed applications (Data)
Data Outputs	• EOSS Project Ref Number (Data) • Competent Authority Application ID (Data) • List of needed applications (Data)
Business Rules	• System must perform basic validation to ensure that data integrity issues do not occur. Examples would be to check that the company name of developer is the same, the project location is within similar area, etc.

8.5.4 Search for Existing Applications



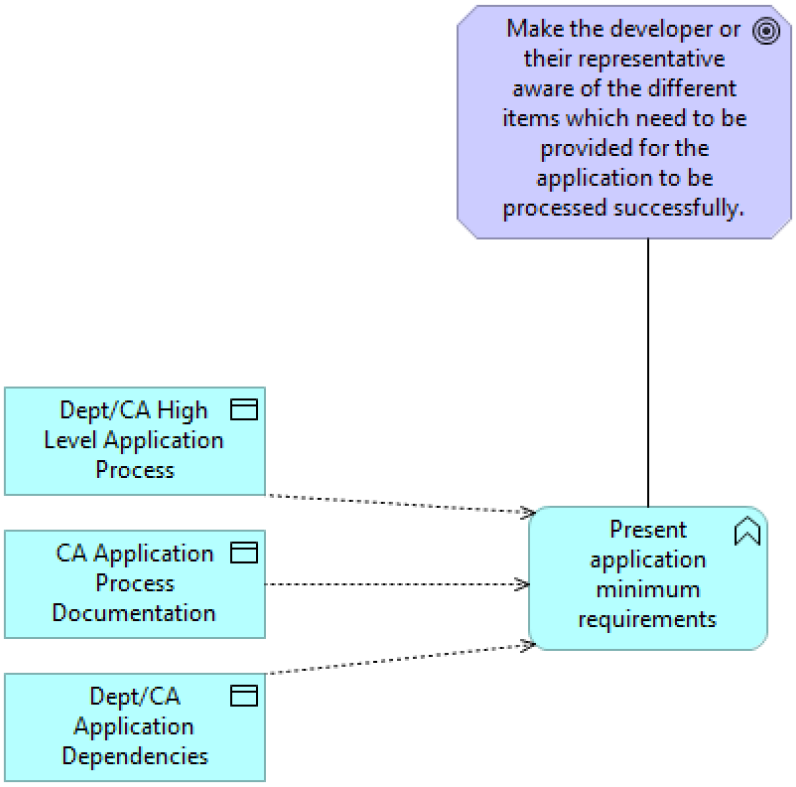
Function Name	Search for Existing Applications
Process ID	4.4
Purpose	Find any existing applications that have already been submitted by the developer, thus preventing duplication.
Features	This is the searching for any existing applications that have already been submitted by the developer to the different competent and commenting authorities. This will initially consist of asking the user whether they have made any applications already prior to registering on the EOSS system. Subsequently, different criteria such as the developer ID and company registration number as well as other project details such as the name and location will be used to try and identify any linked applications within other systems.
Location	Integration Module
Data Inputs	• EOSS Project Ref Number (Data) • Developer / Company Name (Data) • Company Registration Number (Data) • List of needed applications (Data)
Data Outputs	• List of needed applications (Data) • Competent Authority Application ID (Data)
Business Rules	• None

8.5.5 Display application process



Function Name	Display application process
Process ID	4.5
Purpose	Show the developer or their representative what the high-level process for an application with a specific competent authority is.
Features	This is the display of the predefined and high-level application processing procedure that takes place within the competent or commenting authority. Other useful information such as the prerequisites for each stage as well as the timelines for the implementation of each phase will be noted as well. This is a purely visual display with no user input required or data create, captured, or changed.
Location	Application Module
Data Inputs	• Dept/CA High Level Application Process (Data) • Dept/CA Service Level Agreement (Data) • Dept/CA Operational Level Agreement (Data) • Dept/CA Application Dependencies (Data)
Data Outputs	• None
Business Rules	• Those processes which are certainly not required are not presented to the user. This is largely based on the type of renewable energy and the location.

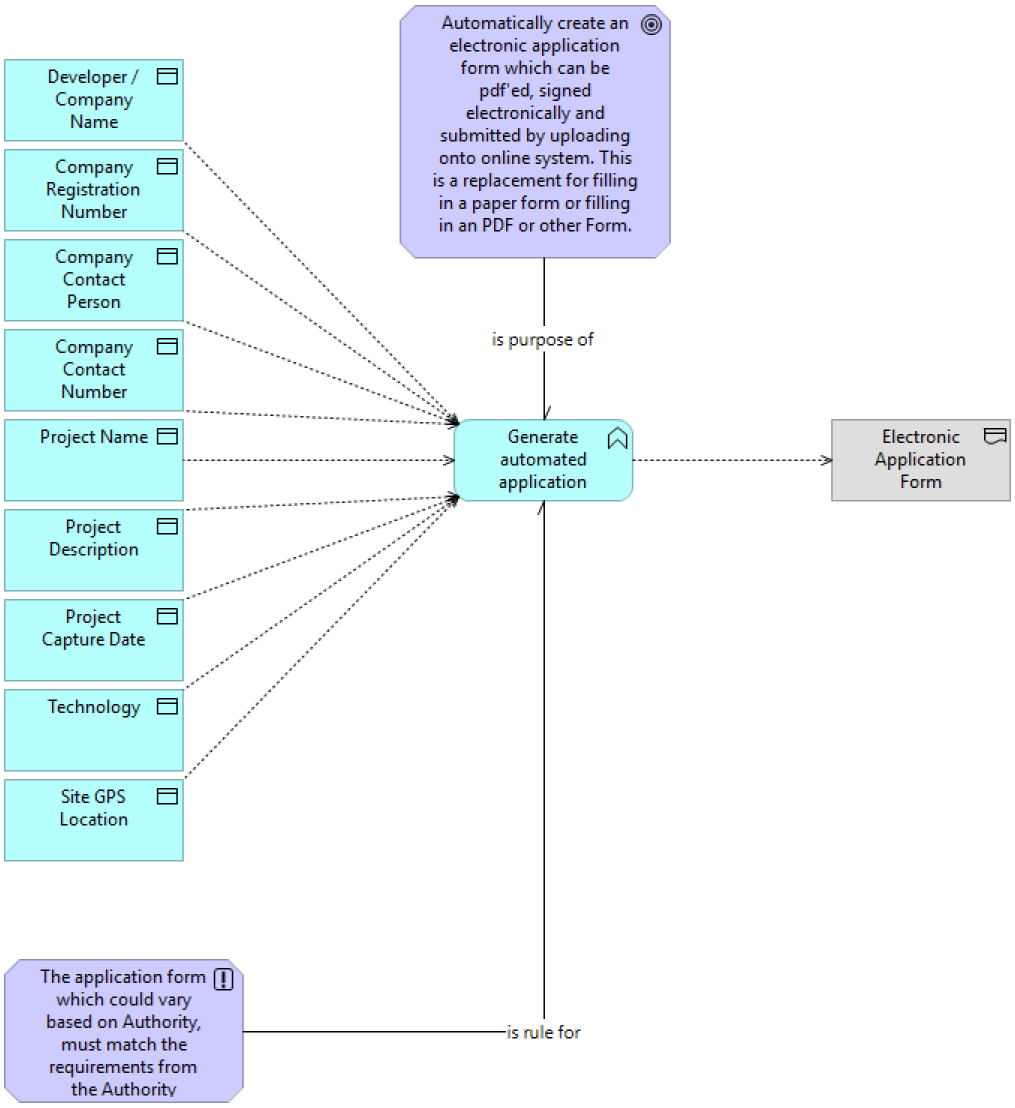
8.5.6 Present application minimum requirements



Function Name	Present application minimum requirements
Process ID	4.6
Purpose	Make the developer or their representative aware of the different items that need to be provided for the application to be processed successfully.
Features	This is the presentation to the developer of the minimum requirements in terms of the applications for each different application that has been assessed as being required. This includes data assessments, investigations, reports and other documents.
Location	Application Module
Data Inputs	• Dept/CA High Level Application Process (Data) • CA Application Process Documentation (Data) • Dept/CA Application Dependencies (Data)
Data Outputs	• None
Business Rules	• None

8.6 Submit Applications (Manual)

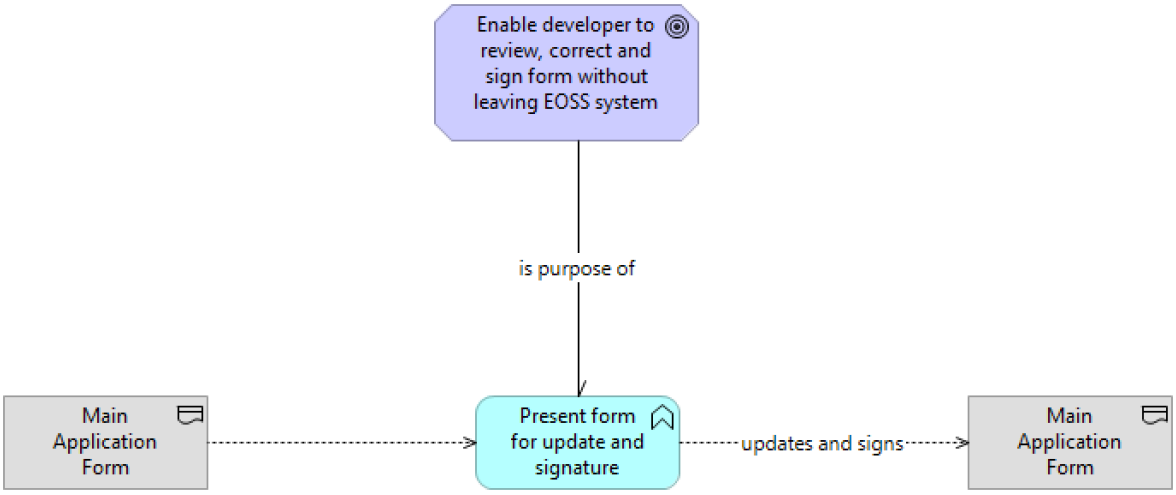
8.6.1 Generate completed application form



Function Name	Generate completed application form
Process ID	5.1
Purpose	Automatically create an electronic application form which can be pdf'ed, signed electronically and submitted by uploading onto online system. This is a replacement for filling in a paper form or filling in an PDF or other form.
Features	This is the generation of completed application forms for those competent and commenting authorities where electronic systems are not available. This applies both to the situation where paper documents need to be delivered to the authority, as well as where these documents are emailed to specific mailboxes within the competent authority. The information that has already been gathered will be used to complete the application form.
Location	Application Module

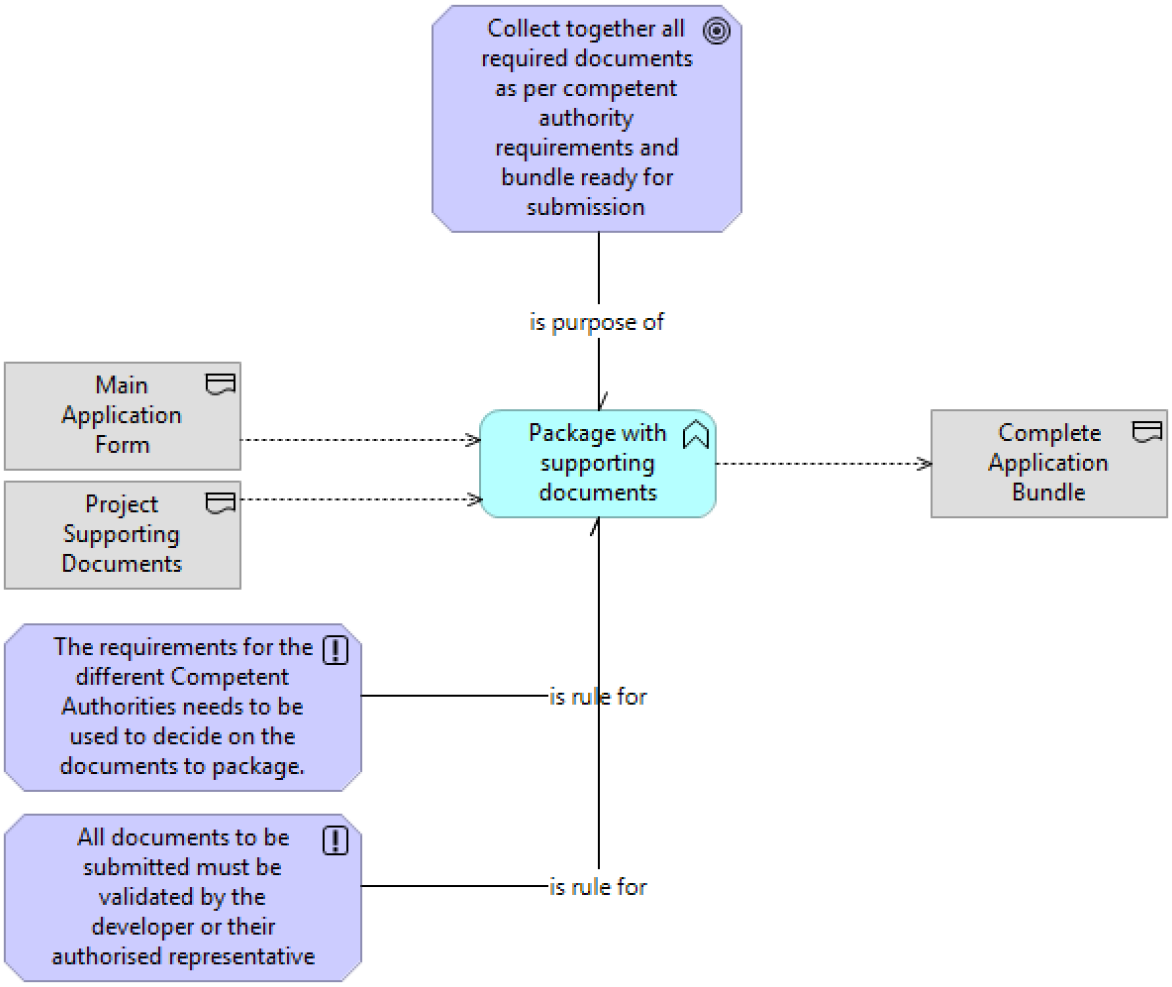
Data Inputs	• Developer / Company Name (Data) • Company Registration Number (Data) • Company Contact Person (Data) • Company Contact Number (Data) • Project Name (Data) • Project Description (Data) • Project Capture Date (Data) • Technology (Data) • Site GPS Location (Data)
Data Outputs	• Main Application Form (Document)
Business Rules	• The application form which could vary based on authority must match the requirements from the authority.

8.6.2 Present form for update and signature



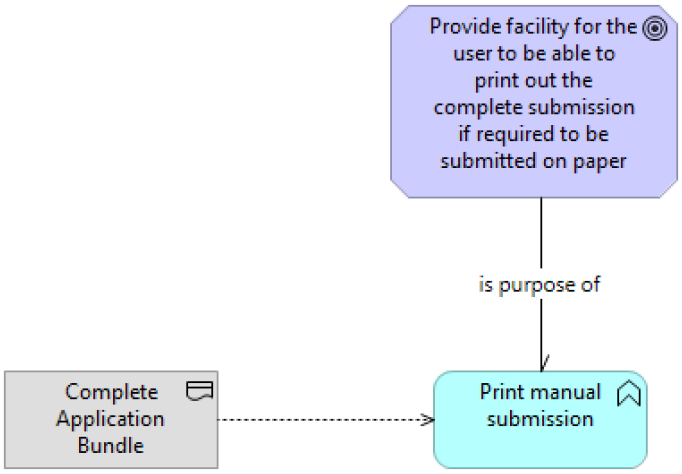
Function Name	Present form for update and signature
Process ID	5.2
Purpose	Enable developer to review, correct, and sign form without leaving EOSS system.
Features	This is the presentation of the completed application form to the developer or their representative in order for this to be reviewed, corrected if necessary and signed if needed. Once this has been completed and signed, a version of this will be stored within the system. If any changes need to take place, then a separate new version will be kept together with the time and date stamp of when this version was created.
Location	Application Module
Data Inputs	• Main Application Form (Document)
Data Outputs	• Main Application Form (Document) • Electronic Application Form (Document) • Electronic Application Form (Document)
Business Rules	• None

8.6.3 Package with supporting documents



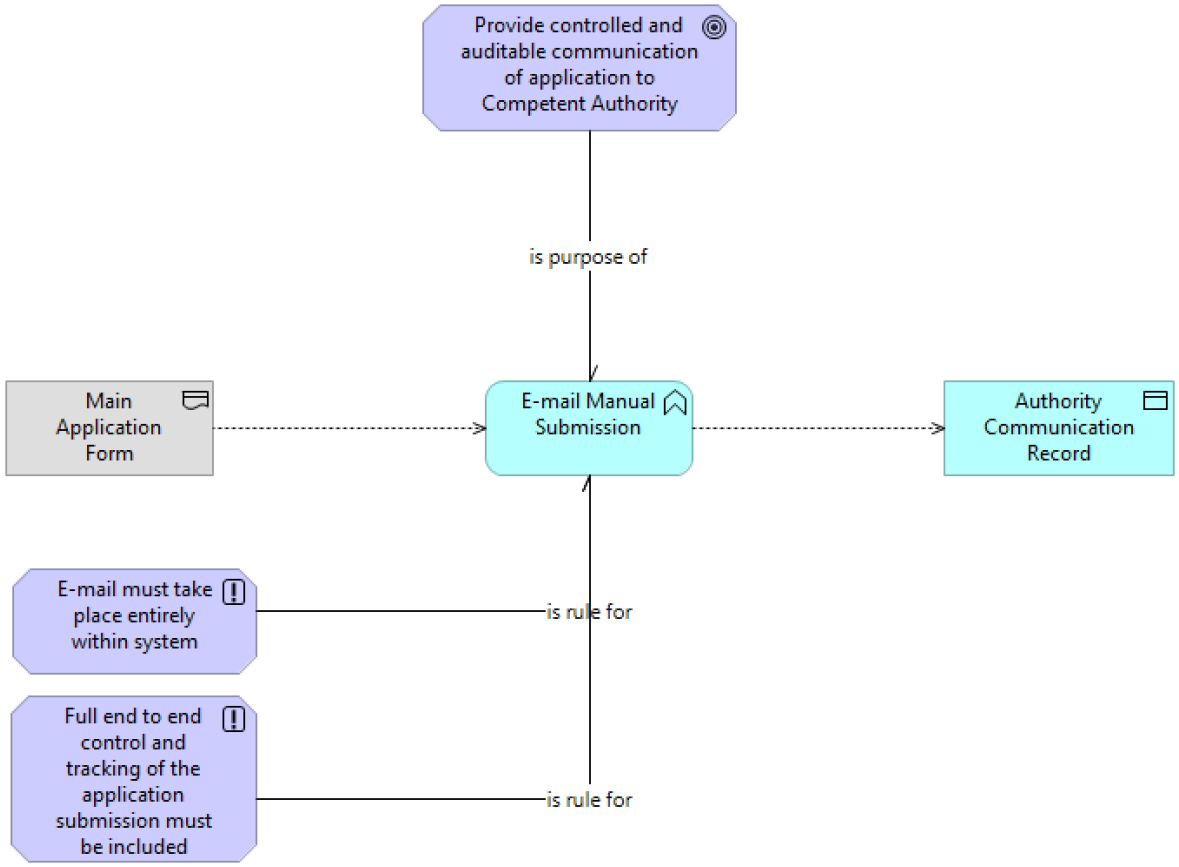
Function Name	Package with supporting documents
Process ID	5.3
Purpose	Collect all required documents as per competent authority requirements and bundle ready for submission.
Features	This is the consolidation and packing of all necessary documentations, forms, and checklists that are needed for an application at a single competent authority. All information will be stored in an accessible location within the EOSS system repository and will be version controlled with date and time for each document.
Location	Application Module
Data Inputs	• Main Application Form (Document) • Project Supporting Documents (Document)
Data Outputs	• Complete Application Bundle (Document)
Business Rules	• The requirements for the different competent authorities need to be used to decide on the documents to package. • All documents to be submitted must be validated by the developer or their authorised representative.

8.6.4 Print manual submission



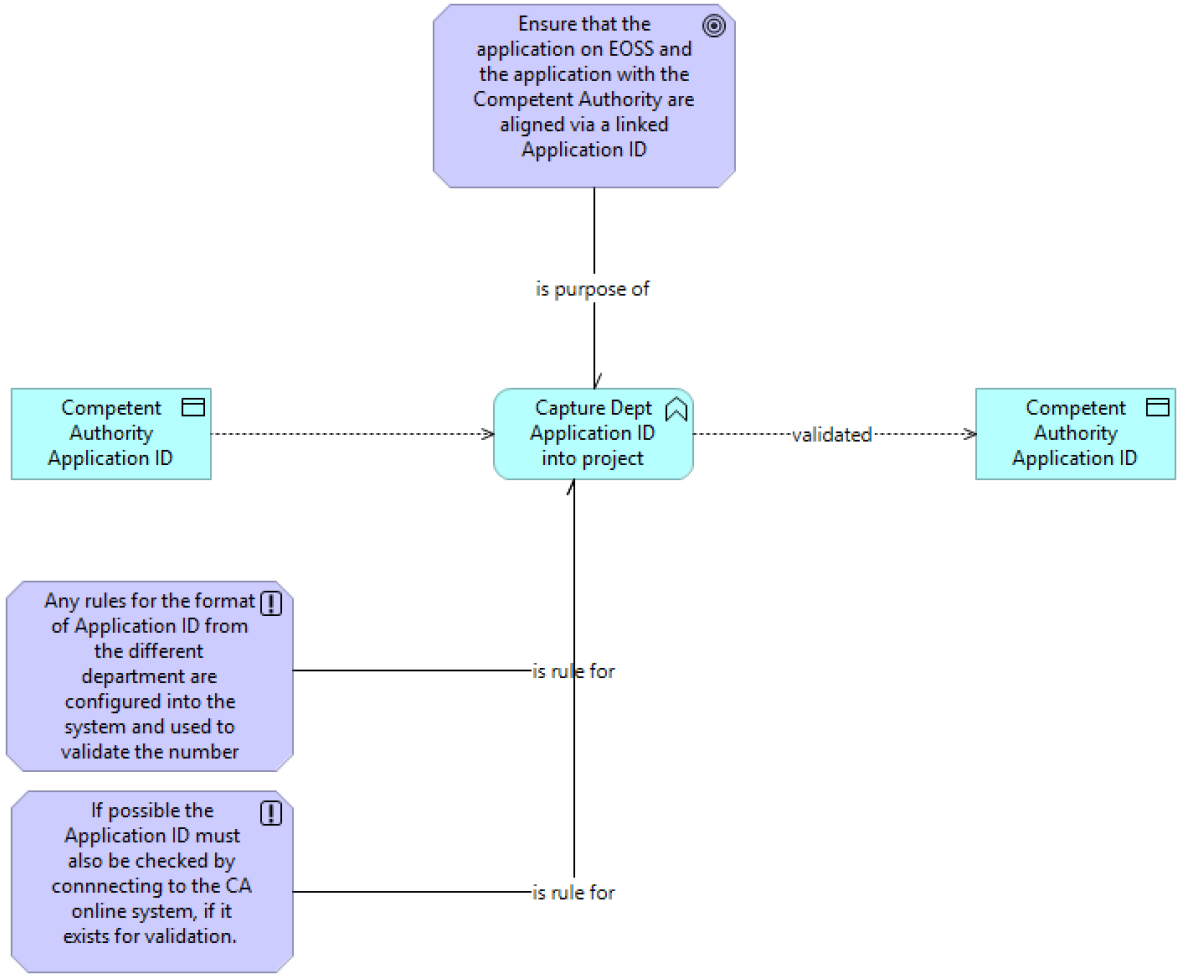
Function Name	Print manual submission
Process ID	5.4
Purpose	Provide facility for the user to be able to print out the complete submission if required to be submitted on paper.
Features	For those competent authorities that require paper submissions, the system will facilitate the printing of these documents out such that the user can then manually deliver them to the necessary competent authority.
Location	Application Module
Data Inputs	• Complete Application Bundle (Document)
Data Outputs	None
Business Rules	None

8.6.5 E-mail Manual Submission



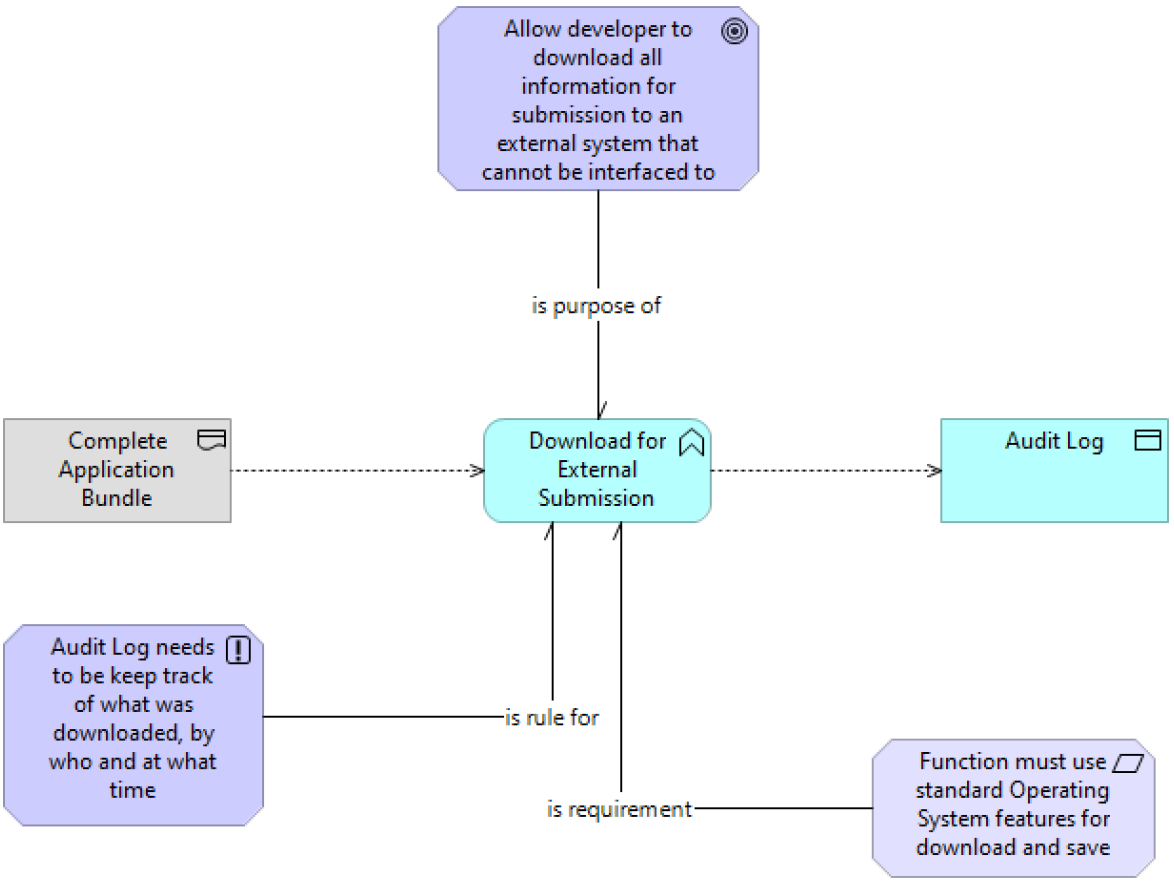
Function Name	E-mail Manual Submission
Process ID	5.5
Purpose	Provide controlled and auditable communication of application to competent authority.
Features	This is the emailing, within the system of all application forms and necessary supporting documents to the competent authority as they have been configured within the system. This also consists of the end-to-end management of the E-mail - including the tracking of acknowledgement of delivery of any received confirmation or other messages.
Location	Communications Module
Data Inputs	• Main Application Form (Document)
Data Outputs	• Authority Communication Record (Data)
Business Rules	• E-mail must take place entirely within system • Full end to end control and tracking of the application submission must be included

8.6.6 Capture Dept Application ID into project



Function Name	Capture Dept Application ID into project
Process ID	5.6
Purpose	Ensure that the application on EOSS and the application with the competent authority are aligned via a linked Application ID.
Features	This is the saving of the application ID at each competent authority such that it is linked to the project from the developer and can be used to track the status of the application thereafter. In certain situations where this information is manually uploaded either as a physical file or as an email the information will need to be captured onto the project by a user. This user could either be the developer, their representative or the EOSS staff.
Location	Integration Module
Data Inputs	• Competent Authority Application ID (Data)
Data Outputs	• Competent Authority Application ID (Data)
Business Rules	• Any rules for the format of Application ID from the different departments are configured into the system and used to validate the number entered. • If possible, the Application ID must also be checked by connecting to the CA online system, if it exists, for validation.

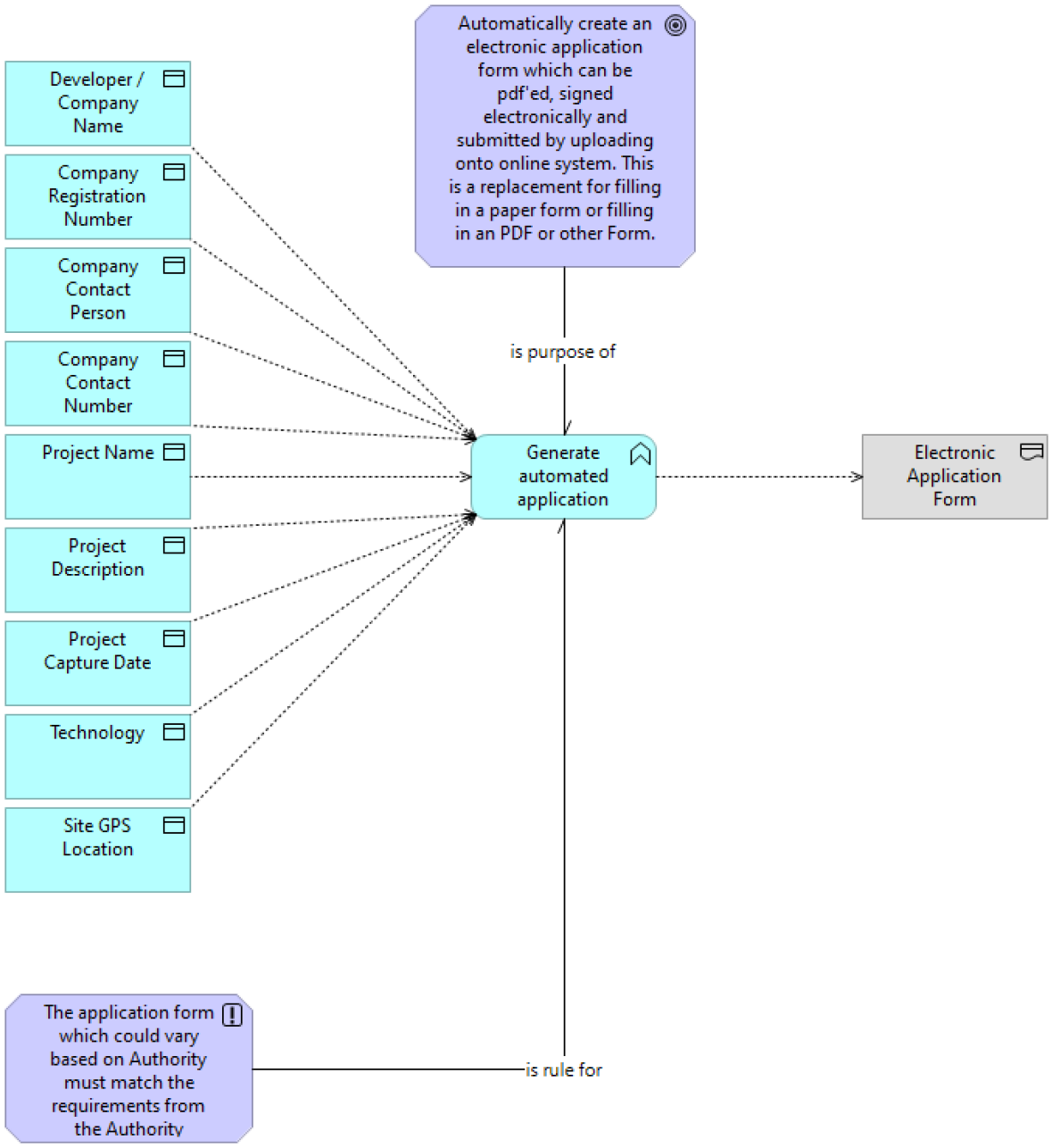
8.7 Download for External Submission



Function Name	Download for External Submission
Process ID	6.1
Purpose	Allow developer to download all information for submission to an external system that cannot be interfaced to.
Features	This is a function that allows applications that cannot be electronically submitted from the EOSS system into the competent authority system to be downloaded by the user and then submitted by logging on to the competent authority's online system. This is only required for those systems which are not possible to interface to for any reason.
Location	Application Module
Data Inputs	• Complete Application Bundle (Document)
Data Outputs	• Audit Log (Data)
Business Rules	• Audit Log needs to keep track of what was downloaded, by who and at what time.

8.8 Submit Applications (Integrated)

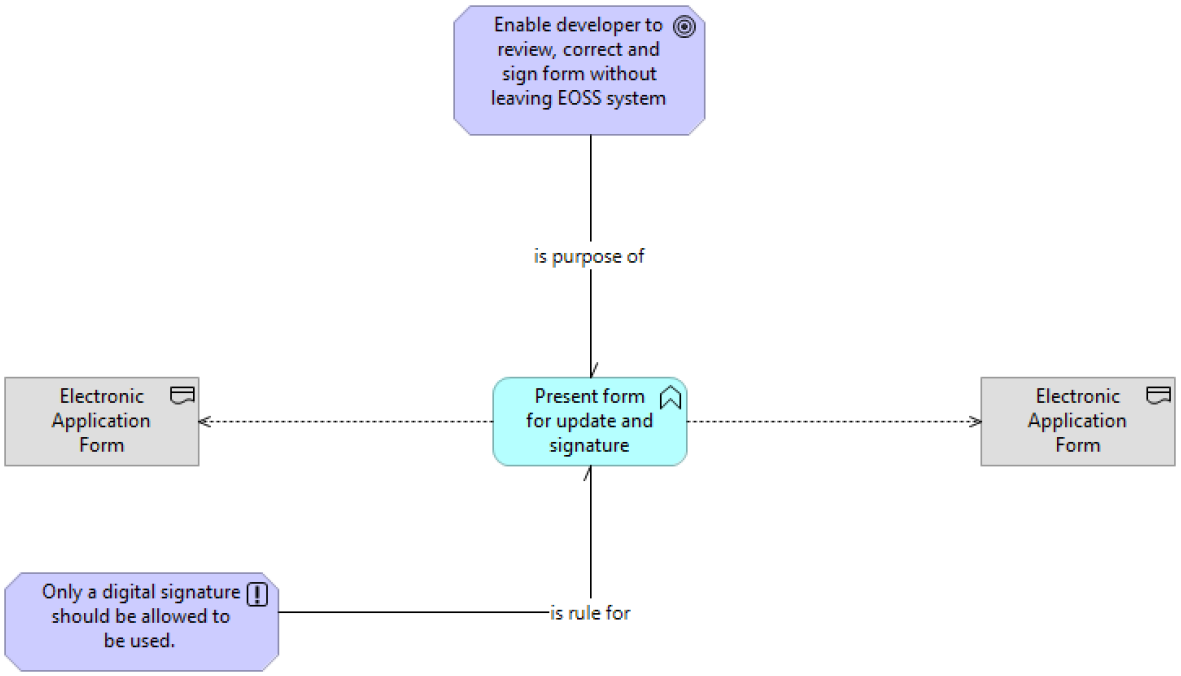
8.8.1 Generate automated application



Function Name	Generate automated application
Process ID	7.1
Purpose	Automatically create an electronic application form which can be pdf'ed, signed electronically, and submitted by uploading onto online system. This is a replacement for filling in a paper form or filling in an PDF or other form.
Features	This is a consolidation of all information that is necessary to be submitted electronically directly from the EOSS system into the competent authority system. This includes having all of the necessary structured data that needs to be submitted directly via APIs or other methods.

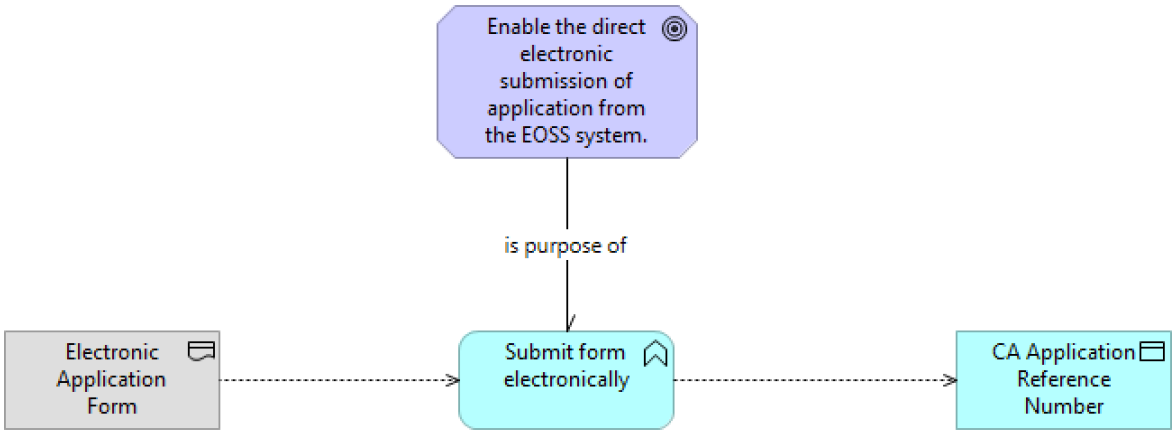
Location	Application Module
Data Inputs	• Developer / Company Name (Data) • Company Registration Number (Data) • Company Contact Person (Data) • Company Contact Number (Data) • Project Name (Data) • Project Description (Data) • Project Capture Date (Data) • Technology (Data) • Site GPS Location (Data)
Data Outputs	• Electronic Application Form (Document)
Business Rules	• The application form which could vary based on authority must match the requirements from the authority.

8.8.2 Present for update and signature



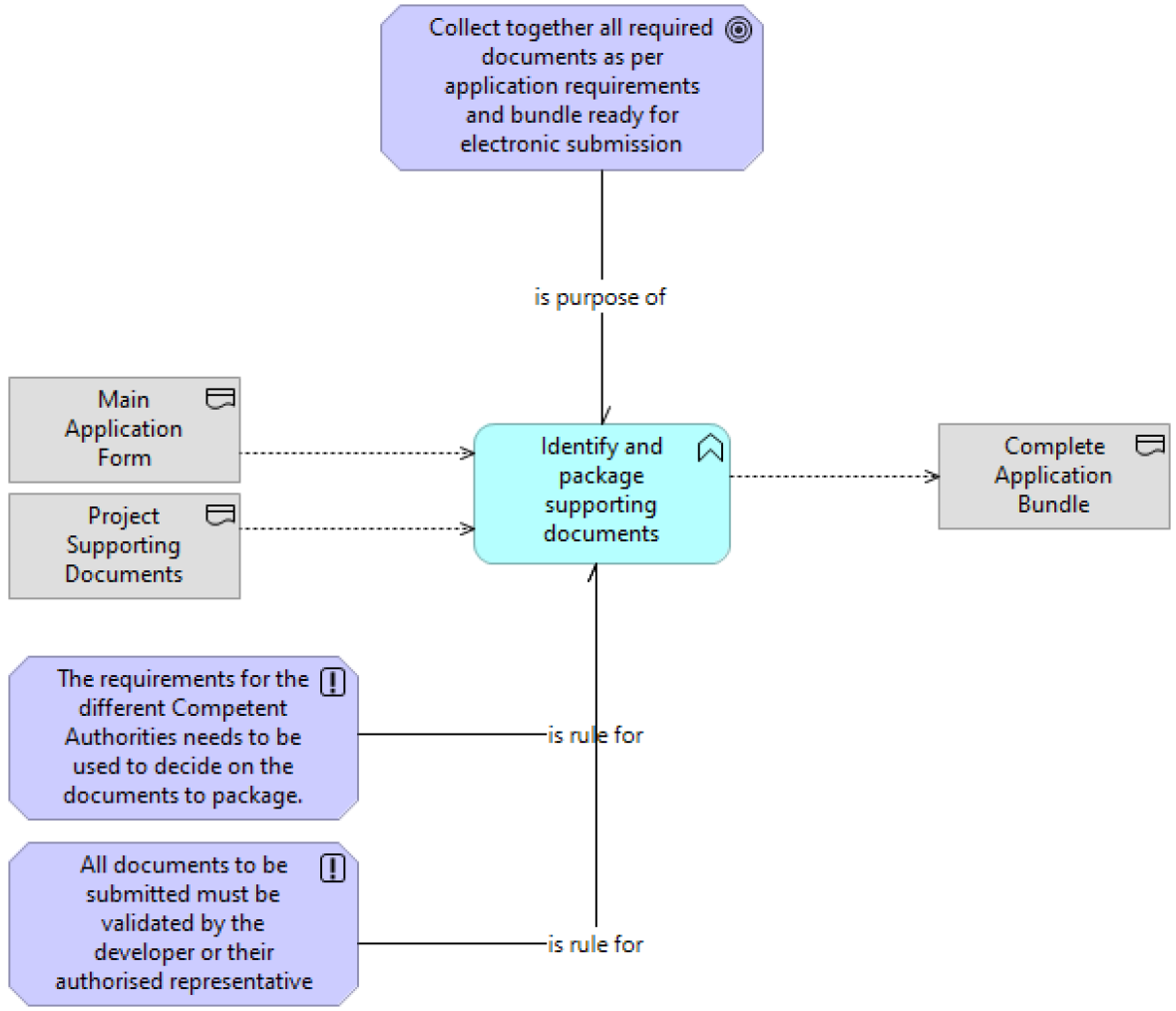
Function Name	Present for update and signature
Process ID	7.2
Purpose	Enable developer to review, correct, and sign form without leaving EOSS system.
Features	This is the presentation of the application form for any updates and signatures that are required where the application has to be either manually or electronically signed by the user before being submitted to the competent authority. This also applies to any other documents that need to be signed off either manually or electronically by the developer before being submitted.
Location	Application Module
Data Inputs	Electronic Application Form
Data Outputs	Electronic Application Form (signed)
Business Rules	Only a digital signature should be allowed to be used.

8.8.3 Submit form electronically



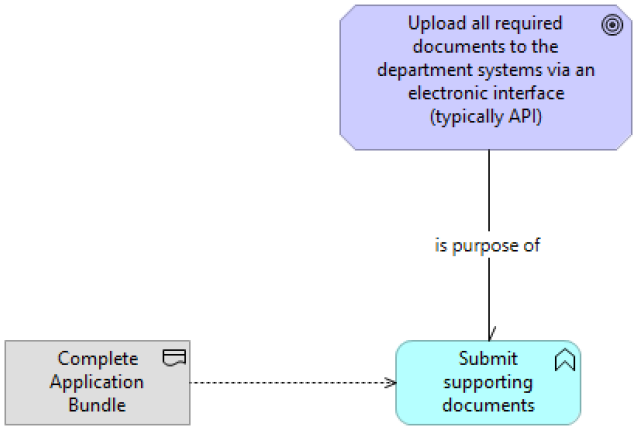
Function Name	Submit form electronically
Process ID	7.3
Purpose	Enable the direct electronic submission of application from the EOSS system.
Features	This is the submission of the application form directly into the competent authority systems via an electronic interface.
Location	Application Module
Data Inputs	Electronic Application Form (Document)
Data Outputs	CA Application Reference Number (Data)
Business Rules	None

8.8.4 *Identify and package supporting documents*



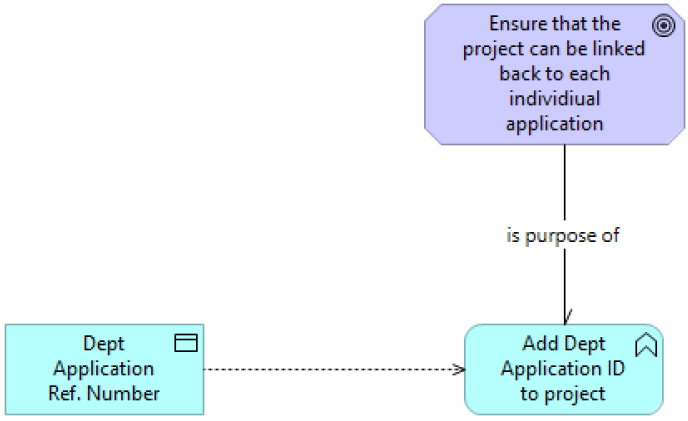
Function Name	Identify and package supporting documents
Process ID	7.4
Purpose	Collect all required documents as per application requirements and bundle ready for electronic submission.
Features	This is the identification and packaging of all supporting material that is required in support of the application (this seems to be similar to package with supporting material which is used for the manual submission of applications and may thus not need to be a separate function on the system).
Location	Application Module
Data Inputs	• Main Application Form (Document) • Project Supporting Documents (Document)
Data Outputs	• Complete Application Bundle (Document)
Business Rules	• The requirements for the different competent authorities need to be used to decide on the documents to package. • All documents to be submitted must be validated by the developer or their authorised representative.

8.8.5 Submit supporting documents



Function Name	Submit supporting documents
Process ID	7.5
Purpose	Enable the direct electronic submission of application from the EOSS system.
Features	This is the uploading of the supporting materials using the electronic interface directly into the competent authority's systems.
Location	Application Module
Data Inputs	Complete Applications Bundle
Data Outputs	None
Business Rules	None

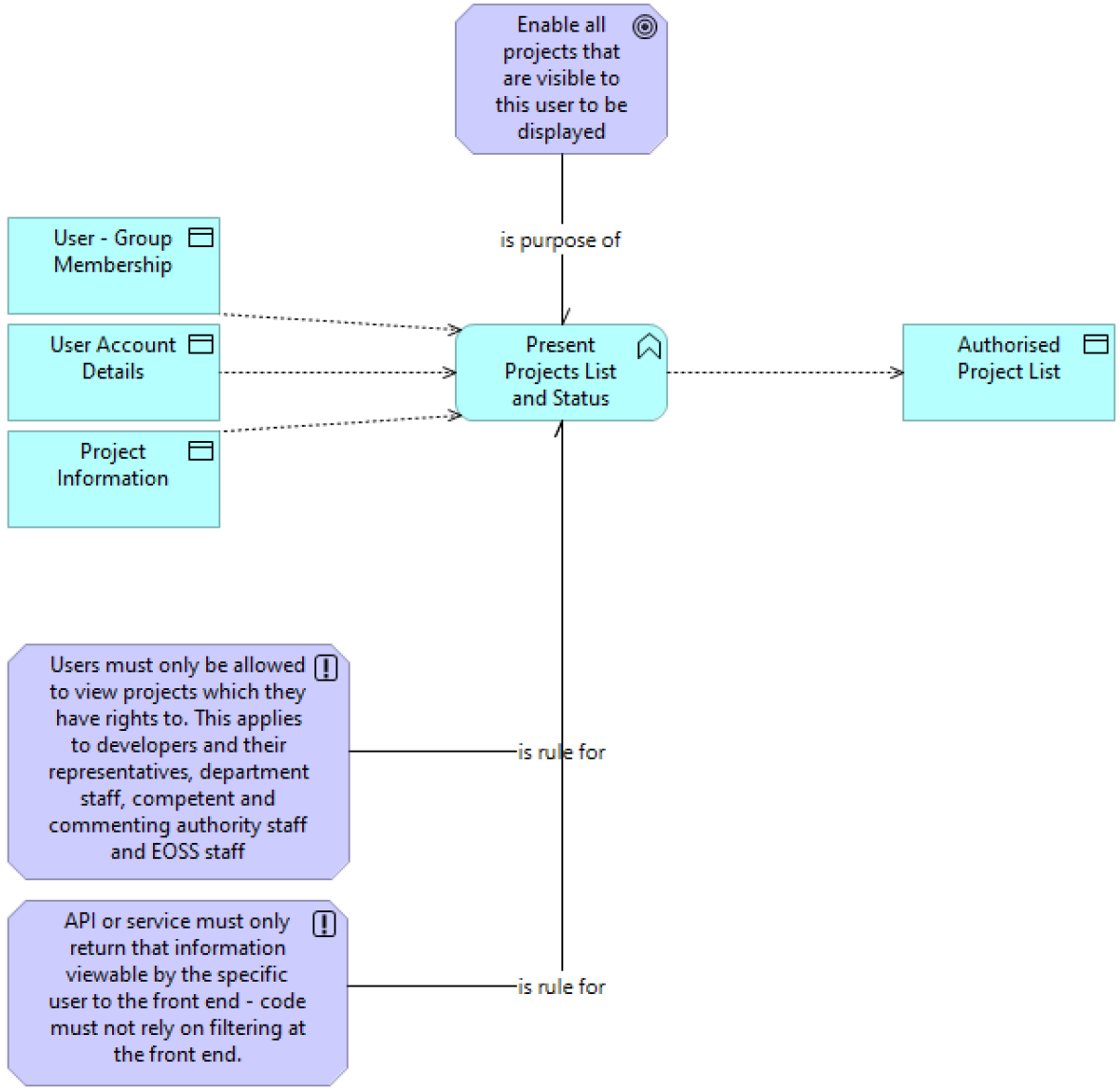
8.8.6 Add Dept Application ID to project



Function Name	Add Dept Application ID to project
Process ID	7.6
Purpose	Ensure that the project can be linked back to each individual application.
Features	This is the electronic and fully automated addition of the application ID at the company authority into the project information.
Location	Application Module
Data Inputs	Dept Application Ref. Number (Data)
Data Outputs	None
Business Rules	None

8.9 Track Overall Project Status

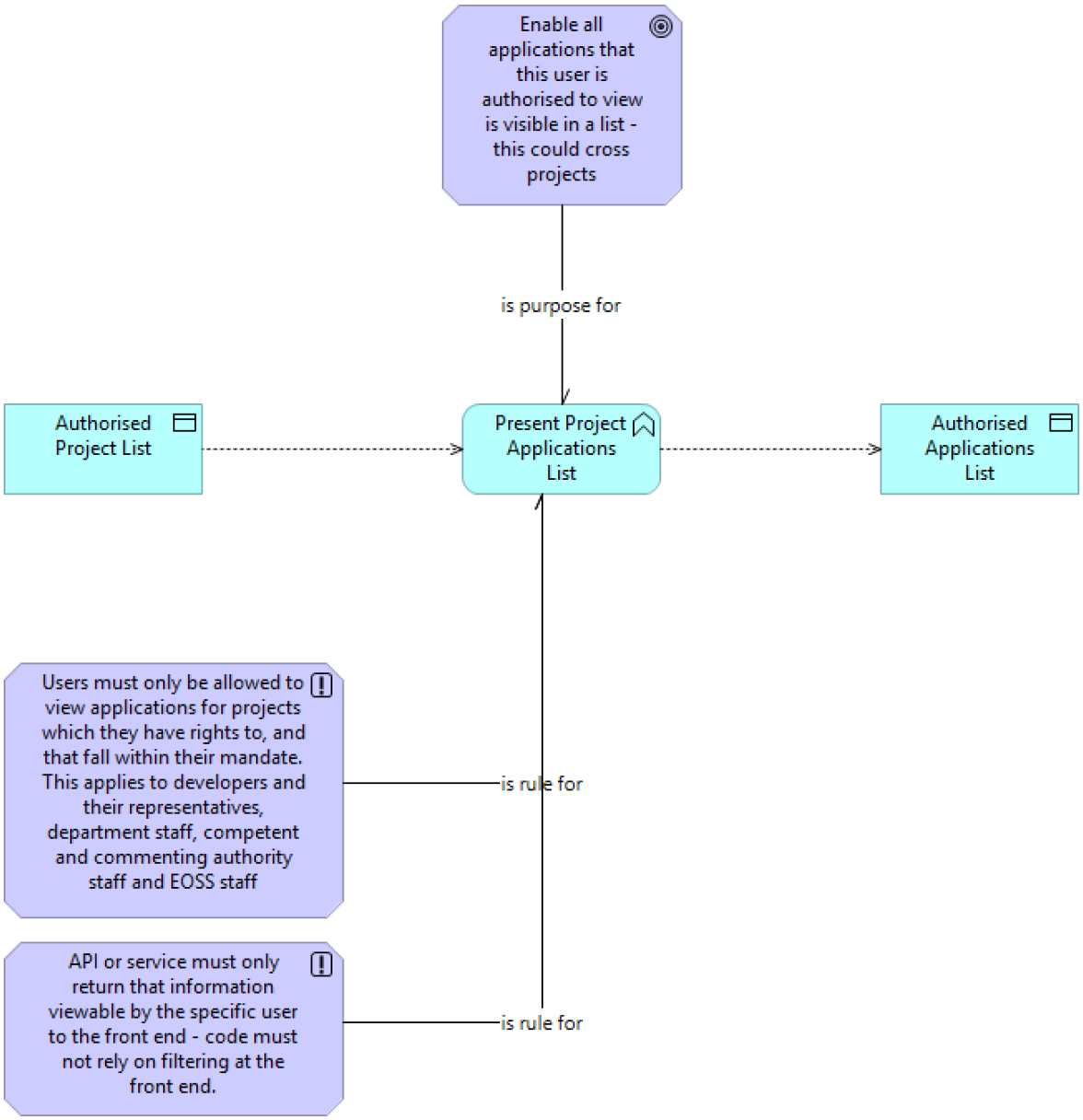
8.9.1 Present Projects List and Status



Function Name	Present Projects List and Status
Process ID	8.1
Purpose	Enable all projects that are visible to this user to be displayed.
Features	This is a facility for the presentation to the user of all projects associated with that user as well as the current status of those projects. This will be context sensitive with different users having different projects visible to them based on whether they have authority for that project or not. In the case of a developer, they would be able to see only the projects which that user has been assigned to within the developer. In the case of the competent authority this will be all projects as well as the applications only for those projects which need to be submitted to that particular competent authority. In the case of EOSS users, this will be the subset of projects which the EOSS staff have been allocated to within the system.

	In some cases, this could be the entire project list and in other cases, this could be a subset of the entire project list.
Location	Project Module
Data Inputs	• User - Group Membership (Data) • User Account Details (Data) • Project Information (Data)
Data Outputs	• Authorised Project List (Data)
Business Rules	• Users must only be allowed to view projects which they have rights to. This applies to developers and their representatives, department staff, competent and commenting authority staff and EOSS staff. • API or service must only return that information viewable by the specific user to the front end - code must not rely on filtering at the front end.

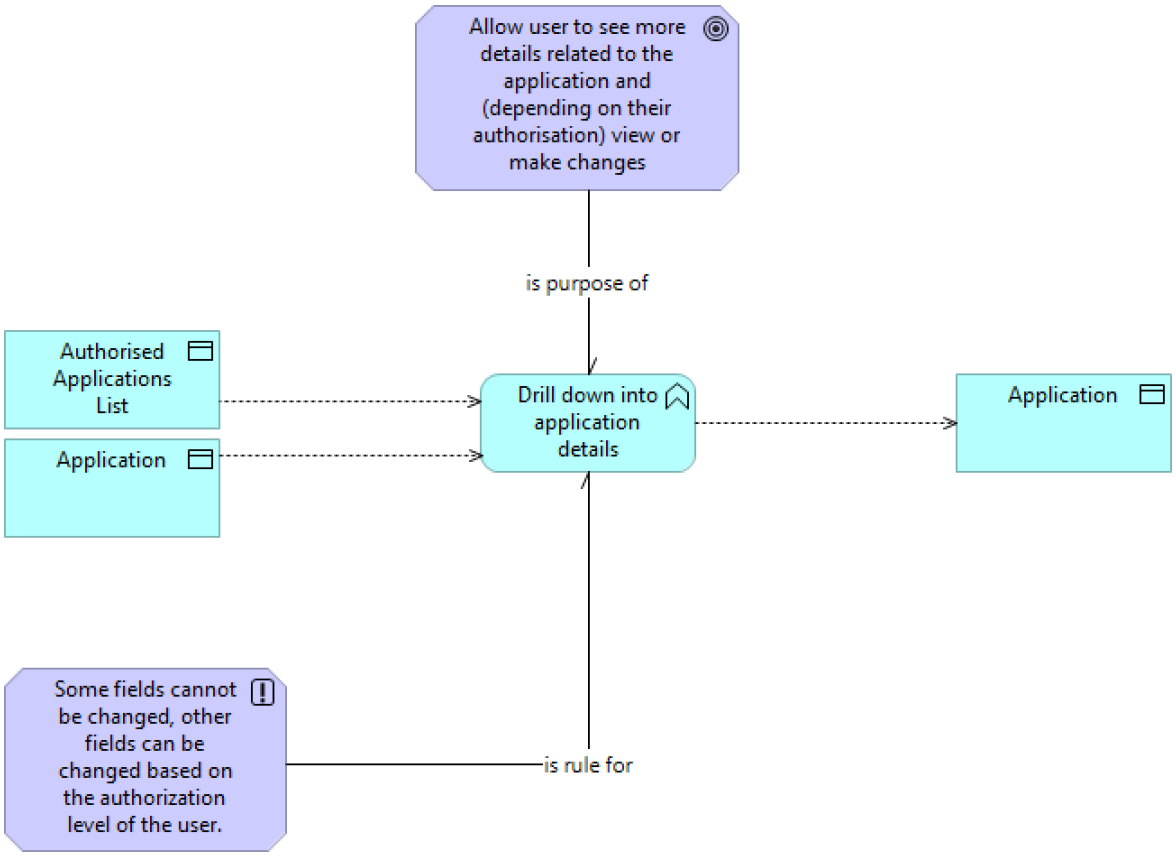
8.9.2 Present Project Applications List



Function Name	Present Project Applications List
Process ID	8.2
Purpose	Enable all applications that the user is authorised to view as visible in a list - this could cross projects.
Features	This is a facility to present to the user all applications that are linked to a specific project which the user has access rights to see. The high-level status of the application will be shown. If the user needs to see in more detail they will be able to drill down from this into another function which will provide said information.
Location	Project Module
Data Inputs	• Authorised Project List (Data)
Data Outputs	• Authorised Applications List (Data)

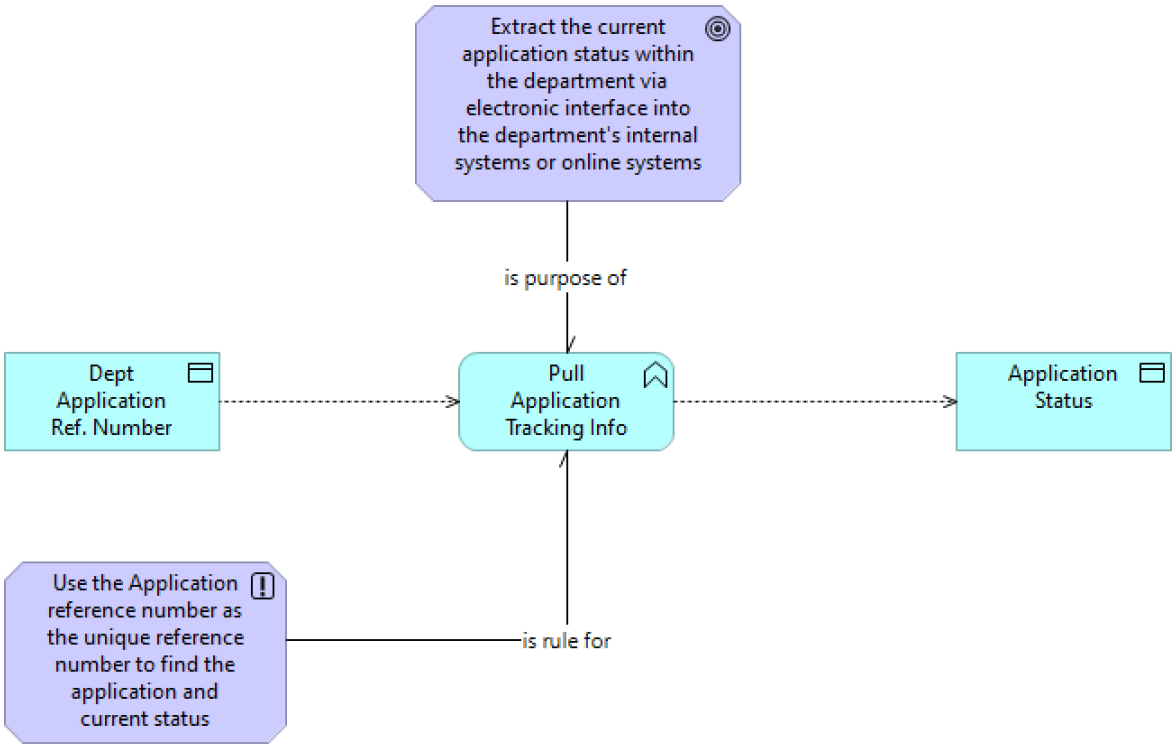
Business Rules	• Users must only be allowed to view applications for projects which they have rights to, and that fall within their mandate. This applies to developers and their representatives, department staff, competent and commenting authority staff and EOSS staff • API or service must only return that information viewable by the specific user to the front end - code must not rely on filtering at the front end.

8.9.3 Drill down into application details



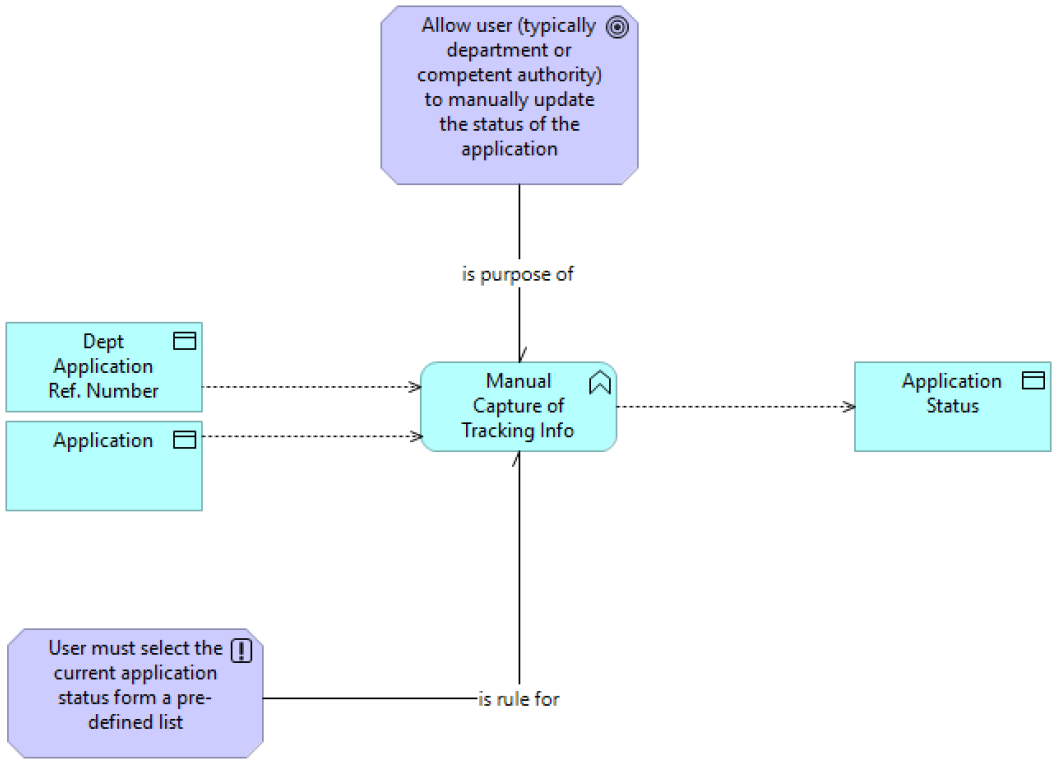
Function Name	Drill down into application details
Process ID	8.3
Purpose	Allow user to see more details related to the application and (depending on their authorisation) view or make changes.
Features	This is a facility for the user to do drill downs from the application list in order to see details of a single application. This will include the current state within the competent authority in terms of processing as well as any additional information or work that needs to be conducted by the developer.
Location	Project Module
Data Inputs	• Authorised Applications List (Data) • Application (Data)
Data Outputs	• Application (Data)
Business Rules	• Some fields cannot be changed; other fields can be changed based on the authorization level of the user.

8.9.4 Pull Application Tracking Info



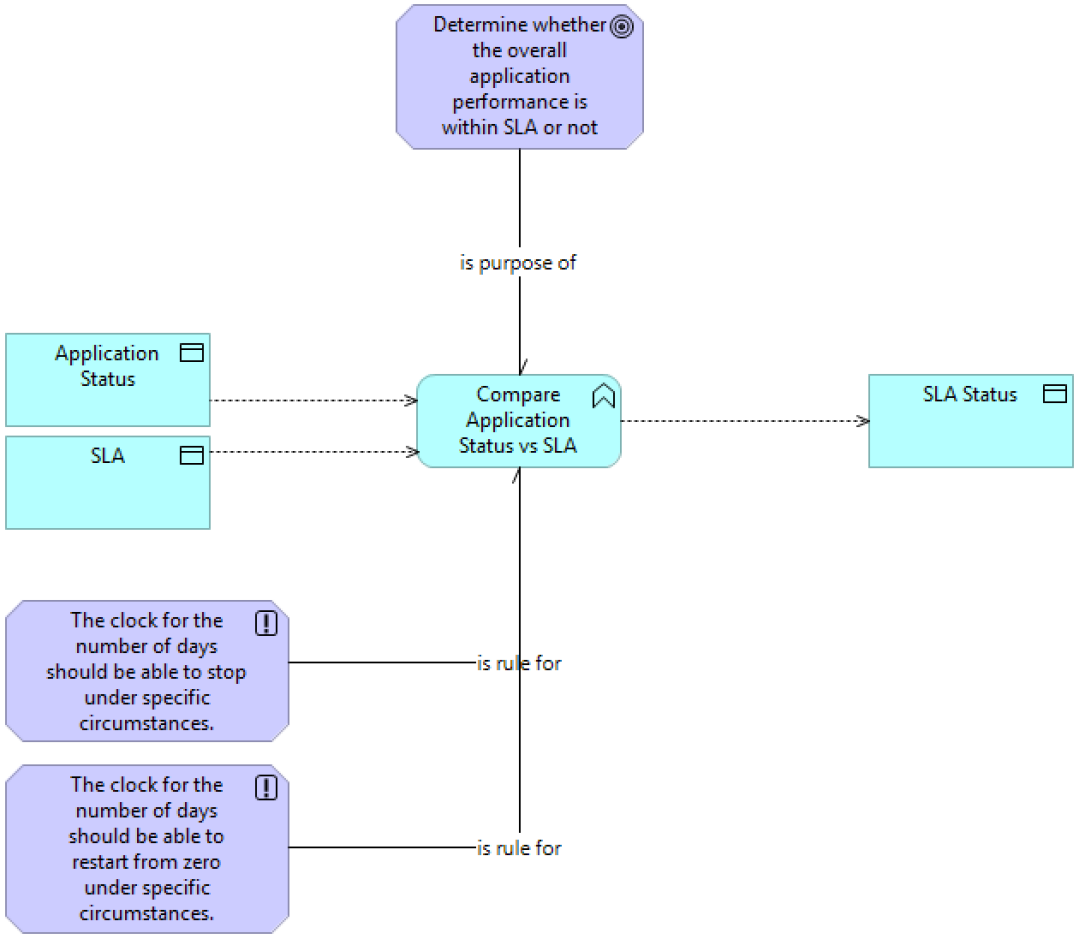
Function Name	Pull Application Tracking Info
Process ID	8.4
Purpose	Extract the current application status within the department via electronic interface into the department's internal systems or online systems
Features	This is the automated pulling of current application tracking information from within the competent authority system. This could take place via a number of different connectors, all of which need to be supported by the system. Authenticated APIs should ideally be the method used; however, database integration as well as push systems which allow the computer authority to push information into the system as well as the processing of messages such as email messages which are sent through to predetermined mailboxes could be methods used to obtain this information.
Location	Integration Module
Data Inputs	• Dept Application Ref. Number (Data)
Data Outputs	• Application Status (Data)
Business Rules	• Use the Application reference number as the unique reference number to find the application and current status

8.9.5 Manual Capture of Tracking Info



Function Name	Manual Capture of Tracking Info
Process ID	8.5
Purpose	Allow user (typically department or competent authority) to manually update the status of the application.
Features	This is a facility that allows the update of the application status to be manually captured in the case where it is impossible to obtain information from within the competent authority systems, either because of technical issues or administrative issues. EOSS staff would be able to update the status. Staff with competent authority would also be able to update this status by manually capturing it onto the EOSS system.
Location	Project Module
Data Inputs	Dept Application Ref. Number (Data) Application (Data)
Data Outputs	Application Status (Data)
Business Rules	User must select the current application status form a pre-defined list.

8.10 Provide Feedback / Additional Information

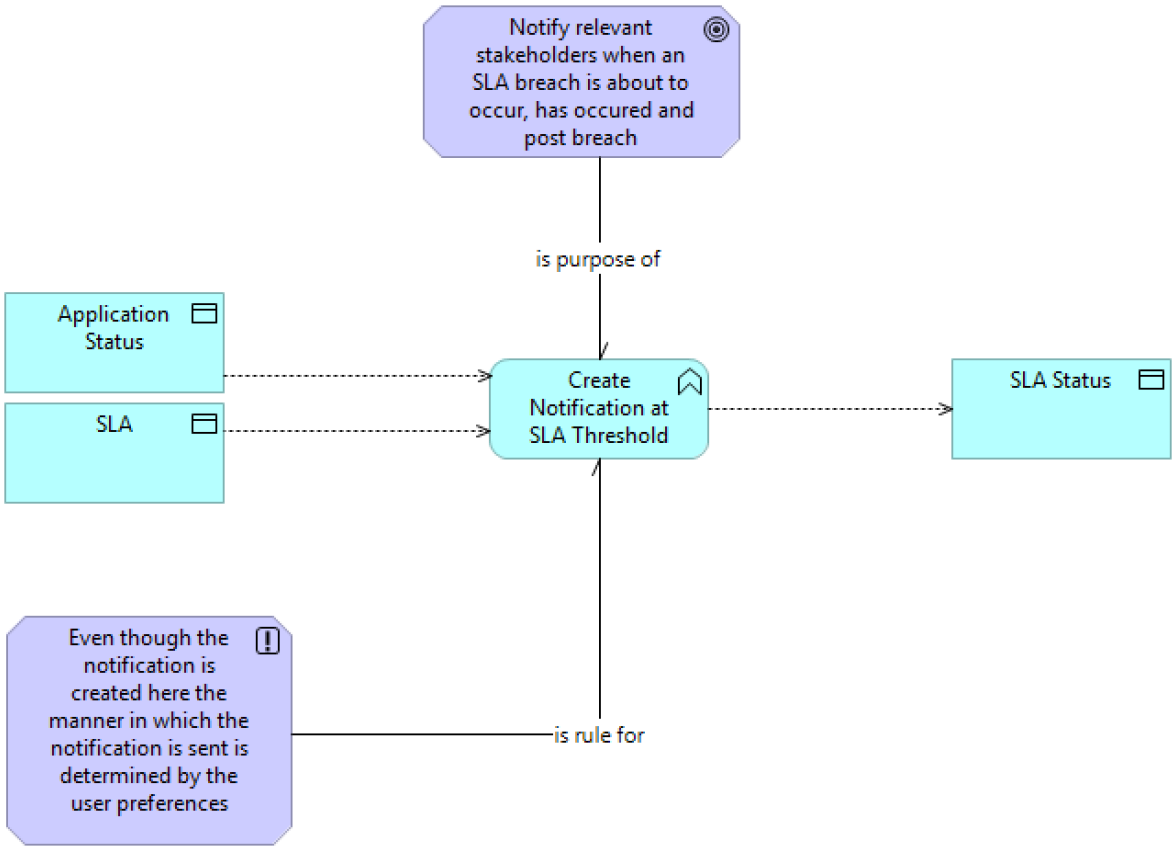


Function Name	
Process ID	9.1
Purpose	Determine whether the overall application performance is within SLA or not
Features	This is the comparison of the overall application processing status with the agreed service level agreements for end-to-end processing of an application. This will take into consideration that the clock could (but not always) stop if there is any additional information that is required from the developer. The facility also needs to support the situation where the clock would restart from the beginning if the developer has not provided complete and correct information.
Location	Workflow Module
Data Inputs	• Application Status (Data) • SLA (Data)
Data Outputs	• SLA Status (Data)
Business Rules	• The clock for the number of days should be able to stop under specific circumstances. • The clock for the number of days should be able to restart from zero under specific circumstances.

8.10.1 Compare Application Activity vs OLA

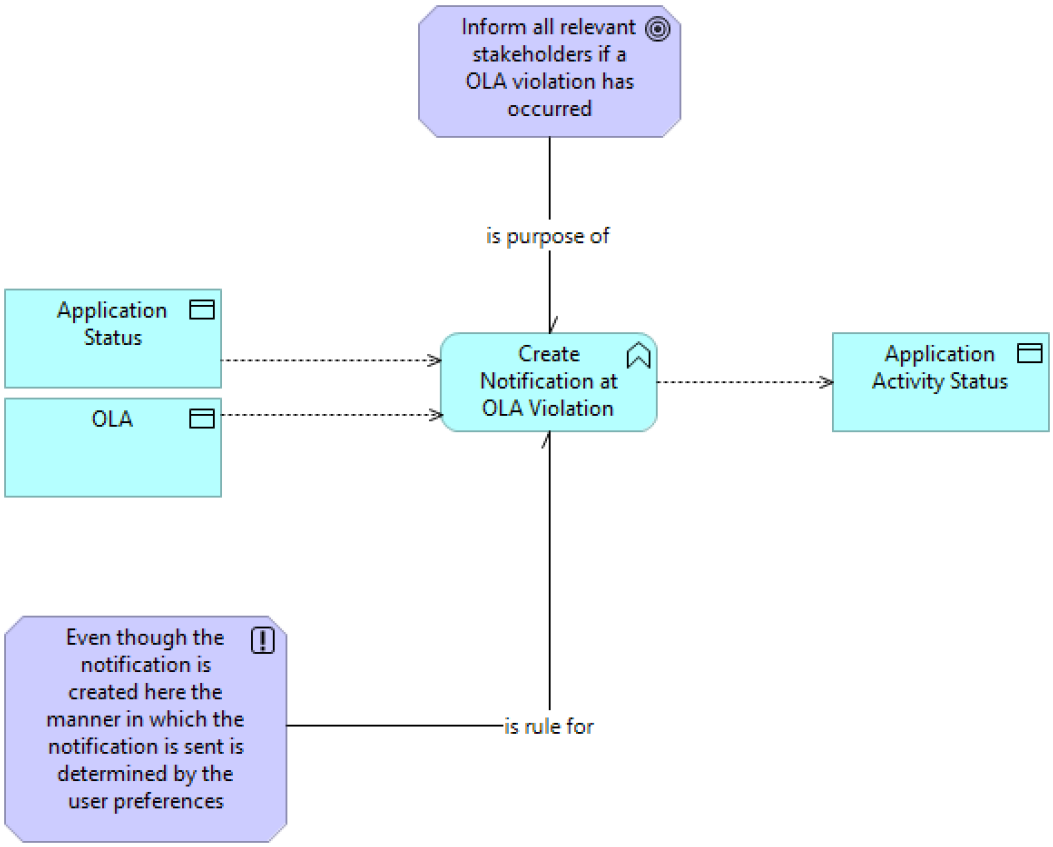
Function Name	Compare Application Activity vs OLA
Process ID	9.2
Purpose	Determine whether the specific activity within the application is within OLA or not
Features	This is the comparison of the time taken within activities that are part of the overall application process at a competent authority with the agreed operational level agreements which have been configured into the system for the specific competent authority. Based on this it will be visible whether a project or activity is on track as expected, is close to the deadline time, or has exceeded the deadline time. This information will be used in other services in order to notify different persons based on the current state of that specific application activity.
Location	Workflow Module
Data Inputs	• Application Status (Data) • OLA (Data)
Data Outputs	• Application Activity Status (Data)
Business Rules	• None

8.10.2 Create Notification at SLA Threshold



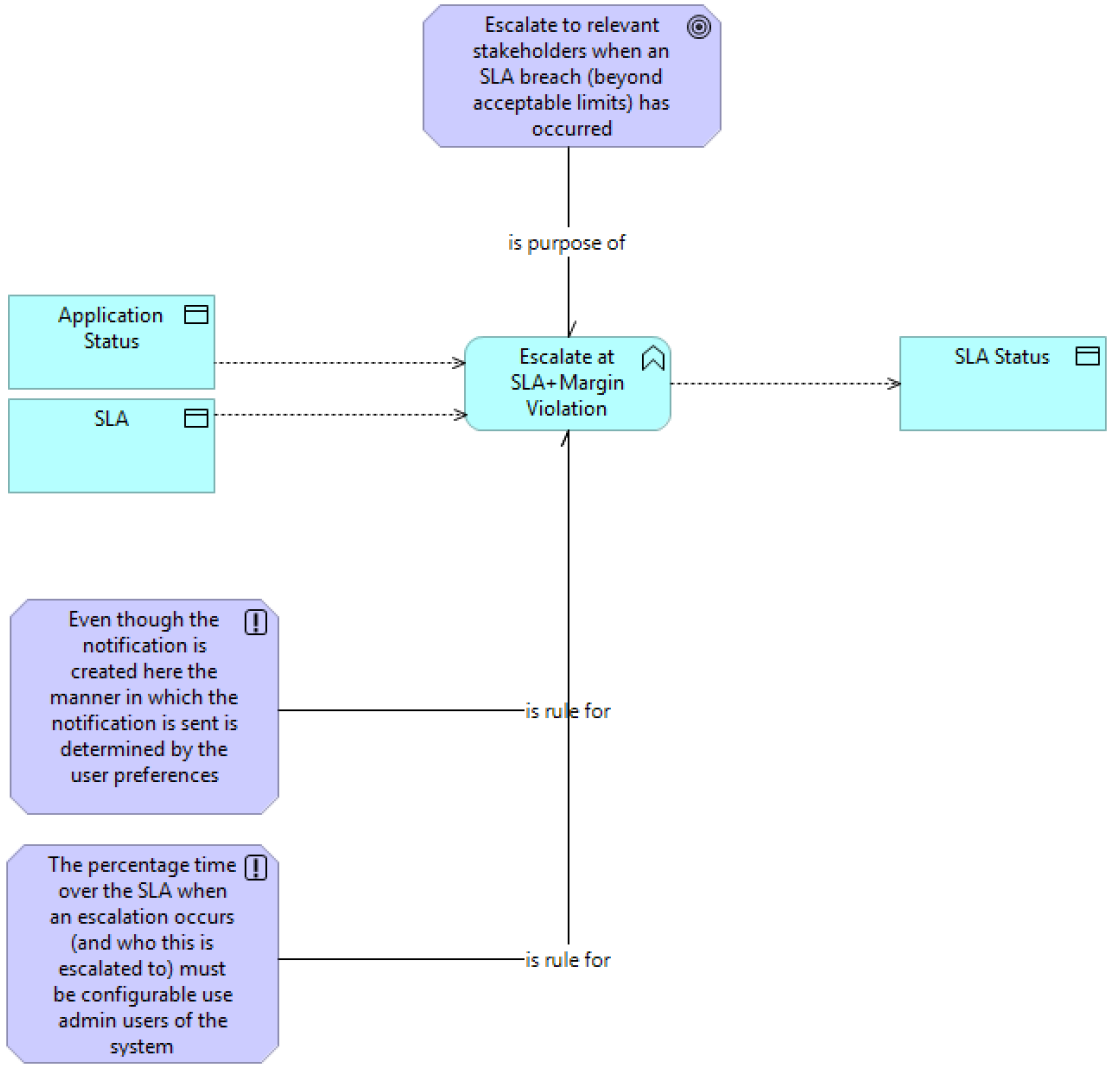
Function Name	Create Notification at SLA Threshold
Process ID	9.3
Purpose	Notify relevant stakeholders when an SLA breach is about to occur, has occurred, and post breach.
Features	This is the creation of a notification when a preset threshold has been breached (before the SLA has expired). This could be that either 75% or 80% of the predetermined time before SLA breach, SLA breach (100%), or when the SLA time has been exceeded by a predefined percentage such as 25%. All of these need to be configurable per application (and application subsection within the process). Based on this information, different notifications will be created for different responsible persons to deal with the issue within the competent authority, the developer so that they can understand the current status of the application or an escalation to higher level staff within the competent authority and within EOSS.
Location	Workflow Module
Data Inputs	• Application Status (Data) • SLA (Data)
Data Outputs	• SLA Status (Data)
Business Rules	• Even though the notification is created here, the manner in which the notification is sent is determined by the user preferences.

8.10.3 *Create Notification at OLA Violation*



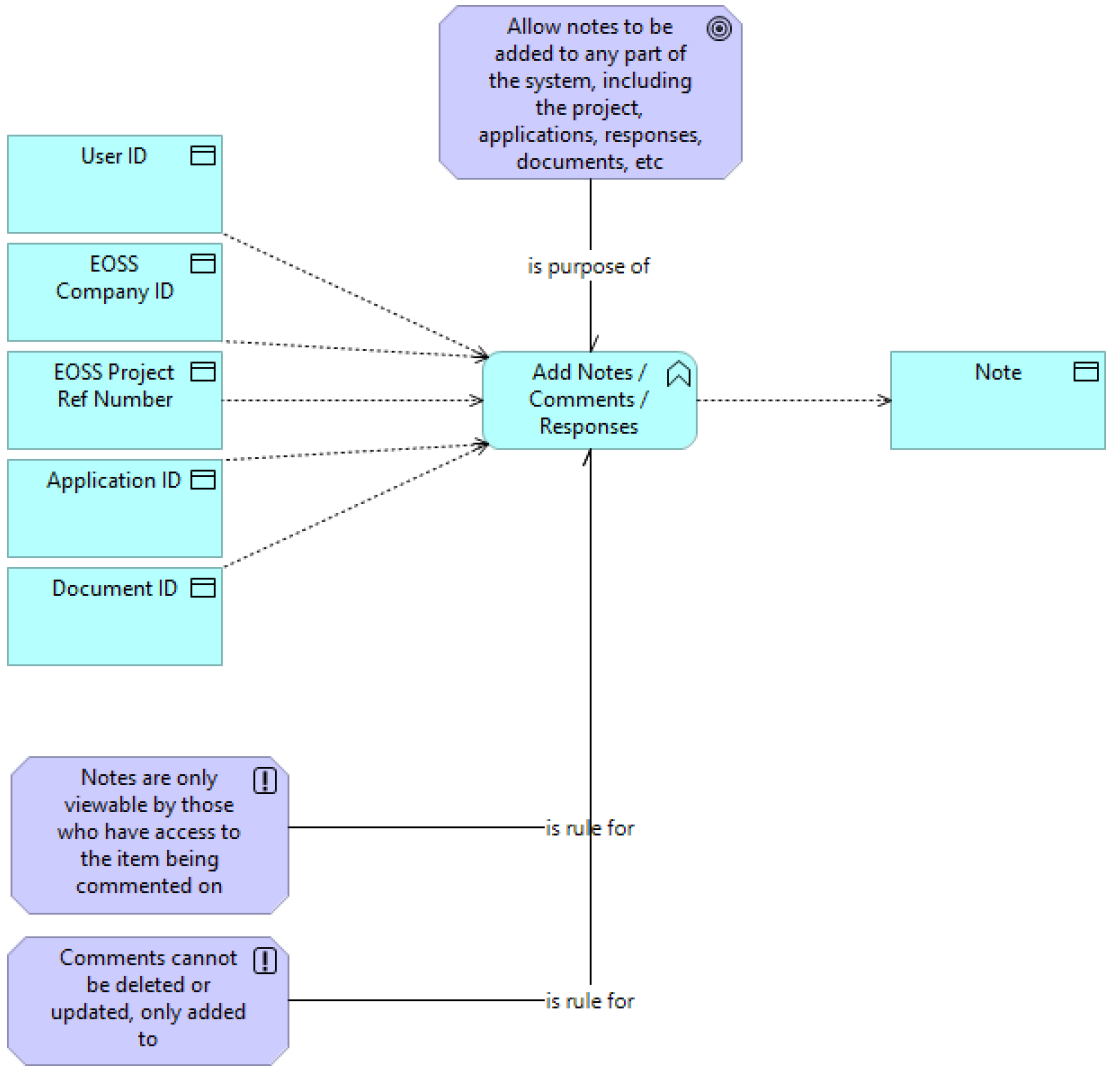
Function Name	Create Notification at OLA Violation
Process ID	9.4
Purpose	Inform all relevant stakeholders if an OLA violation has occurred
Features	This is the creation of a notification when an OLA violation or a threshold breach has occurred
Location	Workflow Module
Data Inputs	• Application Status (Data) • OLA (Data)
Data Outputs	• Application Activity Status (Data)
Business Rules	• Even though the notification is created here, the manner in which the notification is sent, is determined by the user preferences.

8.10.4 *Escalate at SLA+Margin Violation*



Function Name	Escalate at SLA+Margin Violation
Process ID	9.5
Purpose	Escalate to relevant stakeholders when an SLA breach (beyond acceptable limits) has occurred.
Features	This is an escalation (typically to a line manager) when an SLA violation has occurred.
Location	Workflow Module
Data Inputs	• Application Status (Data) • SLA (Data)
Data Outputs	• SLA Status (Data)
Business Rules	• Even though the notification is created here, the manner in which the notification is sent is determined by the user preferences. • The percentage time over the SLA when an escalation occurs (and who this is escalated to) must be configurable - use admin users of the system.

8.10.5 *Add Notes / Comments / Responses*

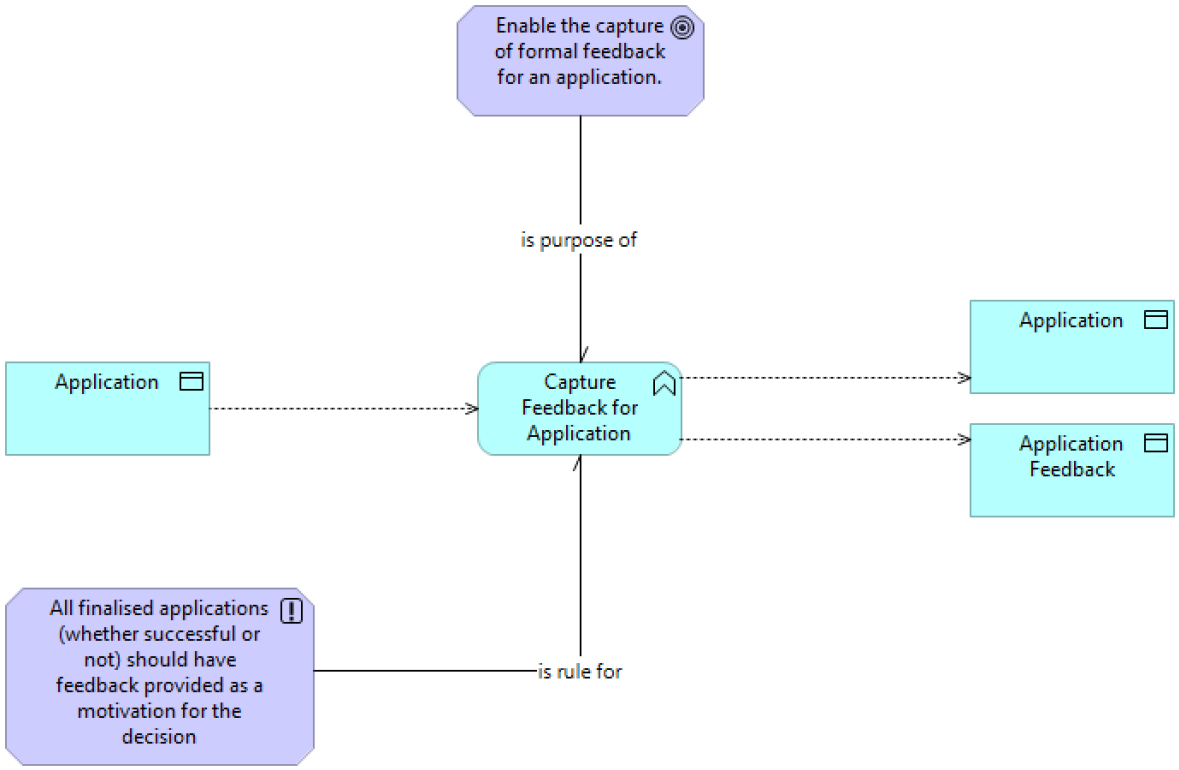


Function Name	Add Notes / Comments / Responses
Process ID	9.6
Purpose	Allow notes to be added to any part of the system, including the project, applications, responses, documents, etc.
Features	This is a facility to allow notes to be added to different components within the system including any project or application supporting documents, any application processing activity, or the overall project. This facility will allow users to respond to comments. The time and date of such comments shall be kept together with the user who entered the comment, as well as any users who responded to the comment. No comments shall be overwritten or deleted.
Location	Workflow Module
Data Inputs	• User ID (Data) • EOSS Company ID (Data) • EOSS Project Ref Number (Data) • Application ID (Data) • Document ID (Data)

Data Outputs	• Note (Data)
Business Rules	• Notes are only viewable by those who have access to the item being commented on. • Comments cannot be deleted or updated, only added to.

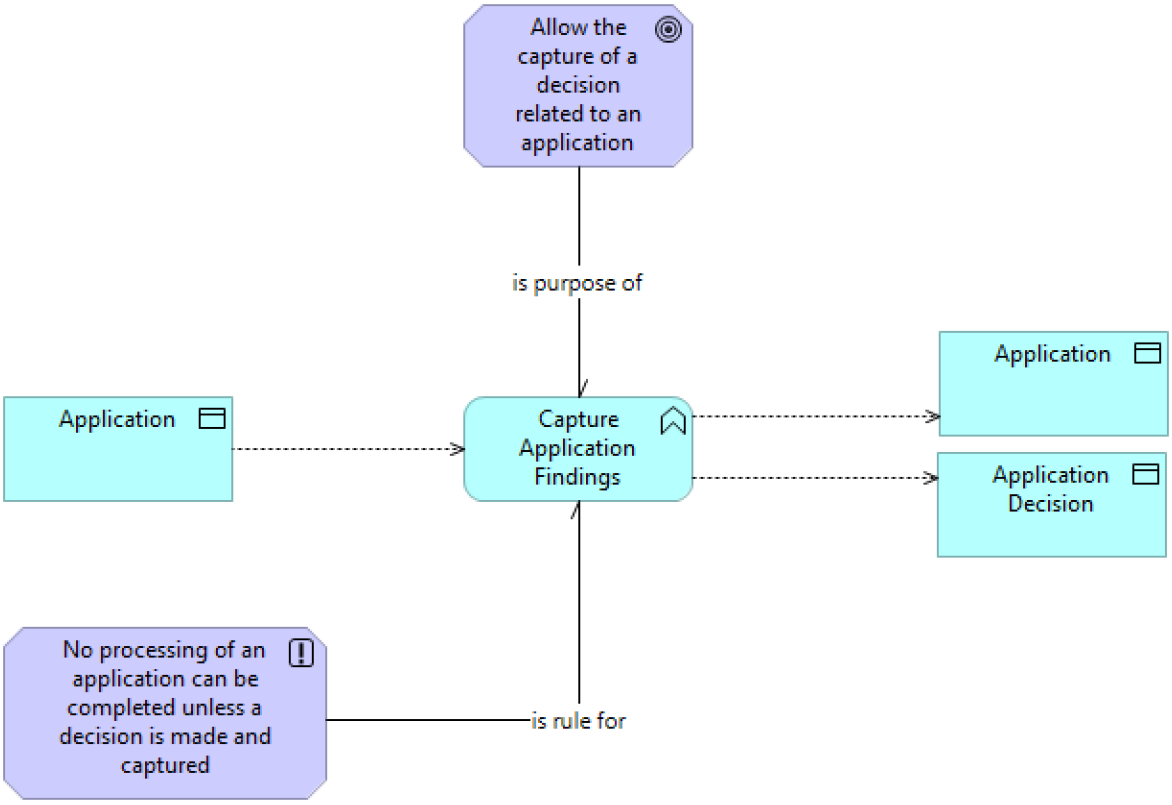
8.11 Provide Feedback / Additional Information

8.11.1 Capture Feedback for Application



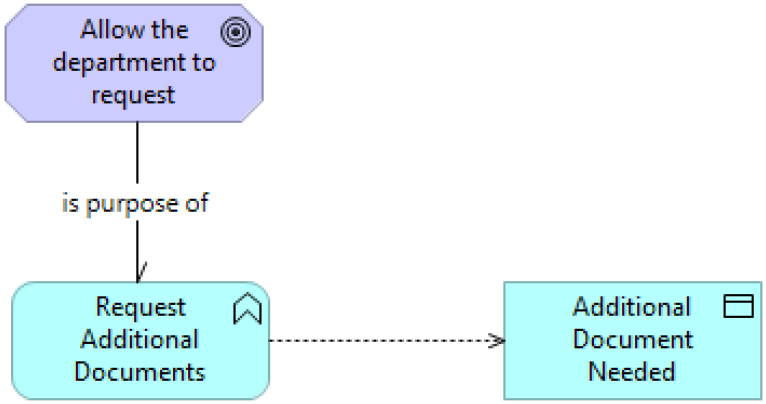
Function Name	Capture Feedback for Application
Process ID	10.1
Purpose	Enable the capture of formal feedback for an application.
Features	This is the capturing of feedback specifically related to an application, typically the end result, which is a formal process. The date and time of the feedback as well as the user who made the feedback must be included. It will be possible to add a document to this feedback, thus enabling further information to be provided as supporting material.
Location	Application Module
Data Inputs	• Application (Data)
Data Outputs	• Application (Data) • Application Feedback (Data)
Business Rules	• All finalised applications (whether successful or not) should have feedback provided as a motivation for the decision.

8.11.2 Capture Application Findings



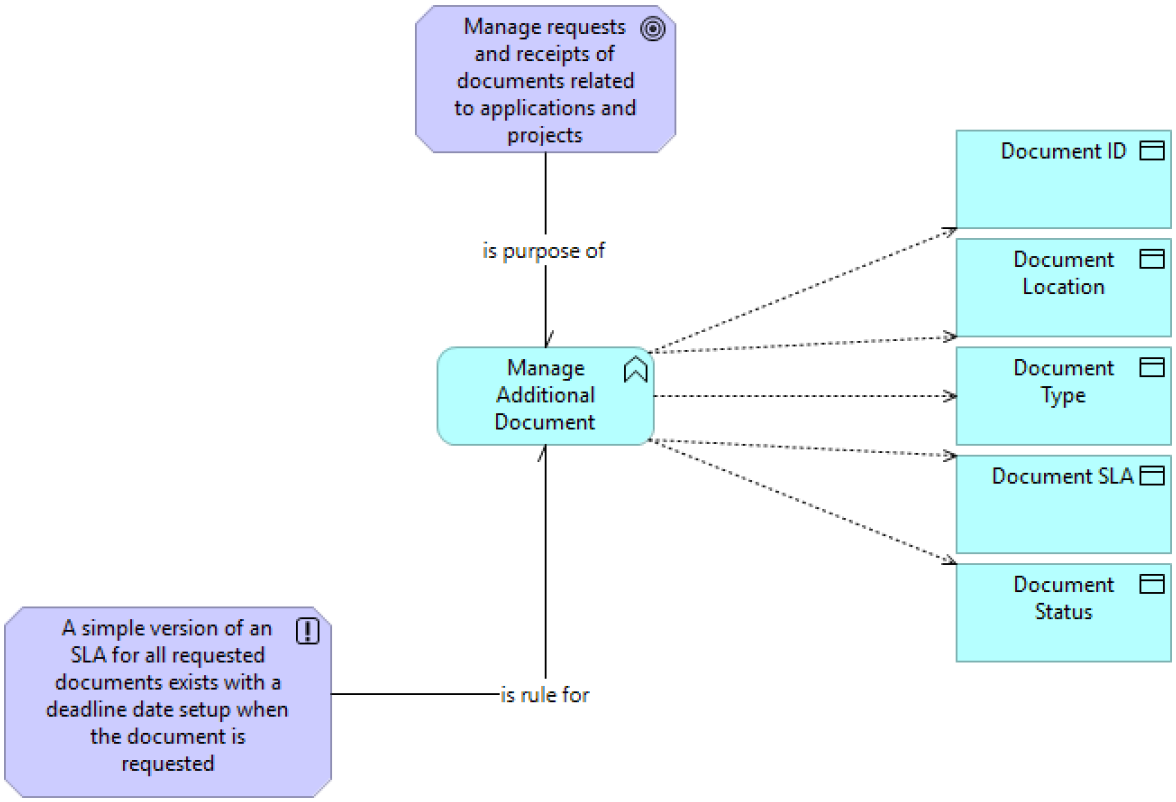
Function Name	Capture Application Findings
Process ID	10.2
Purpose	Allow the capture of a decision related to an application.
Features	This is the capture of the overall findings related to an application, including whether it is accepted, provisionally accepted, returned for new information, or rejected. Supporting commentary and documentation will be possible to link to the finding.
Location	Application Module
Data Inputs	• Application (Data)
Data Outputs	• Application Decision (Data) • Application (Data)
Business Rules	• No processing of an application can be completed unless a decision is made and captured.

8.11.3 *Request Additional Documents*



Function Name	Request Additional Documents
Process ID	10.3
Purpose	Allow the department to request additional supporting documents and reports.
Features	This is the requesting of additional documentation from the developer to further clarify their application. the time and date of the request as well as the user and department which requested this information shall be kept together with the request . The system could either stop clock and send notification once this occurs and only restart when the document or information is correctly received.
Location	Application Module
Data Inputs	None
Data Outputs	• Additional Document Needed
Business Rules	None

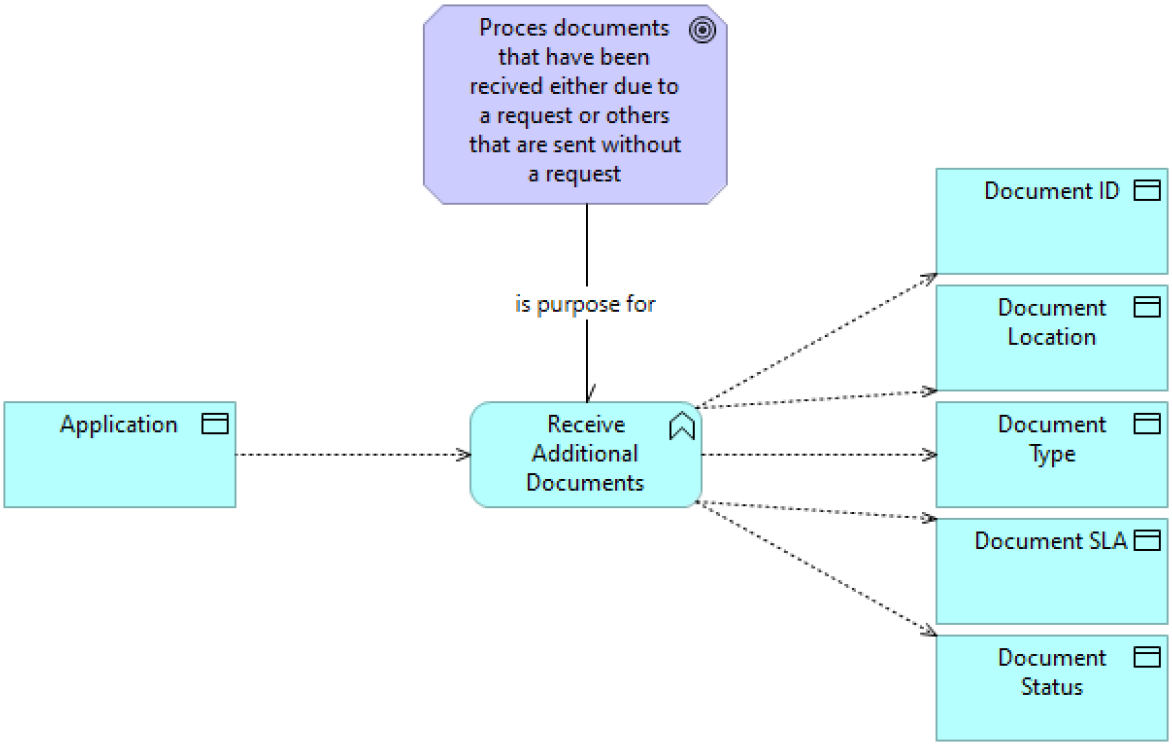
8.11.4 *Manage Additional Document Requests*



Function Name	Manage Additional Document Requests
Process ID	10.4
Purpose	Manage requests and receipts of documents related to applications and projects.
Features	This is the management of the additional documents that have been requested to ensure that they are received within a reasonable time frame. This shall include tracking the additional document requests to ensure that it is received timelessly, including escalation to the developer's staff or department staff if timelines are not being met. This includes the uploading of additional documentation that has been received as specified as well as notification of all responsible persons when the document has been uploaded.
Location	Document Management Module
Data Inputs	None
Data Outputs	• Document ID (Data) • Document Location (Data) • Document Type (Data) • Document SLA (Data) • Document Status (Data)
Business Rules	• A simple version of an SLA for all requested documents exists with a deadline date setup when the document is requested.

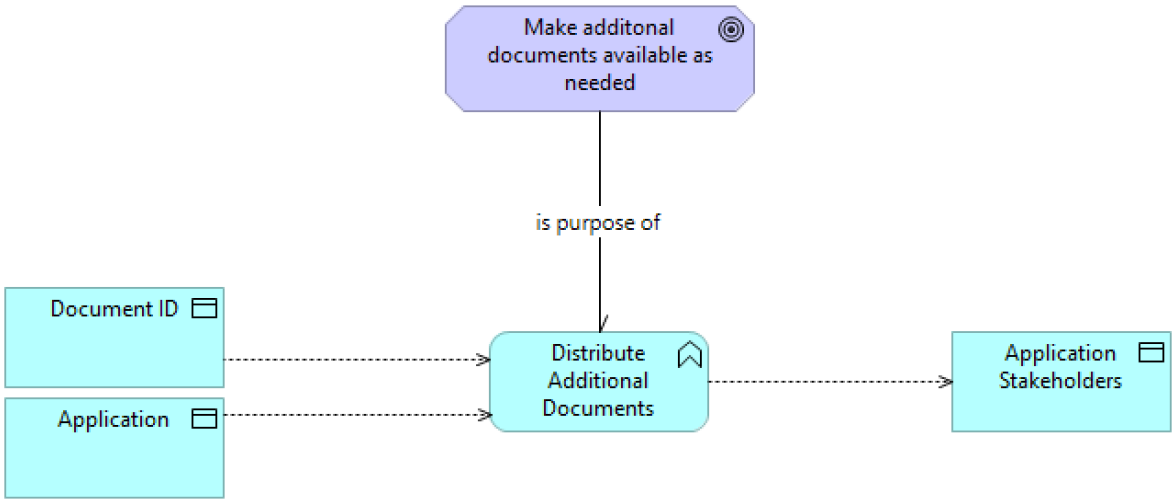
8.12 Provide Additional Documents / Reports

8.12.1 Receive Additional Documents



Function Name	Receive Additional Documents
Process ID	11.1
Purpose	Process documents that have been received either due to a request or others that are sent without a request.
Features	This is the receiving of the additional documentation, storage of this documentation with the associated metadata and allowing access to the documents based on the users having access to that project and that application.
Location	Document Management Module
Data Inputs	• Application (Data)
Data Outputs	• Document ID (Data) • Document Location (Data) • Document Type (Data) • Document SLA (Data) • Document Status (Data)
Business Rules	• None

8.12.2 *Distribute Additional Documents*



Function Name	Distribute Additional Documents
Process ID	11.2
Purpose	Make additional documents available as needed.
Features	This is the distribution of the additional documents to the staff that requested that document. This includes either restarting the clock or starting the clock for the service level agreement (SLA).
Location	Document Management Module
Data Inputs	• Application (Data) • Document ID (Data)
Data Outputs	• Application Stakeholders (Data)
Business Rules	None

9 Reports

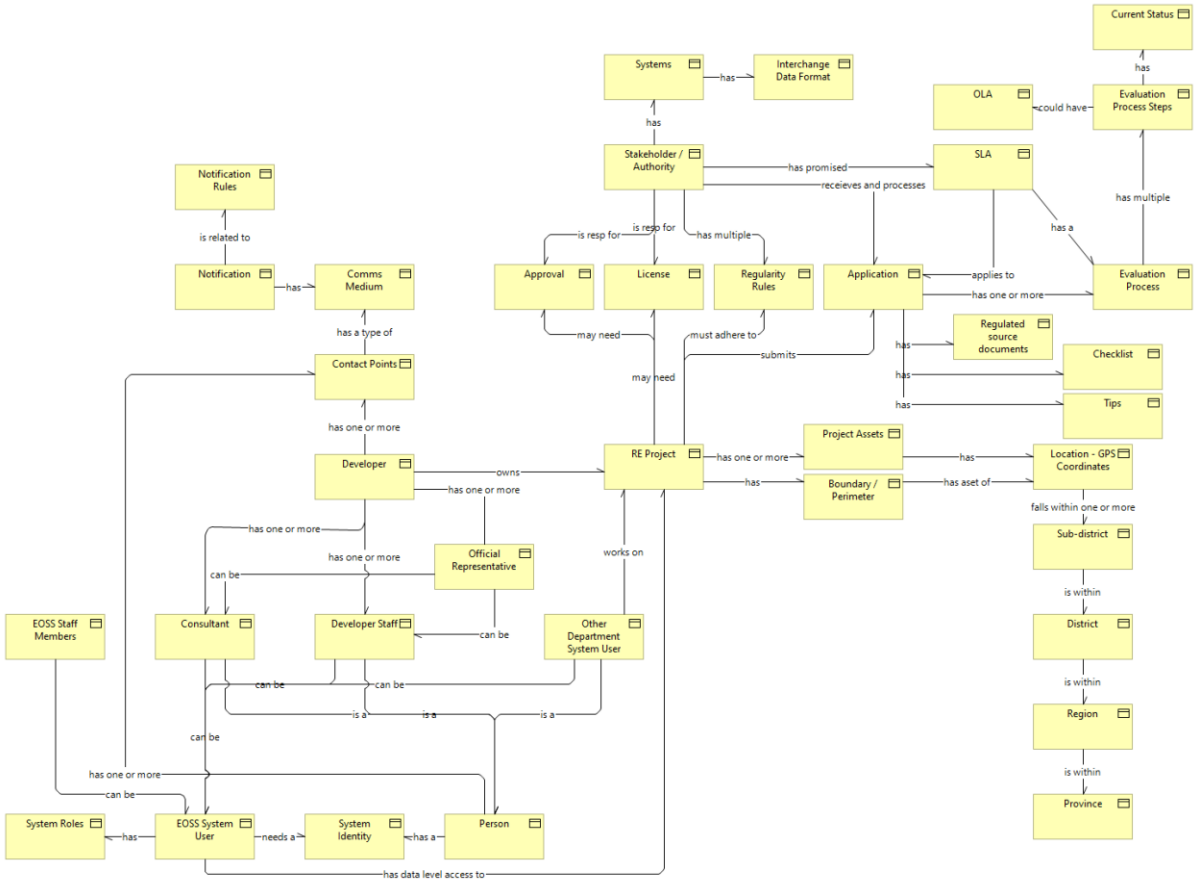
The main user of reports will be EOSS. The following reports should be supported:

Report Name	Report Description	Audience	Purpose
Total Projects List	List of all projects with initial application and predicted end dates for each required approval.	EOSS	Enable EOSS to see all projects and the current status of these projects together with certain details such as, the type of project, the size of the project in terms of megawatts, etc. Projects that are outside of an acceptable window for approvals can be highlighted.
Actual Applications (End to end)	List of all past projects and the timelines from initial application until completion with an indication of whether approved, cancelled, or rejected.	EOSS	Provide trends with regard to improvements to completion times.
Application Bottlenecks	List of applications that took longer than normal. SLA, with reasons for the delays (which activities within the approval process were the impediments).	EOSS/Dept	Understand the root cause of delays in the approval process.
Application process Variances	For application types, display the minimum, average and maximum times.	EOSS/Dept	Understand causes of variance to enable process improvements to improve predictability.
Data Issues	Sorted list for data issue types.	EOSS/Dept	Understand which data the developers or their representatives regularly get incorrect, thus allowing initiatives for improvement.
Supporting Document Issues	Sorted list for supporting document issues.	EOSS/Dept	Understand documents data that the developers or their representatives regularly get incorrect, thus allowing initiatives for improvement.
Renewable Capacity with stages of completion	Graph with renewable energy capacity categorised by proposed, in-application process, constructed and production. This would also be categories by geographic location.	EOSS	Provide information for current renewable project delivery as well as planned capacity.

The actual data and report layout would be finalised during the project. All reports must be exportable to Excel and PDF. All Excel exports must be immediately possible to run Pivot Reports on. The data in

reports must only include the data that the user has access to and is relevant for their area of responsibility.

10 Data Model



10.1 Data Definitions

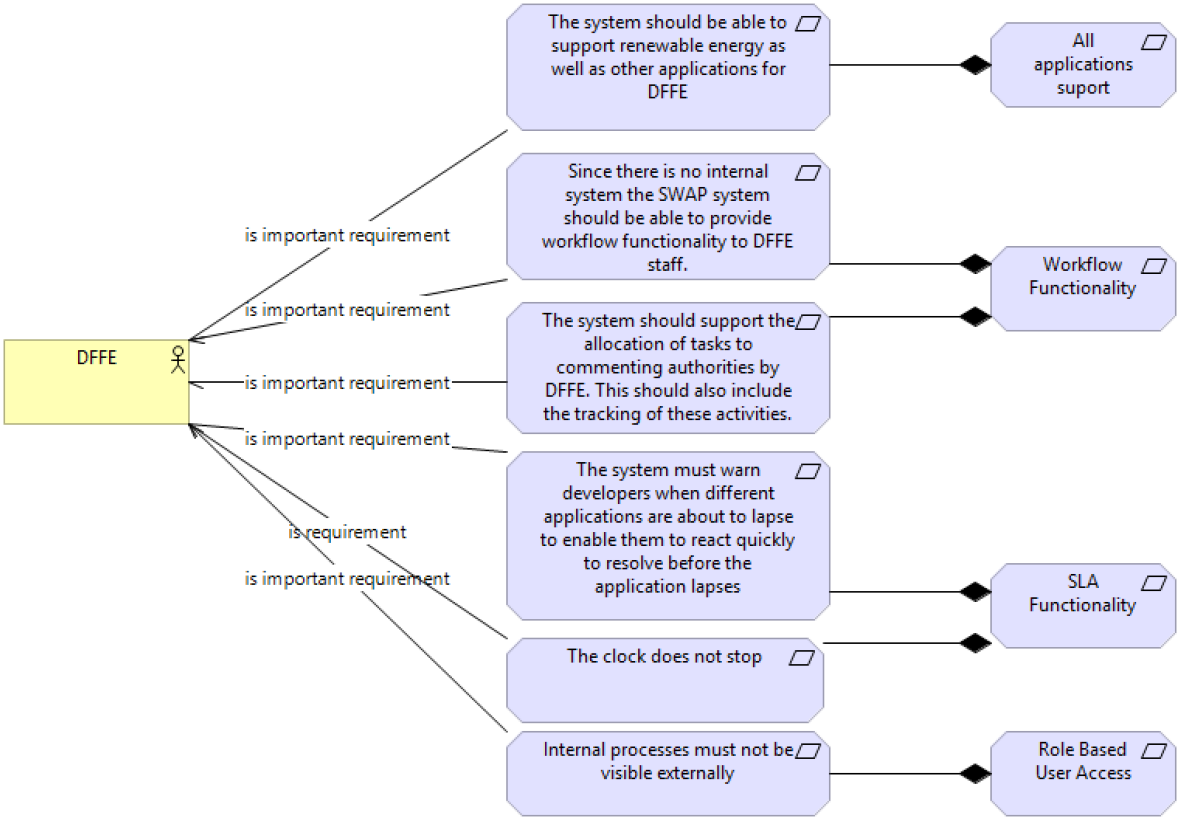
Name	Documentation
Developer	A natural or juristic person who is the owner of the renewable energy development project.
Consultant	This is an official agent of the developer, either an agent or a consultant.
EOSS System User	EOSS System User - this user does not have access to all parts of the system, but only those parts within the applications that they are associated with.
Other Department System User	These are users within the application processing departments or organisations, e.g. SAWS, ATNS, Sanral.
RE Project	A renewable energy development project. This data object includes all project related details, such as name, description, start dates, go-live dates, etc.
System Roles	This is the set of roles that each system user has been allocated.
Province	Location Information
District	
Region	
Sub-district	
Location - GPS Coordinates	This is the GPS Coordinates (of the entire site, the boundary of the site or the individual assets) that forms part of the development.

Comms Medium	This could be E-mail, WhatsApp, SMS, or in-system notifications.
Contact Points	This is the contact points for the developer as a whole and could be E-mail, telephone, IM, etc. The contact points need to be totally flexible to allow multiples of each type, together with a note for each indicating the purpose as well as the default and preferred contacts.
Person	This holds all generic information related to a person.
Developer Staff	This is staff within the developer organisation
Project Assets	This is individual locations of each component of the project, including wind turbines, solar panels, buildings, roads, etc. This could be in the form of a KML file, which may need to be interpreted.
Boundary / Perimeter	This the total boundary of the RE development.
Approval	This is an approval granted.
License	This is a license to operate granted.
Stakeholder / Authority	This the department, organisation, or competent authority that needs to ensure that its area of control and services are not negatively impacted by a development.
Regularity Rules	This is the set of rules contained in the regulations that govern acceptance or rejection of any application.
SLA	This is the overall process SLA for a complete evaluation process.
Application	This is a complete application that has been submitted for a department.
Regulated source documents	This is each of the source documents (structured data about the document rather than the actual document) that are required to evaluate an application.
Official Representative	This the person or persons (consultants or developers) who are the official developer representative.
Evaluation Process	This is the generic application process that is followed for different application types in different departments and organisations. to evaluate an application.
Evaluation Process Steps	This is the individual steps within the evaluation process - which determine the current state of the application that is communicated to the developer or their representative.
OLA	This is (if available) the timelines promised to execute each individual step in an evaluation process.
Current Status	This is the current status of the application at an individual department.
Systems	This is the systems that are used by the Department / Authority.
Interchange Data Format	This is details of the manner in which data can be shared with EOSS.
System Identity	This is the identity that a person has on the EOSS system.
EOSS Staff Members	EOSS Staff Members.
Notification	This is an instance of a notification.
Notification Rules	These are rules related to notifications.

11 Appendix A: Department Details

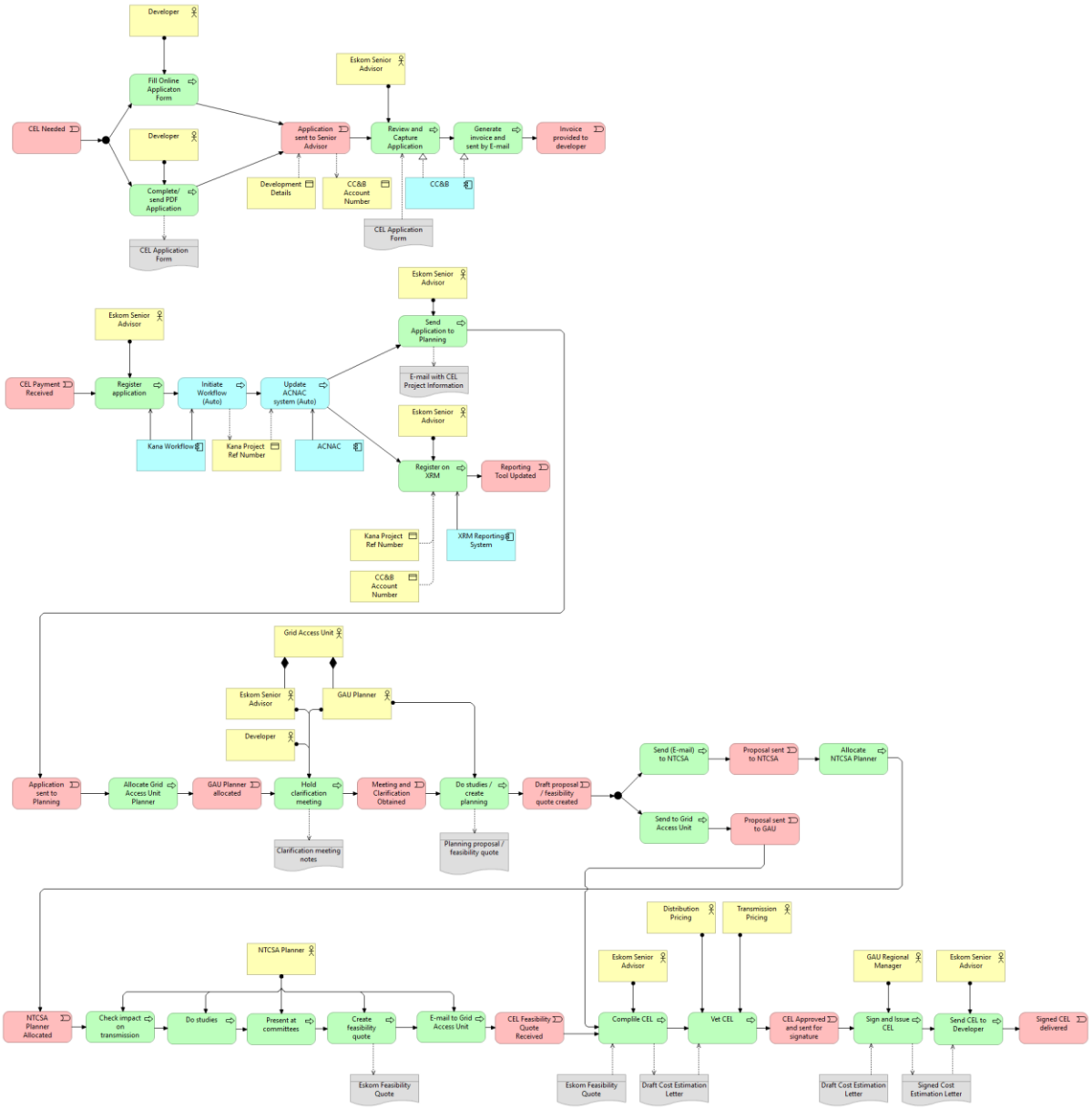
11.1 DFFE (Department of Forestry, Fisheries and the Environment)

11.1.1 Key Requirements

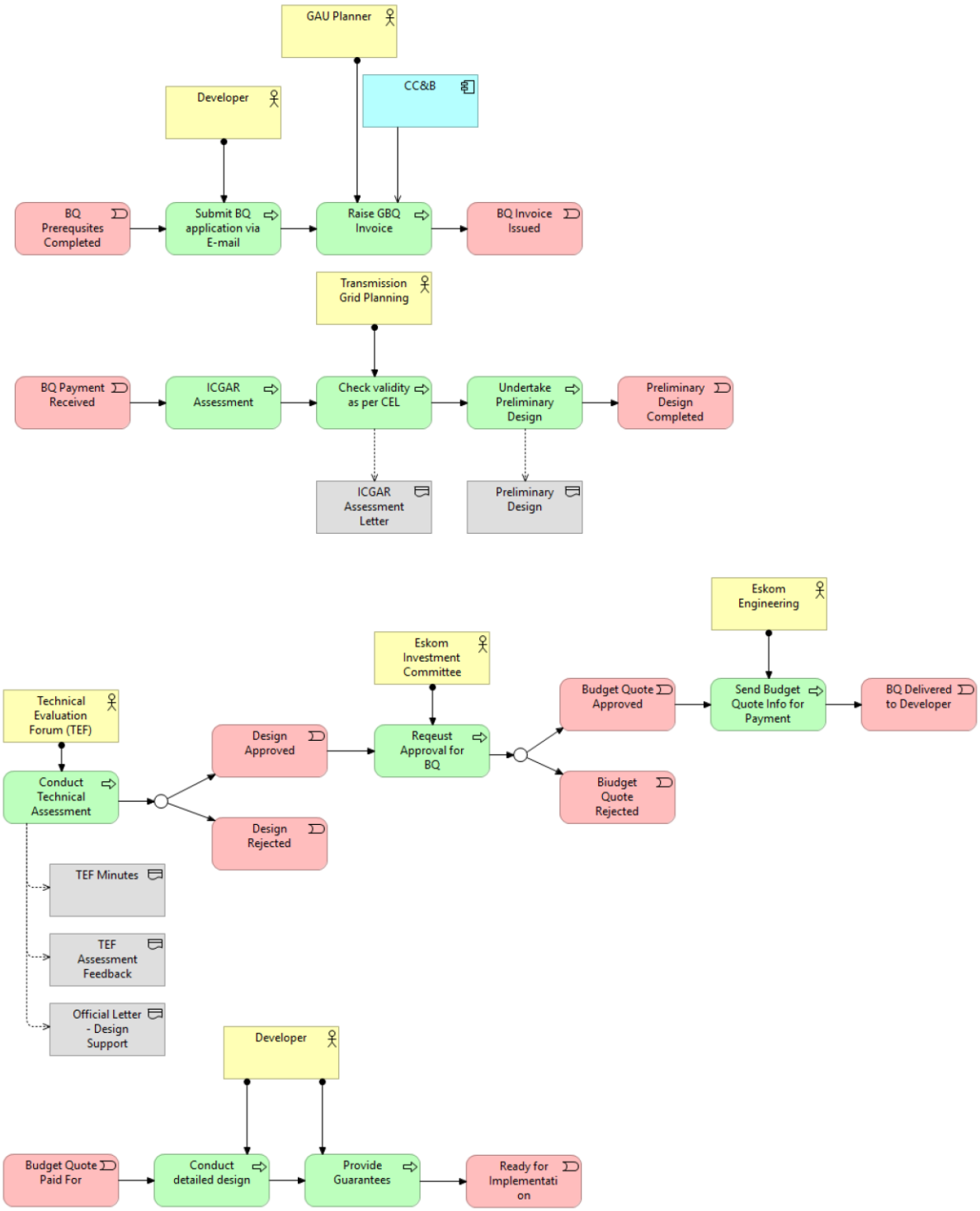


11.2 Eskom

11.2.1 Cost Estimate Letter

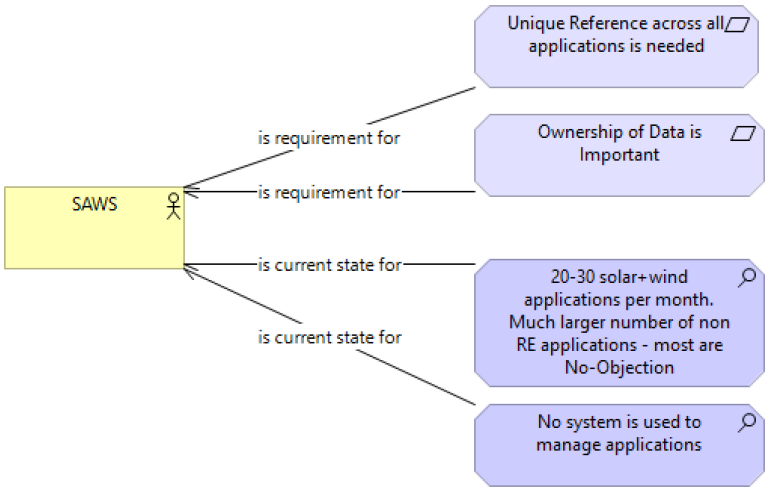


11.2.2 Budget Quote

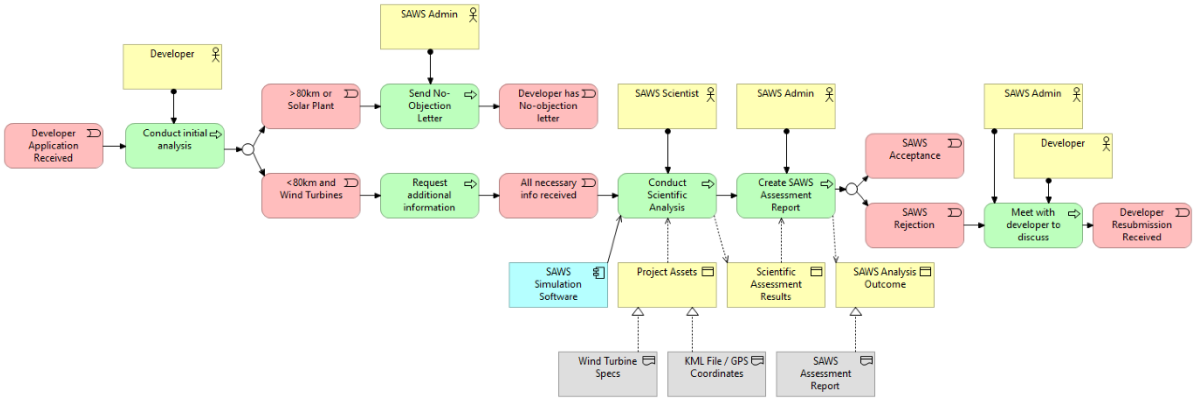


11.3 SAWS (South African Weather Service)

11.3.1 Key Requirements

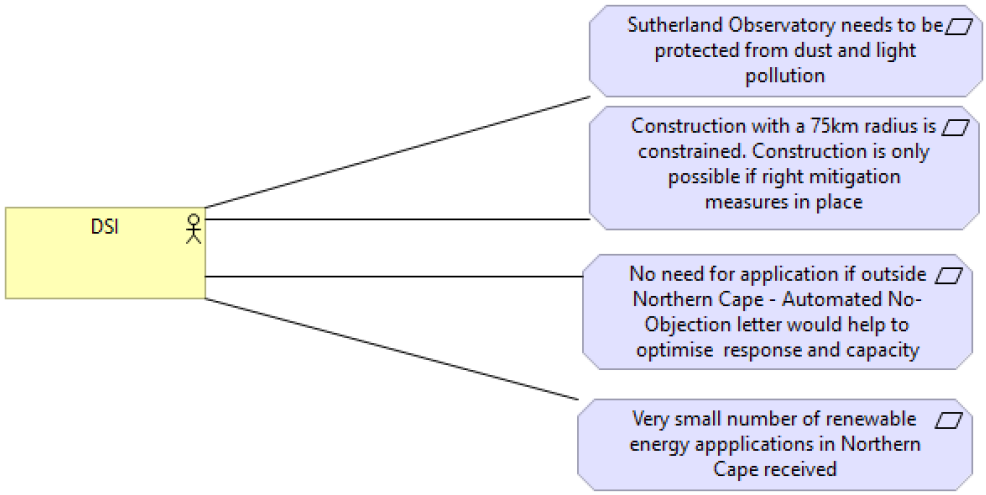


11.3.2 Overview Applications Process Model



11.4 DSI (Department of Science and Innovation)

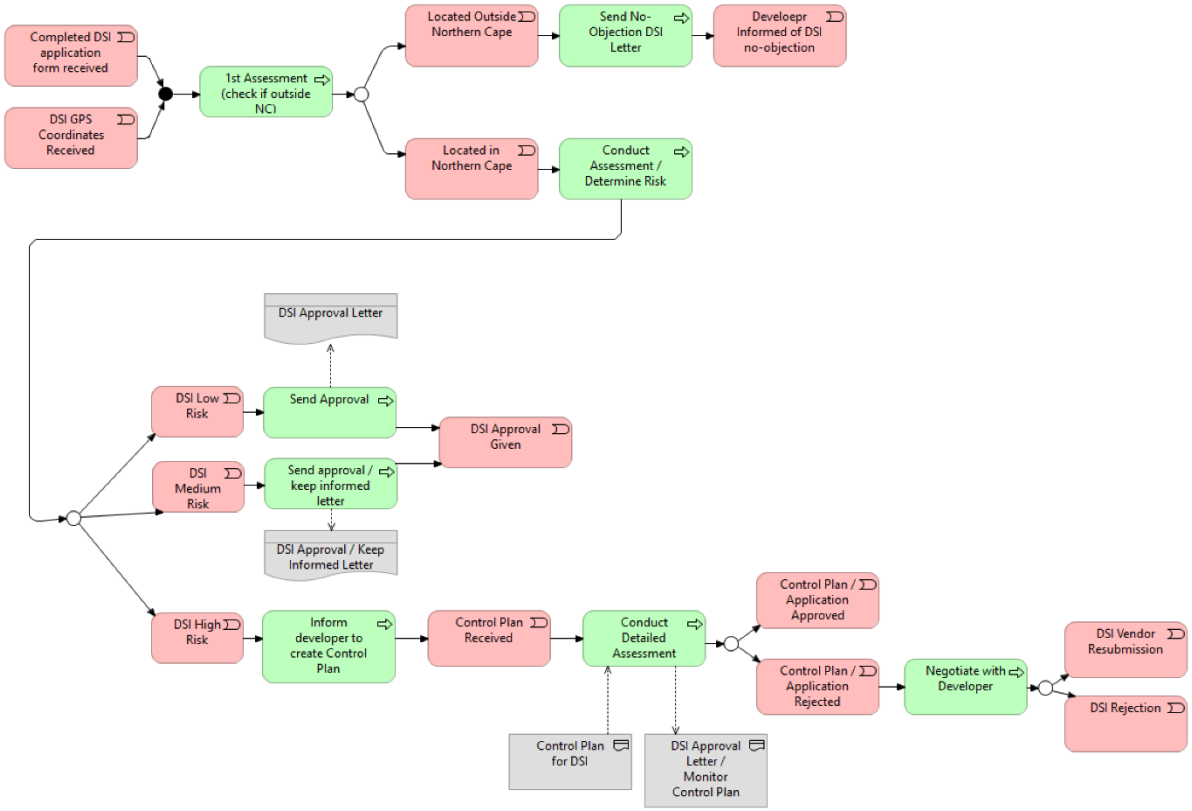
11.4.1 Key Requirements



Different processes exist for the 2 different DSI systems that could be impacted:

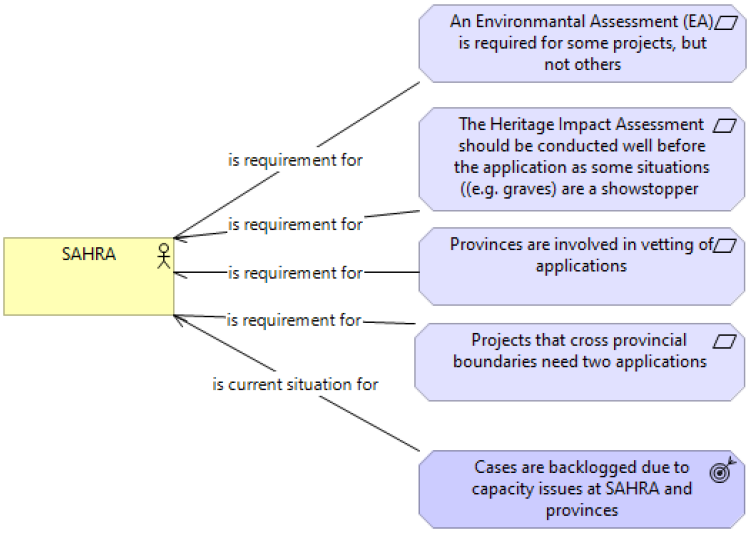
- SCAAA (Sutherland Observatory)
- KCAAA (Square Kilometre Array)

11.4.2 Overview Applications process Model



11.5 SAHRA (South African Heritage Regulatory Authority)

11.5.1 Key requirements



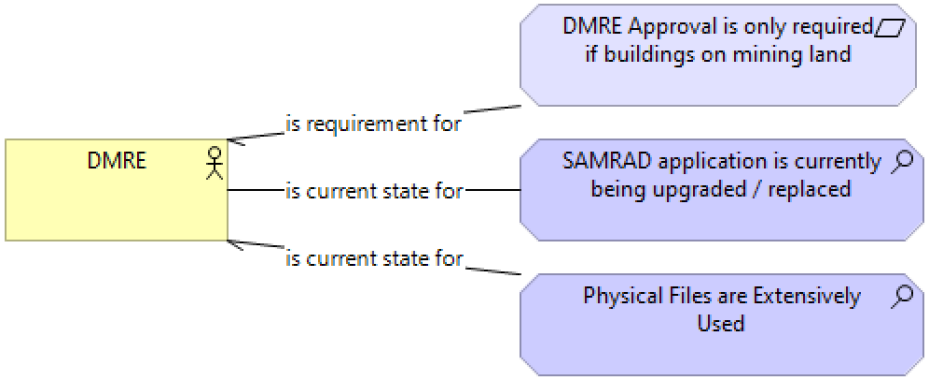
11.6 SAHRIS System Architecture

Technology Stack		
Front End Language	Please provide details of the front-end language, e.g. JavaScript, HTLM5, etc.	PHP mainly with HTML5 and certain modules using Javascript
Front End Platform	Please provide details of any front-end platform used, e.g. React, Angular, Visual Studi Core.	Drupal 9
Middleware	Please provide details of any API Gateway, service hub, integration later or middleware used, e.g. Oracle Fusion, Kafka, Kong Gateway, etc.	None
Back End	Please provide details of the back end, e.g. Java, etc.	Amazon Web Services using EC2 Apache webserver, RDS MySQL database and S3 media storage
Database	Please provide details of database, e.g. Microsoft SQL, Postgres, etc.	MySQL 8
Interfaces	Please indicate any current integrations that exist. Please also indicate the integration technology used, e.g. Rest API Call, Database Integration, etc.	none
Interface Authentication	In any current API integration what authentication is used, e.g. none, OpenID Connect, OAutho2.0, SAML, etc.	none

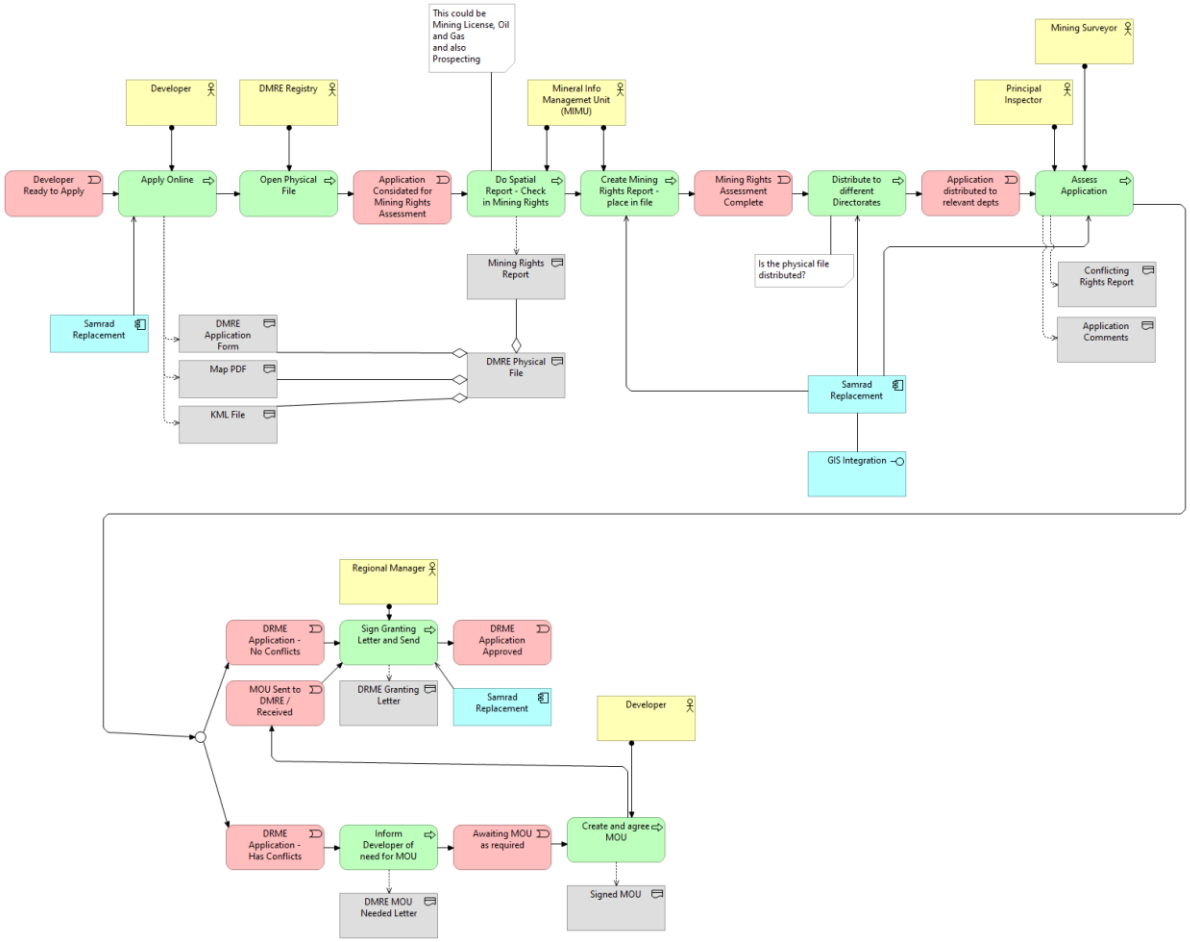
Authentication Engine	What tool or system is used to authenticate users on the system for online access (for both internal and external users).	Drupal authentication (MySQL database accounts)

11.7 DMRE (Minister of Mineral Resources and Energy)

11.7.1 Key requirements

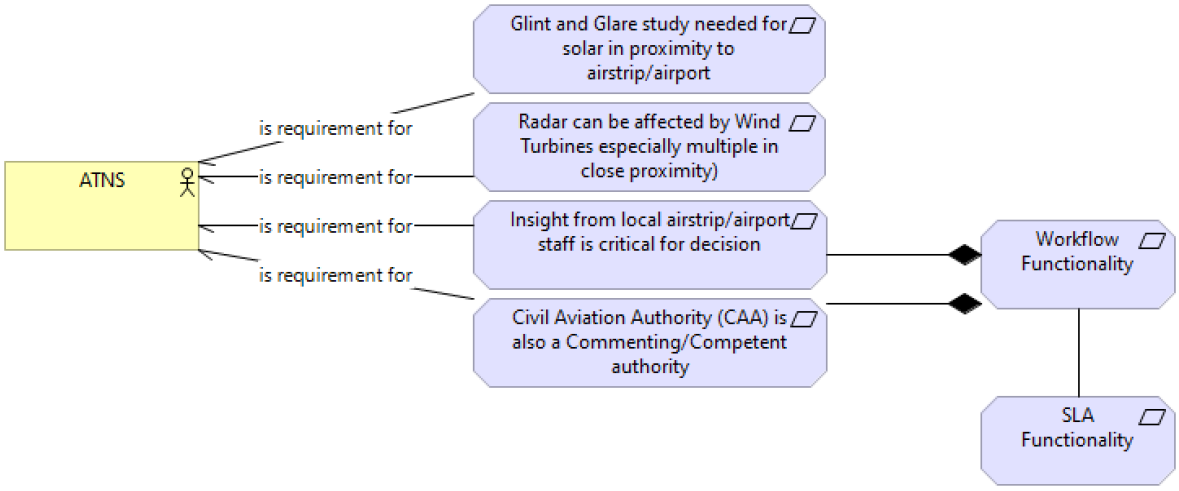


11.7.2 Overview Process Model

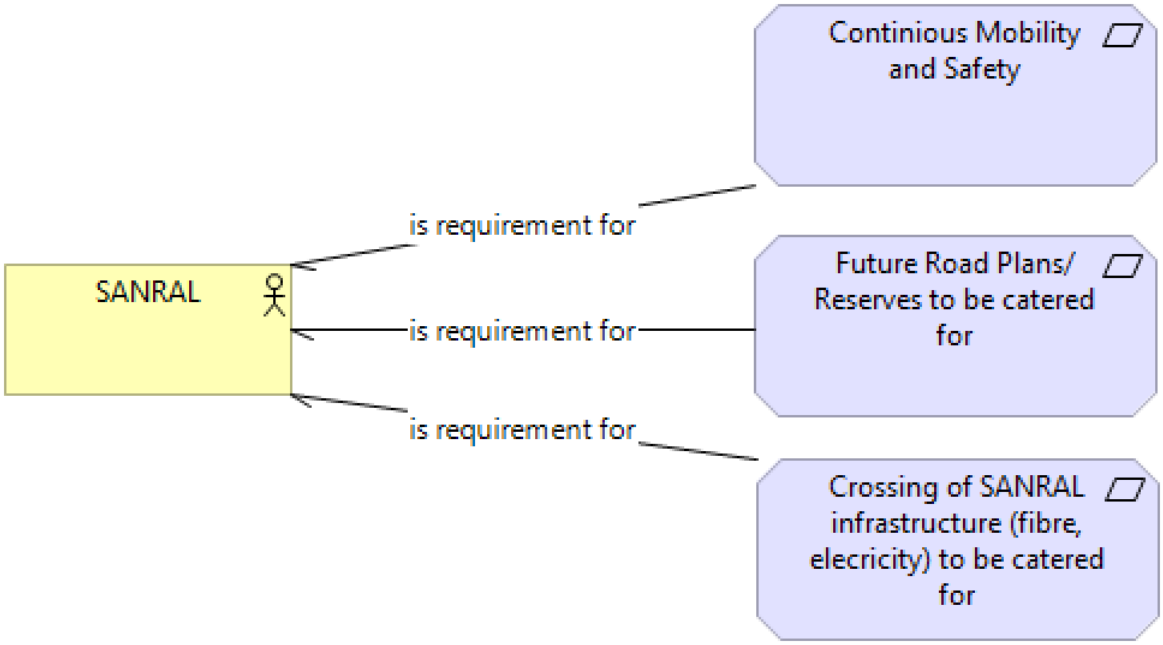


11.8 ATNS (Air Traffic Navigation Systems)

11.8.1 Key requirements

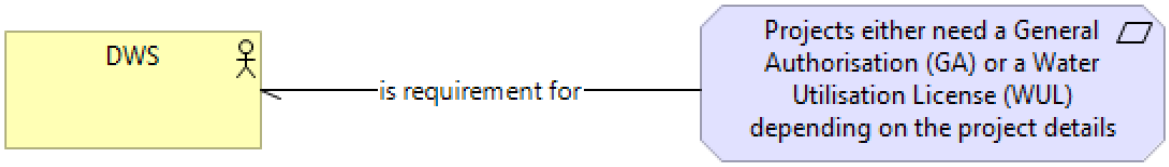


11.9 SANRAL (South African National Roads Agency)



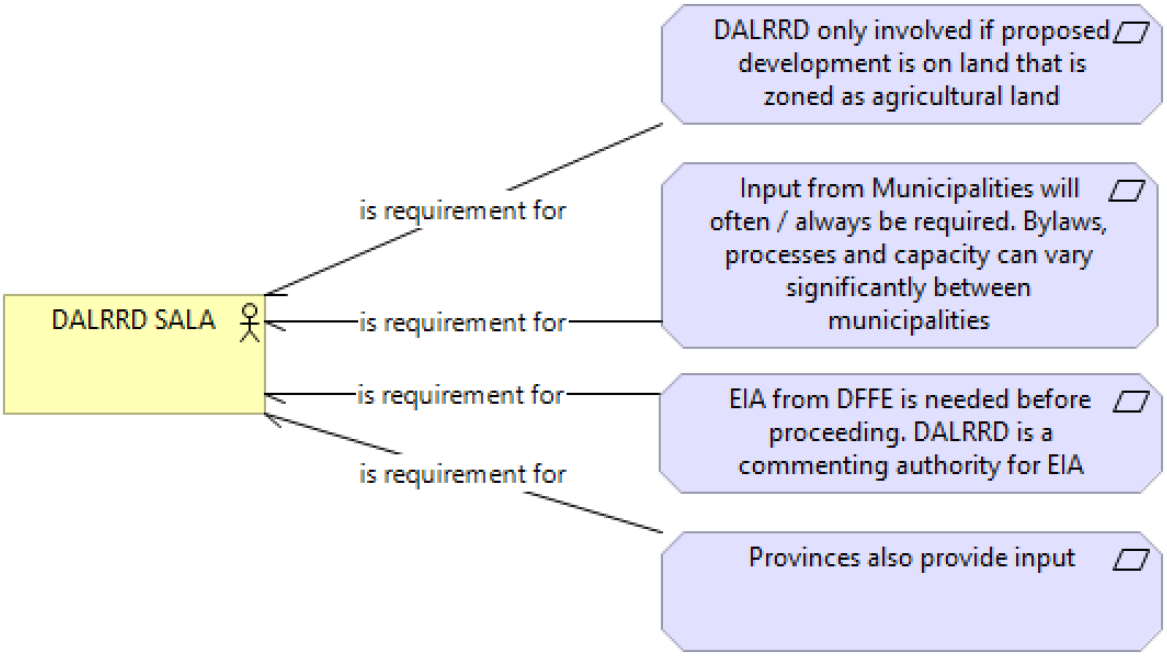
11.10 DWS (Department of Water and Sanitation)

11.10.1 Key requirements



11.11 DALRRD (Department of Agriculture, Land Reform and Rural Development)

11.11.1 Key Requirements



11.11.2 AGRILAND System Architecture