# Section 6. Technical Requirements & Operational Expectations

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**Technical Requirements & Operational Expectations**

A. Background and Objectives

1. International Trade Procedures
   1. Existing Operational Environment

The current procedures for import and export of goods in Maldives are primarily based on exchange of paper documents that are processed by government cross border regulatory agencies (CBRAs). Some government institutions such as Maldives Customs Service (MCS) and Ministry of Economic Development (MED) use automated systems for some of the operations. Electronic information sharing between border control agencies is however very limited.

* 1. Objectives and Desired Benefits

Government of Maldiveshas decided to implement the Maldives National Single Window (MNSW) in order to streamline international trade procedures. The end objective is to arrive at efficient border control procedures thereby reducing time and cost for both government agencies as well as private sector stakeholders. The MNSW shall assist in eliminating inefficiencies that currently arise from procedures which are mostly paper-based.

The MNSW is expected to streamline international trade procedures via the utilization of Information and Communications Technologies (ICT) so as to enable flow of electronic information with CBRA information systems and enable automation of processes across stakeholder systems.

The operations of MNSW may be chargeable and the MNSW shall incorporate a billing module.

The following benefits are expected to result from implementation of the Maldives MNSW;

1. Reduction in time to complete procedures for international trade
2. Reduction in cost of trade from elimination of inefficiencies
3. Improved Transparency of official controls
4. Predictability of international trade processes
5. Ability to monitor performance of government agencies against Service Level Agreements
6. Enhance revenue collection by the Government.
7. Improved coordination and better sharing of data across Cross Border Regulatory Agencies (CBRAs) towards improved efficiency and effectiveness of controls

The overall result of the above benefits will lead to Increased economic competitiveness of Maldives.

* 1. Stakeholders

Importers, exporters and professional service providers interact with Maldives government agencies in order to comply with border control and administrative procedures for international trade. These stakeholders will interact with the MNSW and comprise the following:

1. Government Cross Border Regulatory Agencies (CBRAs)

Five Cross Border Regulatory Agencies will interact with the MNSW for Maldives border control procedures. Maldives Customs Service (MCS) is the lead agency responsible for ensuring that movement of goods in and out of Maldives comply with the Customs Act. Other CBRAs issue licenses, permits, certificates, others (LPCOs) to exercise the requisite control on goods that cross Maldives’ border. The list of CBRAs consist of the following:

* 1. Maldives Customs Service (MCS)
  2. Maldives Food and Drug Authority (MFDA)

Food and drugs controls are exercised by separate departments of MFDA

* 1. Ministry of Defence and National Security (MDNS)
  2. Ministry of Economic Development (MED)
  3. Ministry of Fisheries and Agriculture (MOFA)

Control for fish products and agricultural products are exercised by separate departments of MOFA

1. Seaports

Maldives Ports Limited (MPL) operates the Male Commercial Harbour which is the main port located in Male island.

Other seaports that handle international trade cargo in Maldives are: KULHUDHUFFUSHI REGIONAL PORT, HITHADHOO REGIONAL PORT

1. Airports

Maldives Airports Company Limited (MACL) acts as the sole Ground Handling Agent at the Velana international airport which is located on Hulhule island, five minutes from Male island.

Other airports that handle international trade cargo in Maldives are: HANIMAADHOO international airport, GAN international airport

1. Shipping Stakeholders

Shipping lines offer cargo transport services as bulk cargo or containerised cargo. Ship agents act on behalf of feeder vessel operators to allocate Shipping Lines capacity for transport of cargo.

1. Airlines

The scheduled airlines serving Maldives destination include: Air China, Austrian Airlines, British Airways, Emirates, Ethihad, Kingfisher, Korean Airlines, Malaysian Airlines, Maldivian, Oman Air, Qatar, Singapore Airlines, Srilankan Airlines, Turkish Airlines,

1. Freight Forwarders

Freight forwarder services include consolidation of cargo. At present, there are an estimated 60 Freight Forwarding companies operating in Maldives. MCS is in the process of introducing regulation on the services, role and responsibilities of freight forwarders.

1. Customs Brokers

An estimated 111 customs brokers are registered with MCS for customs procedures. This includes freight forwarders and logistics service providers.

1. Consignees

The clearing agents provide their services to consignees (importers / exporters). There are at present an estimated 2189 consignees operating in Maldives.

1. Cargo Handlers

The main cargo handling entities in Maldives are:

* + MPL port at Male port and Hulhumale port
  + MACL at Velana International Airport

1. Bonded warehouses

Maldives authorities have issued licenses for the operations of estimated 38 Bonded warehouses. Primary users of the bonded warehouses include resort operators who store liquor and other restricted products in the bonded warehouses until withdrawal for consumption.

1. Maldives Monetary authority (MMA)

The Maldives Monetary Authority is the central bank of the Republic of Maldives. Bank accounts of CBRAs are held at the MMA.

1. Commercial Banks in Maldives

* Bank of Ceylon
* Bank of Maldives Plc
* Commercial Bank of Maldives Private Limited
* Habib Bank Limited
* Hongkong and Shanghai Banking Corporation Limited
* Maldives Islamic Bank Private Limited
* The Mauritius Commercial Bank (Maldives) Private Limited
* State Bank of India

**Existing transactions**

Procedures for international trade are carried out via a mix of automated systems and manual procedures.

Prior to import or export, traders apply for import and export LPCOs with the CBRAs that have control responsibility for the specific products. Some LPCOs are subject to a fee by CBRAs.

Maldives customs brokers lodge online customs declarations by using MCS’s ASYCUDAWORLD system. Remaining steps within MCS and other government agencies for clearance of goods are manual and paper-based. Traders may have accounts with MCS and customs duties are debited against those accounts. Else payment of duties is paid either (a) online using online payment services from Bank of Maldives (b) cash or (c) credit card at Customs’s cashier or commercial bank.

Interactions of CBRAs with cargo handlers are also manual. The regulatory hardcopy documents such as MCS Customs Release and CBRA LPCOs are submitted to the cargo handlers as proof of authorization.

Import and export of goods occur at the following main locations: (a) MPL at Male port (b) and Velana International Airport, next to the capital island Male. In addition, Government of Maldives has granted licenses to 38 private sector operators to operate bonded warehouses.

**Main border posts and Volume of transactions**

Customs declarations for from 2013 to 2017 were as follows:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **PORT** | **2013** | **2014** | **2015** | **2016** | **2017** |
| VELAANA INTERNATIONAL AIRPORT | 116,115 | 125,333 | 131,953 | 138,561 | 149,557 |
| HANIMAADHOO INTERNATIONAL AIRPORT | 113 | 143 | 95 | 98 | 179 |
| GAN INTERNATIONAL AIRPORT | 591 | 547 | 583 | 685 | 1,319 |
|  |  |  |  |  |  |
| MALE COMMERCIAL HARBOUR | 39,887 | 42,583 | 47,397 | 52,232 | 54,464 |
| KULHUDHUFFUSHI REGIONAL PORT | 238 | 231 | 348 | 338 | 342 |
| HITHADHOO REGIONAL PORT | 457 | 637 | 1,006 | 653 | 824 |
| POST OFFICE | - | 673 | 865 | 1,121 | 2,522 |
|  |  |  |  |  |  |
| TOTAL | **157,401** | **170,147** | **182,247** | **193,688** | **209,207** |

The number of LPCOs issued in 2017 by CBRAs are as follows:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **MDNS** | **MED** | **MFDA (Drugs)** | **MFDA (Food)** | **MOFA (Agriculture)** | **MOFA (Fisheries)** | **TOTAL** |
| Number of LPCOs | 1,437 | 37,698 | 1,438 | 12,094 | 4,000 | 12,000 | 68,667 |

Note on MED LPCOs: As a result of business process streamlining, it is expected that the number of MED LPCOs will be reduced substantially to less than 1,000 per year in order to simplify procedures for traders.

**AsycudaWorld System Usage**:

The average number of concurrent users of AsycudaWorld is 105. At peak, concurrent numbers of users is estimated at 150.

Once the MNSW is in operation, it is expected that average number of concurrent users will be 150. At peak, concurrent number of users is estimated at 200.

**Information Systems in use for International Trade Procedures**

1. MCS Customs operates ASYCUDAWORLD which provides the following services:
   1. Shipping lines and air carriers submit manifests electronically prior to arrival of vessel / aircraft. Amendments to manifests are also entered in AsycudaWorld by Customs staff using documents submitted by shipping lines.
   2. Customs brokers use ASYCUDAWORLD to:
      * Lodge Import and export declarations
      * Warehousing declarations
   3. Customs officials use ASYCUDAWORLD to:
      * Review declarations
      * Assess declarations for Customs duties and taxes payable
      * Issue consignment release order
2. Clearing Agents access ASYCUDAWORLD from their office premises
3. MPL manages its container terminal operations at Male Port by using inhouse developed software.
4. MACL uses COSYS system for cargo management
5. The computer systems that are being used to manage back office administrative processes, including issue of permits are as follows:

|  |  |  |
| --- | --- | --- |
| **CBRA** | **LPCOs** | **System** |
| Drugs (MFDA) | Imports and Exports | Aspn.net C# and MSSQL as the database engine |
| Food (MFDA) | Export (fish) certificates | Aspn.net C# and MSSQL as the database engine |
| MED | Import and Export licenses | ASP.NET framework, C#. Microsoft SQL Server |
| MDNS | Import permits | CSharp.net, MS SQL |
| Agriculture (MOFA) | Import permits | ASP.NET MVC 5 with C#.NET (.NET 4.5), MS SQL |
| Fisheries (MOFA) | Catch certificates | ASP.NET MVC 5 with C#.NET, MS SQL |

1. Scope of Work

The scope of work for the MNSW consists of the following components which are detailed subsequently.

* **Component #1**: Design, development and implementation of Maldives National Single Window (MNSW) system
* **Component #2**: Setup, operate and maintain a Contact Centre
* **Component #3**: Training and capacity building
* **Component #4:** Implementation Manager

A brief description of milestones and activities to be undertaken under components 1 and 2 is discussed below.

|  |  |
| --- | --- |
| **Milestone** | **Brief Scope of Work** |
| **Activity #1: Project Planning and Inception** | Bidders must include in their bids a Preliminary Project Plan containing sufficient detail to show work breakdown structure, sequencing and time frame for every activity. The plan must include the proposed staffing plan including numbers, roles, and responsibilities of team members. The plan must provide phasing of the system development, testing and implementation including project milestones, deliverables and performance indicators that may be used to monitor progress.  The preliminary plan submitted in the bid shall be further strengthened and finalized by the successful bidder upon award of contract and commencement of the project. The successful bidder is also required to submit a project inception report, along with the detailed project plan, which will serve as the foundation document for all activities related to the project. The Inception Report must cover the following processes during the project:  The project risk management process, which includes the identification of potential risks, their mitigation strategies, maintenance of risk register and monitoring and remediating the risks.  Communication and escalation process, which shall define the formal mechanism of communication between the client and Selected Bidder and various escalation methods and options.  The acceptance of the Inception Report by the client is required before proceeding to the next stage of the project. |
| **Outputs at Activity #1:**  1. Detailed Project Plan and Project Inception Report | |
| **Activity #2: System Requirements Study** | For the functions and processes proposed to be covered, the Selected bidder shall use the high level and indicative requirements specifications as the base for detailed study and assessment. The requirements specifications provided are high level requirements and the detailed requirements will be finalized in the System Requirement Specification (SRS) document which will form the basis for application software development. The Selected bidder is required to capture all required functional requirements. Selected bidder shall perform the following key activities during this phase:   * Detailed process study including stakeholder consultation and review of existing acts and regulations pertaining to international trade procedures * Detailed assessment of the processes, forms, formats, reports etc. adopted by CBRAs. Data used by CBRAs will be harmonized for efficient capture and processing. * Study the requirements of CBRAs for setting up the MNSW system in terms of efficient handling of back end operations, effective delivery of services to its stakeholders, service levels, etc. * Study the system, procedures, web services, database table, etc. of applications being used by related CBRA ICT systems and cargo handler systems (MPL, MACL, …) for integration/interfacing requirements to and from MNSW system * Revise/Update the Requirement Specifications document for MNSW system based on the study carried out by the Selected Bidder * Preparation of System Requirements Specifications (SRSs) for the MNSW system based on the revised Requirements Specifications document and the study carried out by the Selected bidder * Obtaining formal sign-off on the SRSs from CBRAs, MPL and MACL.   The Selected bidder shall ensure that its team has experts in international trade procedures, national single window related areas for providing best practice inputs in system requirement specifications design and system development. The experts engaged by Selected bidder shall have experience in providing recommendations/reforming the business environment. Proposed experts must have successful credentials to prove these abilities and must be actively involved throughout this phase with significant onsite involvement during initial design period, which is an essential requirement.  It is to be noted that CBRAs will deploy staff from CBRAs, MPL, and MACL, as well as international domain experts who will work in close coordination with Selected bidder during system requirement specifications design and system development. Selected bidder shall take cognizance of such inoput and recommendations from the client team in finalizing the SRS. |
| **Outputs of Activity #2:**   1. Revised Requirements Specifications for MNSW system 2. System Requirements Specifications (SRS) for MNSW system including system integration/interfacing requirements. SRS document shall comply with the latest and most relevant IEEE standards. The SRS should have the following minimum details:  * List of all forms, registers and reports with their contents * Screenshots, prototypes of the system to be developed * List of all validations/ internal controls applicable * List & format of MIS reports to be generated * Detailed process flow of the entire Business Logic * List of all data elements and database requirements * Details of interfaces/ integration between MNSW and systems at CBRAs, MPL, and MACL * System and processes for capturing attributes of Service Level Agreement (SLA) measurements * Various attributes of the application and the mechanism to manage the SLA’s * Details of all tools & technologies to be used * Integration/ interface requirement with other external stakeholders such as Banks etc. * List of Standards followed or to be followed * Assumptions, dependencies & constraints. | |
| **Activity #3: Solution design, development/ customization** | * The Selected bidder shall design the complete system architecture & specifications for meeting the system requirement specifications finalized during activity #2. The system design shall include the design of the application architecture, user interface; database structures, security architecture, network architecture, and deployment architecture. The Selected bidder shall submit the system design document to the client and should obtain the sign off on the design document before commencing the development of the system. * The solution design shall identify all the process logic and business logic for import and export processes for international trade in Maldives. It shall define all the workflows and the validations at every level of each workflow. * The detailed Solution design document shall specify the detailed solution architecture. The Solution Architecture shall highlight the major components of the solution and map it to the requirements identified in the SRS. * The Selected bidder shall prepare and update the Requirements Traceability Matrix by mapping the functional requirements specified as part of this RFP with the related sections in the solution design document * The Selected bidder shall perform the development/ customization of proposed solution based on the approved functional, system requirement specifications and design document. * During the development/customization phase, Selected bidder shall conduct demos to the team identified by Client to demonstrate the prototype of the solution and to obtain inputs on the proposed prototype. Selected bidder shall carry out interim reviews of prototypes prior to review of the final prototype. * Selected bidder shall also develop and customize the MNSW system including necessary tools and interfaces for exchange of data to and from other related ICT systems (CBRA systems, MPL and MACL systems). The protocol for communication including data formats and the exact mechanism of data transfer with participating entities/ stakeholders has not been explicitly defined in this RFP and the Selected bidder shall capture these during the requirements gathering phase and ensure that all of these are documented as part of the SRS document. * The system/solution provided by the Selected Bidder should be a web based solution. To the extent possible, the system development shall be carried out based on open standards and technologies. * The Selected Bidder shall design the software testing strategy including traceability matrix, test cases and conduct testing of various components of the MNSW system. |
| **Outputs at Activity #3:**   1. Technical / System Design Document including but not limited to:  * Logical and Physical Database Design * Logical Data Dictionary and data / file formats * Component, and Deployment Views of the Application * Collaboration, Class diagrams in the UML notations * Security and Features * Performance Features * Audit Features * Interface / Control Design Features * Design of an audit trail capturing mechanism for all transactions (add, update and delete) using transaction log reports, so that errors in data, intentional or otherwise, can be traced and reversed, throughout the project duration. * The security aspects, measures, etc., to deployed for the solution * Access Controls measures - to ensure the adequate protection of the databases from malicious operations from authorized and unauthorized users including the system operators or database administrator. * Implementation plan for data security- to allow for changes in technology and business needs. * Plans for various types of testing and audit as required by this RFP. * Any other section as required as per the process followed by the Selected Bidder  1. Requirements Traceability Matrix 2. Test Strategy and Test Plans 3. Any relevant Data Migration Plan 4. Prototypes of proposed solution based on the agreed SRS and system design | |
| **Activity #4: Testing** | * The Selected bidder shall perform testing of the solution based on the approved test plan, document the results and shall fix the bugs found during the testing. Though Client is required to provide formal approval for the test plan, it is the ultimate responsibility of Selected Bidder to ensure that the end product delivered by Selected bidder meets all the requirements signed-off with the Client. * The basic responsibility of testing the system lies with Selected bidder. The acceptance testing by the Client or any third party identified by the Client is for ensuring that the systems provided by Selected bidder meets the Client’s requirements. Selected bidder shall provide and ensure all the necessary support to the Client or any third party in conducting the Acceptance Testing including sharing necessary project documentation, systems designed & developed, testing strategy, test cases developed for the project, test results etc.   The various testing phases are as follows:   1. **Unit Testing** - The Selected bidder will test all individual units/ modules under unit testing. The Selected bidder will submit a unit testing report along with test cases, tests results, etc., at the end of the unit testing exercise. 2. **Integration and system testing** - The purpose of the Integration Test is to execute the integrated components, including simulation of live operations, and analyze the results that are important for the functional verification of the production system. Integration testing shall be accomplished through the execution of predefined business flows, or scenarios, that emulate how the system will run the processes of the client. These business flows, using migrated data from the existing systems, shall be performed in a multifaceted computing environment comprising of developed application, third-party software, system interfaces and various hardware and software components. The integration tests shall build the necessary level of confidence that the solution is complete and will perform the business processes of the client. Integration testing shall be done in two iterations. 3. The first iteration (Integration Test) shall concentrate on testing all important business processes inside the system, starting with touch point scenarios and ending with end-to-end-scenarios. Authorizations and user roles would also be tested in the Integration Test. 4. System Testing, as a second iteration, shall focus on the most important cross-enterprise scenarios with touch points to external components, including testing of conversions, interfaces, reports, and the necessary authorizations. It will be conducted in the presence of officials of the client or any other nominated agency of the client. 5. Selected bidder should ensure that any closure of bugs, observations, etc., should not lead to any adverse regression errors on the overall solution. 6. The Selected bidder will submit a testing report along with the test cases, tests results, etc., at the end of the testing exercise 7. **Performance testing** - Once the system integration testing has been conducted successfully, Load, scalability and stress testing would be conducted prior to Go-Live. Selected bidder should use suitable simulation tools in accordance with the agreed test procedures keeping in view the Year on Year (YoY) growth in transactions. The Selected bidder will submit a testing report along with test cases, tests results etc. at the end of the testing exercise. Selected bidder should submit a self-certificate stating the solution is meeting the required functional and performance features as agreed. 8. **User acceptance testing** – Selected bidder shall prepare test cases for User Acceptance Testing (UAT) in consultation with the client. Selected bidder shall facilitate the team from the client to conduct this test after successful completion of performance testing. Selected bidder will close all observations, bugs, etc., identified during the UAT. This process of UAT will continue in an iterative manner till zero defects are shown by the Selected bidder for the test cases developed. The Selected bidder also needs to ensure that errors/ defects detected in previous round of tests do not get repeated in successive tests. The Selected bidder should submit a UAT report along with test cases; tests results etc. at the end of the testing exercise and get a sign-off on the UAT report from the client. |
| **Outputs of Activity #4:**   1. Test cases, test logs detailing the testing performed and provides evidence of the results achieved 2. Self-certificate of functional and performance requirements of the system 3. UAT runs successfully and sign-off by client when system operates satisfactorily | |
| **Activity #5: Pilot Testing** | * Selected bidder shall support the Pilot Test phase for the MNSW. The objective is to verify that MNSW operates properly under real-time operating conditions before going into production. The Pilot test will also provide stakeholders with the opportunity to give feedback on to the MNSW features and operations. The Pilot test will be carried out after UAT and before Go Live operations. In order to execute the Pilot test, the MNSW will be interfaced with CBRA systems and users will consist of a selected group of traders, customs brokers, etc.. who will carry out international trade procedures with CBRAs via the MNSW * Selected bidder shall create the Pilot test plan in consultation with the Client. The test plan shall include (a) a list of the features to be tested during the Pilot test, (b) duration of pilot test, including number of builds to roll out corrections to bugs fixed.. (c) evaluation criteria for successful completion agreed with stakeholders and user community (d) training of CBRAs and end users (e) support plan, problem recording, reporting and response, and (f) a user survey at the end of the Pilot test shall record concerns, suggestions for improvements, and level of satisfaction with the MNSW system. |
| **Outputs of Activity #5:**   1. Logs of problems raised by users 2. Logs of problems successfully fixed 3. Logs of trade transactions successfully completed using MNSW and CBRA systems. 4. Report on end user survey and recommendations from the Pilot test | |
| **Activity #6: Acceptance Testing and Verification** | * The Selected Bidder shall install the application software instance required for testing, training and data entry in the staging environment and shall perform installation of the proposed application, database and other related software. For installation of system and application software, Selected Bidder shall work in close coordination with the team identified by Client. * Client may perform review of supplied system software to ensure that they are in line with the specifications quoted by Selected Bidder in its proposal and Client reserves the right to reject any material found with deviations. It is Selected Bidder’s responsibility to rectify the deviations without losing any time in meeting the timelines prescribed in the RFP * Client may engage a third party quality assurance service provider or a team of experts to perform independent verification and validation of solution delivered by Selected Bidder to assess the solution in various areas such as functionality, security, scalability, integration, performance etc. * The Selected Bidder shall provide access to the instance to the team identified by Client for performing acceptance testing and shall provide complete coordination and support in conducting the testing including detailed demonstrations/walkthrough of system developed for Client. * Selected Bidder shall address all the gaps identified during the acceptance testing, which will be revalidated by the team identified for acceptance testing. Selected Bidder shall deliver an error free solution/software including the application source code and related documentation upon addressing all the identified gaps. The application source code and related documentation will be the property of the Client without any pre-conditions * After the solution has been certified by the 3rd party, the Selected Bidder will prepare the Solution Application Readiness Report and submit it to Client |
| Outputs of Activity#6:   1. System walkthroughs and demonstrations to the identified team for performing acceptance testing 2. Solution Application Readiness Report 3. Source code (soft copy) 4. Report formats (soft copy) 5. Test script (soft copy) 6. Database (soft copy) 7. Data Migrated (soft copy) 8. Executable file (soft copy) 9. Product CD’s 10. Others relevant documents deemed necessary | |
| **Activity #7: Configuration, Implementation and go- live of MNSW system** | * After successful acceptance testing of the software in the test instance, Selected Bidder needs to configure the accepted solution for all the offices identified by Client. Selected Bidder will install and configure the application software, system software and other necessary tools for implementation of the MNSW system. * DR location shall be decided and communicated by the Client to the Selected Bidder during the implementation phase. * Selected Bidder shall provide staff, technical and supervisory, in sufficient numbers to operate and manage the functioning of the MNSW application setup with desired service levels. * Selected Bidder is also required to perform any required migration of data and documents to the production instance. * Upon implementation of the production system, Selected bidder shall test the MNSW environment to ensure completeness of the implementation. Upon successful testing and addressing all the gaps identified during the testing, system shall be put into operations and it will be declared as ‘Go-live’ for Phase 1. |
| Outputs of Activity#7:   1. Data migration scripts 2. Deployment plan 3. Final production deployed source codes bundles (e.g. configured packages, binaries, configuration files, integration components) 4. Configured MNSW system in production instance | |

**Activities for Phase 2 of MNSW**

The Activities carried out during Phase 1 of MNSW implementation will be repeated for Phase 2 implementation of MNSW.

**Activities for Component # 2 – Contact Centre**

The Activities for implementation of Contact Centre will be similar to MNSW related activities without the need for integration to CBRA, MACL and MPL systems.

0.3 Acronyms Used

|  |  |
| --- | --- |
| Abbreviation | Full Meaning |
| BL | Bill of Lading |
| CB | Customs Broker |
| CBRA | Cross Border Regulatory Agency |
| CWH | Custom Warehouse |
| DBMS | Database management system |
| EDI | Electronic Data Interchange |
| EDIFACT | Electronic Data Interchange For Administration Commerce and Trade |
| EFT | Electronic Funds Transfer |
| ETA | Expected Time of Arrival |
| FCL | Full Container Load |
| VIA | Velaana International Airport |
| LCL | Less Container Load |
| LPCO | License, Permit, Certificate, Other |
| MOFA | Ministry of Fisheries and Agriculture |
| MED | Ministry of Economic Development |
| MFDA | Maldives Food and Drug Authority |
| MTBF | Mean time between failures |
| MACL | Maldives Airports Company Limited |
| MPL | Maldives Ports Limited |
| MCS | Maldives Customs Service |
| MNSW | Maldives National Single Window |
| SAD 500 | Customs declaration (Single Administrative Document) |
| SLA | Service Level Agreement |
| TIN | Taxpayer Identification Number |
| VAN | Vessel Arrival Notice |

B. Business Requirements Specifications

This section presents key functional requirements to be supported by the MNSW system for international trade procedures. The Functional Requirement Specifications (FRS) presented below are indicative and high-level requirements and the detailed requirements will be finalized in the System Requirements Specification (SRS) document which will form the basis for application software development. A functional overview of the MNSW system is discussed below which is followed by the functional requirement specifications.

1. Component #1: Maldives National Single Window
   1. Overview of Desired Solution for MNSW

The MNSW will enable electronic interchange of information for border control procedures, streamline information flows, and assist to trigger automated procedures upon receipt of electronic information.

The design and development of the MNSW shall be in line with the principles of UN/CEFACT Recommendation No.33 for an electronic Single Window. “Within the context of this Recommendation, a Single Window is defined as a facility that allows parties involved in trade and transport to lodge standardized information and documents with a single entry point to fulfil all import, export, and transit-related regulatory requirements.” Where possible, individual data elements should be submitted only once. The MNSW shall also implement the requirements that are specific to the operational context in Maldives.

CBRAs are in the process of computerising their back-office permit processing systems and these systems are expected to be ready by mid-2019. The CBRA systems will interface with the MNSW as per details provided in this document.

All stakeholders from the trade community, public sector and private sector, will be able to access the Maldives Single Window, across Maldives, either online or via system to system interfaces to perform electronic transactions related to regulatory requirements and cargo movement for clearance of goods. These transactions cover the entire cycle of international trade regulatory procedures and include:

(a) Applications, approvals, rejections for licenses, permits, certificates and others (LPCOs)

(b) Information on Vessels (sea and air) arrival and departure,

(c) Electronic invoices from CBRAs,

(d) Cargo landing / loading onto sea vessels / aircrafts

(e)The MNSW will interact with AsycudaWorld in order to provide the status of declaration processing, and assessment notices for payments of customs duties and taxes. Customs declarations will not be submitted via the MNSW and will be submitted directly in AsycudaWorld by customs brokers and traders.

(e) Coordination of border management by sharing border control requirements, facilitation of joint inspection by CBRAs, recording of outcomes of border control inspections

(f) Electronic Payment as per features provided by the Bank of Maldives and commercial banks

(g) Electronic release from MCS to relevant stakeholders

(h) Cargo movement (entry and exit) within customs areas managed by cargo handlers

(i) Ability to query transactions and consignment information online

The MNSW general functions shall be as follows:

1. Online transactions via the MNSW will eliminate / reduce the need for stakeholders to physically present documents to the offices of CBRAs.
2. The MNSW provides an opportunity for exercising better controls by the multiple Cross Border Regulatory Agencies (CBRAs). The improved controls are implemented by Coordination of Border Management (CBM) features.
3. Government also wishes to ensure that the delivery of services by its agencies meet expectations of the trade community. To assist towards this end, the MNSW will provide the features necessary to track performance against Service Level Agreements that have been established by CBRAs.
4. Payment is a step that is required in almost all international trade transactions. The MNSW will interface with epayment services that are provided by Bank of Maldives commercial bank. Other modes of payment will be supported that are supported include cash and credit card.

**Streamlined Process Flows**

Streamlined processes have been conceived in order to simplify procedures when the MNSW is in operation. Bidders may propose further optimization of processes that will lead to the same desired end results for a specific transaction. The Purchaser will consider such optimization.

In addition, given the dynamic context of trade environment, trade procedures, as described below, may require adaptation to any major changes in the operating context, at the time of implementation.

The MNSW shall provide access to its services as follows:

1. **MNSW Administration portal**

MNSW staff will access the MNSW in order to manage and update parameters that are needed for setting up system operational features, user access to the system, CBRA characteristics, CBRA accounts, etc…

1. **CBRA portal**

CBRAs will use the MNSW to interact with traders for matters relating to international trade procedures. CBRAs will have access to the MNSW in order to establish the flow of information from MNSW to CBRA authorised staff. CBRAs will also define on the MNSW Service Level targets that are to be monitored in processing the trader applications.

1. **Trader portal**

Traders will use the MNSW as a common point for submission of applications related to international trade procedures. The MNSW will submit trader applications to CBRA systems. Responses from CBRAs to trader applications will be sent to MNSW and traders shall view the progress of applications on MNSW.

Customs brokers, freight forwarders, shipping lines, airlines, and cargo handlers (e.g. MPL, MACL) will also submit transactions on the MNSW for cargo clearance and related procedures.

The trader portal shall incorporate access to ePayment services offered by some of the commercial banks in Maldives.

In addition to providing stakeholder access to its services, the MNSW shall implement automated information and document exchange in order to support process flows that streamline the end objectives of international trade procedures.

**Illustrative Application Architecture**

The set of services that are typically supported by a National Single Window are depicted in the following chart. The external applications that will interface with the MNSW are also listed. The specific requirements for the features expected from the MNSW are described in the relevant sections.



The processes to be streamlined with the MNSW are grouped under:

1. Manifest Process Flow
2. Permit Process Flow
3. Coordinated Border Management Process Flow

The streamlined process flows are intended to benefit the trade community in terms of reduced time and reduced costs and will also bring along improved regulatory control. CBRAs and the trade community are regularly reviewing other processes such that improvements can be identified and implemented. Bidder can submit proposals for additional or alternate streamlining approaches that will achieve the same benefits to the trade community.

* 1. General Requirements

The General requirements are those requirements applicable across the system such as access control. An indicative and high-level General Requirements for the proposed MNSW system is as follows:

|  |  |  |
| --- | --- | --- |
| **#** | **Requirement** | **Mandatory (M) / Preferred (P) / Optional (O)** |
| GN.01 | MNSW shall provide multilingual support for the content (English & Dhivehi Maldives national language) | M |
| The application should support 500 concurrent users on average |
| The application should support all the popular web browsers and mobile platforms |
| The access to the various processes and modules should be based on authentication and access control. |
| System should facilitate necessary validation checks for different data fields as defined before user can move to the next step. System should not allow user to move to the next step if the validation rules fail. System should display appropriate error message. |
| System should provide online Help for the users for all online modules. |
| The application should support the leading open standards and the use of open source platforms and tools are preferred |
| GN.02 | **User Management**  The system shall enable System Administrators (SA) to manage resources and provision users based on need and role.  User management shall enable enables SA to control user access and on-board and off-board users to and from IT resources.  The system should have elaborate user management capability which includes the following but not limited to:   1. There should be registration process for entities and their representative users 2. Enable self-registration and assisted registration. 3. features to activate and deactivate users manually and automatically 4. Password controls to ensure complexity of passwords, periodic change, auto lock out, password retrieval, etc. 5. Ability to grant and revoke roles and permissions at the system level, on organizations, and on database groups and databases | M |
| GN.03 | **Configuration management**  Configuration management (CM) system focused on operations management shall enable unique identification and configuration of organization’s hardware, software and related information. This includes software versions and updates installed on the organization's computer systems.  The CM shall include Configuration Item (CI) interdependency mapping and correlations between CIs.  The CM shall also be used for deployment of software changes and updates.  The CM shall enable the following processes to be implemented: (a) Revision Control (b) Configuration Identification (c) Change Management (d) Product Release.  Open source Configuration Management systems are preferred with a small footprint that makes it easy to install, configure, and manage. |  |
| GN.04 | **Queries, Reports and Statistics**  The MNSW shall provide a pre-defined set of reports and statistics on trade and MNSW transactions. These reports and statistics will be defined in detail by the Client during the preparation of the System Requirements Specifications.  Confidentiality of data shall be enforced throughout the MNSW system. Data shall be accessible only to those institutions and individuals with rights to access the data. In addition, the MNSW shall maintain an audit trail of all database access.  The MNSW shall provide reporting tools which shall provide flexibility to users to generate reports or online queries based on a broad set of parameters: for example, document type (LPCO), date range, company or user.  Queries on status of trader transactions should be readily available via the NSW: manifest processing, LPCO applications, declaration processing, and delivery orders. Such queries should be accessible to authorised staff from CBRAs. | M |
| GN.05 | The MNSW system is expected to provide a high level of parameterization to implement the business functional requirements. Customization features will be developed for those functions that are specific to Maldives context. | P |

* 1. MNSW Administration portal

The MNSW Administration regroups the features that are required for registration of MNSW users by user profile. Users include internal MNSW users, CBRA users, and external users: traders, customs brokers, ship agents, shipping lines, airlines, bonded ware house operators, freight forwarders, sea port operators, airport operators.

The registration of users will use centralised sign-on credentials that have been established by Maldives’ National Centre for Information Technology (NCIT) which is referred to as eFaas authentication. Validation of identity of users is established by NCIT and includes identity verified in person. eFaas is presently in use by several government agencies, including CBRAs that will interface with MNSW. NCIT has developed an API to be used by government agencies that provides connection authentication services. (Implementation guide is in Appendix 1).

For reference purposes, the functions for MNSW administration are prefixed FN.01

|  |  |  |
| --- | --- | --- |
| **#** | **User Registration Requirements** | **Mandatory (M) / Preferred (P) / Optional (O)** |
| FN.01-1 | MNSW shall connect to NCIT’s eFaas in order to support registered users. | M |
| FN.01-2 | MNSW shall provide a clear guide for users on the steps required to register as a MNSW user. | M |
| FN.01-3 | MNSW shall allow an applicant to submit a request for registration as MNSW user by logging on using eFaas credentials. MNSW shall provide online forms for the user to indicate type of access requested: trader, shipping line, airline, customs broker, etc… User identity and contact details will be available from data supplied by eFaas. | M |
| FN.01-4 | MNSW shall provide ability to define user groups and to assign common rights to a user group. | M |
| FN.01-5 | MNSW shall provide ability to assign each user group the rights to different system function / screen / menus | M |
| FN.01-6 | MNSW system administrator shall register applicant within the relevant user group once applicant has completed all procedFN.01-es associated with the use of the MNSW. | M |
| FN.01-7 | MNSW shall assign for each user a user type: internal MNSW staff, external user and user subtype (trader, customs broker, etc.., CBRA user and CBRA organisation. | M |
| FN.01-8 | MNSW shall assign for each registered user a mailbox. Mails received by the user shall have status of new, read, and deleted as per specific user action. | M |
| FN.01-9 | MNSW shall enable, for any user, facility to assign the user rights assigned to his/her user account to another user temporarily within the system. (This should allow users to temporarily assign his/her work to another while away from office) | M |
| FN.01-10 | MNSW registration process shall enable a user to be assigned to a company, upon signed approval from company representatives. MNSW shall enable multiple users to be registered under one company. | M |
| FN.01-11 | MNSW shall allow an individual to be registered with more than one company. When user makes a request to access MNSW services, MNSW will provide a drop-down list so that user identifies the company for which he / she intends to transact during this online session. | M |
| FN.01-12 | MNSW shall enable applicants to request access to MNSW for specific roles in line with the stakeholder responsibilities: CBRA, customs broker etc… Once authorisation has been confirmed by the authorised representative of the organisation, MNSW system administrator will assign applicant the specific user role. | M |
| FN.01-13 | Each user should be associated to a unique identification number, which can be used by the audit trailing facility of the system, in order to record all user activities, and to identify the initiator/actor of each activity. | M |
| FN.01-14 | The system shall implement detailed audit trails for the changes made to the user profiles including the approvals (if any) provided for such changes. | M |
| FN.01-15 | Post-login, the users should be presented a different dashboard for different category of users (traders, CBRA officials, etc…) | M |
|  | **Security Administration & Monitoring** | M |
| FN.01-16 | The system should have the facility to enable MNSW system administrator to disable user Ids and record reasons for action | M |
| FN.01-17 | MNSW shall parameterize auto-signoff on inactivity such that MNSW system administrator can set duration of inactivity. | M |
| FN.01-18 | The system should maintain audit logs of all additions, modifications and deletion made to data stored in the system. | M |
| FN.01-19 | Audit logs must be part of the daily backup of the system. | M |

* 1. CBRA portal

**CBRA Setup and Controls**

MNSW needs to support administrative setup requirements by each CBRA. This includes assignment of user roles and authorisation for CBRA staff.

Each CBRA will also set performance targets for the services that it delivers. These performance targets are defined in formal Service Level Agreements (SLA) that are commitments by the Chief Executive of each CBRA. As transactions are submitted and processed, the MNSW will maintain time-stamps for CBRA service requests and completion of services in order to compute and monitor compliance to SLAs.

The MNSW will, at pre-defined intervals, extract reports from the CBRA milestone events. The statistics on SLAs can then be queried online or reports can be printed.

For reference purposes, the functions for CBRA administration are prefixed FN.02

|  |  |  |
| --- | --- | --- |
| **#** | **CBRA administration Requirements** | **Mandatory (M) / Preferred (P) / Optional (O)** |
| FN.02-1 | MNSW supplier shall establish database of LPCO application forms. An indicative list of LPCOs for implementation is provided at Appendix 2. For each LPCO application form, the list of HS codes that can be selected by trader will be linked to the form. | M |
| FN.02-2 | For each FN.02-RA, MNSW system administrator shall be able to appoint a user as CBRA administrator as per request from CBRA. | M |
| FN.02-3 | CBRA administrator shall be able to create CBRA user access with specific roles   1. Verifier - Verify application for LPCO 2. Supervisor – Receive alert messages when SLA exceeded 3. Inspector - Carry Out inspection of cargo and record results 4. Reviewer - Issue release of cargo   CBRA administrator can assign multiple roles to a user. | M |
| FN.02-4 | CBRA administrator shall be able to record the following SLAs (see CBRA management of Service Level Agreement below):   * 1. No of hours or days to complete processing of an application for LPCO. Duration to process will be measured as from time when complete application has been submitted until CBRA has issued rejection or approval for application.   2. No. of hours or days to complete processing of inspection. Time to complete will be measured as from time when MCS submits request to CBRA for cargo inspection and time when inspection results are entered on MNSW.   SLAs shall be entered for each LPCO for which CBRA is responsible | M |
| FN.02-5 | CBRA shall be able to indicate the following for each LPCO: amount of processing fee if applicable, amount of permit fee if applicable. In case any of these fees is to be determined on a case by case basis, CBRA administrator will mark this requirement and CBRA will compute fee based on specific content of LPCO application. | M |
| FN.02-6 | An audit trail for all transactions including access to information, changes to data/information shall be maintained in the system such that information can be viewed by applicant and CBRA staff. | M |
| FN.02-7 | Access to the Audit trail should be restricted to authorized CBRA personnel. | M |
| FN.02-8 | MNSW will issue alerts to CBRA designated staff when (a) SLA for processing an application is exceeded (b) SLA for inspection is exceeded | M |
| FN.02-9 | MNSW shall enable CBRA supervisors to query performance of CBRAs in processing of LPCOs. Reports on CBRA performance of SLAs shall also be available. | M |
| FN.02-10 | The MNSW shall allow generation of the following MIS reports to facilitate effective monitoring and reporting:   * Summary of Application received with current status * Summary of pending application and the reason for pendency * Summary of application by CBRA and its status * Comparative assessment of application processing CBRA and its status including necessary graphs * Any other MIS reports identified by Client | M |

* 1. Trader Portal Requirements

**Unique** **Consignment** **Reference** (**UCR**)

The MNSW will support the use of Unique Consignment Reference (UCR) in line with WCO recommendations. The generation of UCR numbers shall be in accordance with ISO 15459. For each import / export transaction, traders will first generate a UCR. The UCR reference will then be attached to subsequent transactions associated with the import or export consignment.

The requirements for UCR shall include, but not be limited, to the following:

For reference purposes, the functions for trader portal are prefixed FN.03

|  |  |  |
| --- | --- | --- |
| **#** | **UCR Requirement** | **Mandatory (M) / Preferred (P) / Optional (O)** |
| FN.03-1 | Trader shall be able to generate a UCR for an import or export transaction. Information captured in a UCR shall include exporter details, importer details, goods description. | M |
| FN.03-2 | Trader shall be able to select and assign UCR from a dropdown list when applying for LPCO | M |
| FN.03-3 | Customs authorised personnel shall be able to access UCR data | M |
| FN.03-4 | MNSW shall link customs declaration number to UCR when AsycudaWorld transmits declaration to MNSW | M |
| FN.03-5 | Trader shall be able to change UCR details if UCR has not yet been linked to a declaration | M |
| FN.03-6 | MNSW shall enable a new “child” UCR to be created from an original UCR and replicate the same information on LPCOs. MNSW will maintain a link to the original “parent” UCR. Such “Child” UCRs are required in case of short-shipment or when LPCOs are issued for multiple use in which case new UCRs are required for additional shipments. | M |
| FN.03-7 | MNSW shall allow for copy of a UCR so as to avoid the need to recapture UCR details. | M |
| FN.03-8 | MNSW shall allow for combining UCR information in case multiple consignments are now to be shipped in one single consignment. | M |

**Manifest Process Flow**

The process flows that for submission of cargo manifest and updates to manifest as a result of any discrepancies upon cargo discharged are described in Section E.

The MNSW shall support the following specific requirements associated with Sea Cargo Manifest:

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| --- | --- | --- |
| **#** | **Sea Cargo Manifest Requirements** | **Mandatory (M) / Preferred (P) / Optional (O)** |
| FN.03-9 | MNSW enables Ship Agent to enter vessel arrival notice (VAN) that contains voyage number, expected time of arrival, Shipping lines with cargo on vessel, and number of containers by shipping line | M |
| FN.03-10 | Shipping Line uploads to MNSW general cargo manifest as XML file for VAN. | M |
| FN.03-11 | Once all manifest information for a VAN has been submitted by shipping lines, MNSW will transmit manifest to MCS. | M |
| FN.03-12 | MNSW shall provide means for MCS to transmit manifest registration number to MNSW. | M |
| FN.03-13 | MNSW shall transmit manifest registration number to Shipping Lines associated with VAN | M |
| FN.03-14 | MNSW shall transmit approved manifest to MPL | M |
| FN.03-15 | MNSW shall provide means for Freight Forwarder to capture house manifest details or transmit as XML file | M |
| FN.03-16 | MNSW shall provide means for Shipping Line to capture house manifest details or transmit as XML file | M |
| FN.03-17 | MNSW shall transmit house manifest details as XML file to MCS | M |
| FN.03-18 | MNSW shall receive approval of house manifest from MCS | M |
| FN.03-19 | MNSW shall transmit to MPL House manifest details as XML file | M |
| FN.03-20 | MNSW shall receive from MPL report on discrepancies recorded between discharge cargo and manifested cargo. Discrepancies will consist of a list of short-landed cargo and / or overlanded cargo | M |
| FN.03-21 | MNSW shall transmit to MCS and Shipping lines report on discrepancies from MPL | M |
| FN.03-22 | MNSW shall receive from Shipping line request for amendments to manifest as XML file | M |
| FN.03-23 | MNSW shall receive from Customs AsycudaWorld approval or rejection of amendments to manifest | M |
| FN.03-24 | MNSW shall transmit to Shipping Line approval or rejection of request for amendments to manifest | M |
| FN.03-25 | MNSW shall transmit to MPL amendments to manifest approved by Customs as XML file | M |

The MNSW shall support the following specific requirements associated with Air Cargo Manifest:

|  |  |  |
| --- | --- | --- |
| **#** | **Air Cargo Manifest Requirements** | **Mandatory (M) / Preferred (P) / Optional (O)** |
| FN.03-26 | Airline uploads to NSW general cargo manifest for VAN. | M |
| FN.03-27 | MNSW shall receive manifest registration number from AsycudaWorld | M |
| FN.03-28 | MNSW shall transmit manifest registration number to Airlines | M |
| FN.03-29 | MNSW shall transmit approved manifest as XML file to MACL | M |
| FN.03-30 | MNSW shall provide means for Freight Forwarder to capture house manifest details or transmit as XML file | M |
| FN.03-31 | MNSW shall provide means for Airline to capture house manifest details or transmit as XML file | M |
| FN.03-32 | MNSW shall transmit house manifest details as XML file to AsycudaWorld | M |
| FN.03-33 | MNSW shall receive approval of house manifest from AsycudaWorld | M |
| FN.03-34 | MNSW shall transmit to MACL House manifest details as XML file | M |
| FN.03-35 | MNSW shall receive from MACL report on discrepancies recorded between discharge dcargo and manifested cargo. Discrepancies shall contain a list of short-landed cargo and / or overlanded cargo. | M |
| FN.03-36 | MNSW shall transmit to MCS and Airlines report on discrepancies from MACL | M |
| FN.03-37 | MNSW shall receive from Airline request for amendments to manifest as XML file | M |
| FN.03-38 | MNSW shall receive from Customs AsycudaWorld approval or rejection of amendments to manifest | M |
| FN.03-39 | MNSW shall transmit to Airline approval or rejection of request for amendments to manifest | M |
| FN.03-40 | MNSW shall transmit to MACL amendments to manifest approved by Customs | M |

**Application for LPCO**

Traders will submit applications to CBRAs for licenses, permits, certificates and others (LPCOs).

The key functional requirements for submission of applications are listed below:

|  |  |  |
| --- | --- | --- |
| **#** | **Application for LPCO Requirements** | **Mandatory (M) / Preferred (P) / Optional (O)** |
| FN.03-41 | MNSW shall allow user to choose CBRA and once CBRA is chosen, the list of LPCO application forms for CBRA will be presented to user who can then choose one specific LPCO application form. | M |
| FN.03-42 | MNSW will allow user to select a UCR that will be linked to the LPCO application. MNSW shall present a dropdown list of UCRs created by user. UCR will be a mandatory field for application of any LPCO. | M |
| FN.03-43 | The trader will choose from UCR the specific item for which LPCO is being applied for. MNSW will provide a dropdown list of items with similar description and corresponding HScodes. Trader will be able to select from dropdown list the specific HSCode for which LPCO is required. | M |
| FN.03-44 | System should allow the applicant to choose the option of uploading any supporting documents online as attachments with LPCO application or submitting the supporting documents in hardcopy format to CBRA office. System should allow submission of online application in both scenarios. | M |
| FN.03-45 | For each LPCO application., MNSW shall generate a unique LPCO application id. MNSW will set the status of the LPCO application as “Submitted” and will display time stamp. | M |
| FN.03-46 | MNSW shall send LPCO application form to CBRA user assigned with role to verify LPCO application. If there are multiple CBRA users with role to verify LPCO application, MNSW will transmit LPCO application forms to CBRA users in sequence. | M |
| FN.03-47 | In response to LPCO application, CBRA can request more information or indicate incorrect information. | M |
| FN.03-48 | MNSW shall enable applicant to respond to missing information. | M |
| FN.03-49 | CBRA will confirm receipt and completeness of LPCO application and attach an invoice with a unique reference number in case processing fee is payable. | M |
| FN.03-50 | In some cases, an inspection may be required. If this is required, CBRA will enter in the MNSW the need for inspection. The MNSW will notify trader of the need for the inspection. After inspection, result will be entered in the MNSW by the CBRA official and the result will be communicated to the Trader by the MNSW. | M |
| FN.03-51 | The system should allow the user to generate the acknowledgement receipt for the application. Acknowledgement receipt will reflect key information from the application along with any processing fees payable. The acknowledgement receipt will have a unique reference number and bar code which can be used to retrieve the application from the database. System should allow the applicant to save the receipt in pdf /print. | M |
| FN.03-52 | System should allow user to proceed to the payment options. System should allow the user to proceed to the payment options in the following cases only: (i) Submission of application along with upload of all supporting documents, or (ii) Submission of application with the options of submitting the supporting document at the CBRA office for upload, (iii) Submission of application along with upload of partial supporting documents and concurrence from the user to submit the supporting documents at the CBRA Centre. | M |
| FN.03-53 | In case the applicant visits the CBRA office to upload the supporting documents, officials at the CBRA office should retrieve the application using application reference number/bar code provided in the acknowledgment receipt to retrieve the application from the database. Officials verifies the supporting documents submitted by the applicant with the documents requirement as indicated in the system and scan the documents if found appropriate. Official uploads the scanned copy of the supporting documents along with the application. If the fees payment has not been made, the applicant can make the payment at these counters or online via the Bank of Maldives payment gateway. | M |
| FN.03-54 | MNSW shall send to CBRA administrator confirmation of receipt of payment | M |
| FN.03-55 | MNSW shall generate an email to CBRA supervisor in case SLA for issuing LPCO has been exceeded | M |
| FN.03-56 | MNSW shall notify applicant of (a) approved LPCO permit (b) rejection of LPCO application and notification as to why application has been rejected. If application is accepted and no fee is required for issue of permit, applicant will receive permit online in softcopy PDF format. | M |
| FN.03-57 | If payment is required before permit is issued, MNSW will send invoice for payment to applicant. Invoice for payment will have a unique reference number. | M |
| FN.03-58 | MNSW shall send to CBRA administrator confirmation of receipt of payment. | M |
| FN.03-59 | MNSW will receive LPCO from CBRA and generate a message to applicant with attached LPCO in applicant’s mailbox. LPCO will bear a unique permit reference number | M |
| FN.03-60 | MNSW will process data attached with the transmission of permit as follows:   1. MNSW will link to UCR the unique permit reference number for the LPCO. 2. If CBRA requests inspection when this LPCO is used, inspection request will be automatically linked to consignment. | M |
| FN.03-61 | The system shall display the current status of the application as it passes through different stages of the processing. Traders and CBRA officials should be able to view status of an application any time. | M |
| FN.03-62 | Trader can cancel request for a LPCO. The request will include reason for cancellation. The CBRA will receive the cancellation request. When CBRA approves cancellation, the status of the LPCO will be changed to Cancelled. | M |
| FN.03-63 | Trader can see browse the list of LPCO applications that he has submitted and MNSW will display for each LPCO the status of the application. The status of an LPCO will be one of the following as per action that has been completed… some examples of status below:   |  |  | | --- | --- | | **LPCO Status** | **Trigger for Status** | | Receipt | Submitted by trader | | In Process | LPCO application opened by CBRA officer | | Request for more information | Additional information requested by CBRA | | Application Complete | LPCO application reviewed and information complete | | Pending payment | Waiting for payment | | Approved | Approved by CBRA | | Rejected | Rejected by CBRA | | Cancelled | Cancelled by trader |   When status changes for an LPCO, the MNSW will display the new status together with a timestamp. Previous status information will not be deleted. The MNSW will display the latest status. The applicant has also the option of displaying the history of status changes for each LPCO he has submitted. | M |
| FN.03-64 | An audit trail for all transactions including access to information, changes to data/information shall be maintained in the system such that information can be viewed by applicant and CBRA staff. | M |
| FN.03-65 | Access to the Audit trail should be restricted to authorized CBRA personnel. | M |
| FN.03-66 | MNSW makes LPCO available to AsycudaWorld data in standardised format which consists of data extracted from the LPCO and which contains information that is needed by Customs | M |
| FN.03-67 | The following notifications are sent by the MNSW to the trader for the following purposes:   1. receipt of LPCO application 2. need for more information 3. Inspection needed 4. Payment required 5. Payment received 6. approval of LPCO 7. rejection of LPCO application | m |

**Using LPCO**

|  |  |  |
| --- | --- | --- |
| **#** | **Using LPCO** | **Priority** |
| FN.03-68 | MNSW shall receive from MCS CBRA identification, UCR number, LPCO number, declaration number, and information from declaration including: customs broker id, trader id, BL number, description of goods, quantity of goods imported / exported, value of goods declared, border post, vessel name, declaration date | M |
| FN.03-69 | MNSW will transmit to CBRA the MCS information on LPCO utilization for a declaration | M |
| FN.03-70 | MNSW shall enable CBRA staff to enter inspection requirements for vessel / BL number. Inspection requirements shall consist of either:   * + - 1. No inspection       2. inspection needed       3. sample needed       4. inspection at trader premises   Inspection requirements shall include requirements from MCS. | M |
| FN.03-71 | MNSW shall enable CBRA staff to record outcome of inspection for a vessel / BL which can be either of following:   * + - 1. No inspection       2. Consignment to be held       3. Sample of Consignment required for tests       4. Release of parts of consignment       5. Release entire consignment   MNSW will provide a Notes field such that text can be entered by CBRA staff to further describe outcome of inspection.  MNSW will record for each entry time stamp and CBRA user. | M |
| FN.03-72 | MNSW shall transmit to MCS outcome of inspection by CBRA to MCS | M |
| FN.03-73 | MNSW shall receive from MCS authorisation to release consignment. Authorisation to release shall include release of entire consignment or release of selective items within consignment | M |
| FN.03-74 | MNSW shall issue MCS release authorisation to MPL, MACL, bonder warehouse and other relevant cargo handlers | M |

**ePayment**

MNSW will support ePayment as per a new Unified Payment Gateway (UPG) that is being procured by the Maldives Monetary Authority (MMA). The UPG is presently being implemented and it is expected that the interface to the UPG shall be via an API and ISO20022 messaging standard shall be used.

CBRAs will issue electronic invoices to request payments associated with processing and / or issue of LPCO. MCS will also issue electronic invoice for duties and taxes to be paid as a result of assessment of a customs declaration.

For reference purposes, the functions for ePayment are prefixed FN.04 and include the following:

|  |  |  |
| --- | --- | --- |
| **#** | **ePayment Requirements** | **Priority** |
| FN.04-1 | MNSW shall receive eInvoice from CBRA | M |
| FN.04-2 | MNSW shall notify trader of eInvoice | M |
| FN.04-3 | MNSW shall enable ePayment of eInvoice by providing an interface to UPG | M |
| FN.04-4 | MNSW shall notify CBRA and trader once successful ePayment has been confirmed by UPG. Notification shall include eInvoice number, payment reference number | M |
| FN.04-5 | Notify trader in case ePayment is not successful | M |

**Shipping Line Electronic Delivery Order**

MNSW will support issue of electronic Delivery Order (eDO) for shipping lines and freight forwarders.

eDOs are issued for each Bill of Lading (BL) in manifest once commercial conditions have been met.

For reference purposes, the functions for ePayment are prefixed FN.05 and include the following::

|  |  |  |
| --- | --- | --- |
| **#** | **eDO Requirement** | **Priority** |
| FN.05-1 | MNSW will provide support for MPL authorised representative to record date for completion of cargo discharge for voyage | M |
| FN.05-2 | Authorised representatives of shipping line will authorise issue of eDO for specific BL. MNSW will provide a default number of free days which is set by the MNSW system administrator. Shipping Line can override the default number of free days. (Free days are measures as from data of completion of cargo discharge). | M |
| FN.05-3 | For consolidated cargo, shipping line representative will issue eDO for master BL and indicate number of free days. Freight forwarder will issue eDO for individual BLs of consolidated cargo. | M |
| FN.05-4 | Shipping lines can extend expired eDO. Freigth forwarders will not have access to this feature. | M |
| FN.05-5 | For each BL, the MNSW will send notification via email and sms associated with consignee and customs broker. The Shipping Line representative can override default email id and phone of consignee. | M |
| FN.05-6 | MNSW will transmit eDO to consignee and MPL. | M |

**Cargo Gate Exit**

Cargo handlers such as MPL and MACL will notify Customs upon exit of cargo from customs area.

For reference purposes, the functions for cargo gate exit are prefixed FN.06 and include the following:

|  |  |  |
| --- | --- | --- |
| **#** | **Gate Exit Requirement** | **Priority** |
| FN.06-1 | MNSW shall provide an interface for MPL and MACL systems to transmit, whenever consignment leaves MPL / MACL cargo storage, cargo exit details which will include: BL, customs declaration registration number, transporter details, time stamp. The cargo exit information shall indicate whether entire consignment delivered or partial consignment delivered. | M |
| FN.06-2 | MNSW shall receive cargo exit information from MPL, MACL, bonded warehouse and other cargo handlers | M |
| FN.06-3 | MNSW shall transmit cargo exit information to Customs, shipping line, customs broker and consignee | M |

An off-the-shelf solution for MNSW is preferred whereby features are configurable and where enhancements and new software development is minimised as per specific requirements for Maldives. Bidders are requested to use Appendix 3 to describe how the proposed solution supports MNSW specific features.

* 1. Other Functional Requirements

**Mailbox Messaging Facility**

For reference purposes, the functions for **Mailbox Messaging** are referred to as FN.07 and all features listed below are mandatory.

In order to provide maximum flexibility, it is proposed that information required for administrative procedures be exchanged as structured messages with each message having a pre-defined data structure. Users should be able to initiate a transaction at any time, check status of transaction, and conversely, to receive transactions sent to them.

For reference purposes, the functions for cargo gate exit are prefixed FN.07 and include the following:

The system shall have a mail box system with the following features:

* Ability to interprete incoming message and distribute message on the basis of the type of message received. For example a Customs Release message is routed to both the Cargo storage operator where the cargo is located and the declarant. The mailbox system can be pre-configured by the MNSW administrator such that, upon receipt of the Customs Release message, the mailbox system determines intended recipients based on message. The mailbox system will then automatically deliver the Release message to the mailbox of the cargo storage operator as well as that of the declarant.
* Format of input message and output message is automatically determined by MNSW based upon the user’s profile. Each user can directly set and update desired format for sending and receiving message(s). The system will interpret incoming message as per sender profile and translate message to be delivered into format desired by recipient(s).

The system must support EDIFACT and XML format. Other message formats that are applicable can be proposed by the bidder. Support for ASCII, PDF, and Excel formats shall provide for additional flexibility. Input as well as output format can be in any of those formats.

Other Mailbox Features that are expected include:

* Delivery Notification, Receipt Notification
* Non-Delivery Notification, Non-Receipt Notification
* Non-Repudiation of Receipt
  + The MNSW will implement Non-Repudiation of Receipt of a message. The sender of a message will have undeniable proof that the recipient received the message and the message was not altered in transit.

**Billing Module**

For reference purposes, the functions for **Billing** are referred to as FN.08 and all features listed below are mandatory

The system shall have a Billing module. The billing module will be parameterised so as to provide flexibility to the MNSW operator to activate / deactivate items to be billed as per government policy.

For reference purposes, the functions for billing are prefixed FN.08 and include the following:

The services that can be billed are as follows:

1. initial user registration fee
2. monthly, yearly user registration fee
3. registration fees by user type: shipping line, airline, freight forwarder, importer, exporter, customs broker

The billing module shall provide features for:

1. definition of transaction types with ability to set different fee for each transaction type: import, export, warehousing, application for LPCO, inspection, epayment
2. ability to generate MNSW invoice either (a) per transaction (b) at the end of each defined period, e.g. per month.
   1. If invoice is generated per transaction, the MNSW fee will be communicated to MCS such that MNSW fee is collected prior to release of consignment by MCS
   2. If billing is periodic, electronic statement is submitted to user and includes an itemised list of transactions and associated fee for each transaction
3. period for billing cycle (monthly, …)
4. application of penalty for late payment, with interest rate
5. generation of periodic statement, identifying detailed items in bill, payments and outstanding balance
6. review of accounts receivable
7. accounts reconciliation

The billing module will allow for billing administrator to adjust bills. For audit purposes, all adjustments will be tracked such that initial amount is logged and changes are recorded with reason code and a remarks field.

**Archiving**

For reference purposes, the functions for **Archiving** are referred to as FN.09 and all features listed below are mandatory

All transactions submitted via the MNSW will be archived.

The system shall provide a module to archive data / messages after a specified number of days from date of creation of data. The MNSW data administrator will be able to easily set media, timing and cycle, and other parameters for data archiving.

The archiving module will maintain an index of archived data and will provide an easy to use interface for selecting and restoring archived data. For example, in order to facilitate retrieval of transactions, the MNSW will use meta-data in order to facilitate the retrieval of transactions based on user specific criteria such as CBRA, LPCO, date range, and user.

1. Component #2: Contact Centre

For reference purposes, the functions for **Contact Centre** are referred to as FN.10 and all features listed below are mandatory

The MNSW implementation requires a Contact Centre module to record and manage request for assistance with the use of the MNSW. Assistance may be requested by users of MNSW on: sources of information, registration enquiries, clarifications on MNSW functions, suspected faults, defects, suggestions and feedback.

For reference purposes, the functions for billing are prefixed FN.10 and include the following:

MNSW will provide the following features for the Contact Centre module.

|  |  |
| --- | --- |
| **Contact Centre Requirement** | **Description** |
| 1. Administration | Administrative features for Contact Centre management and staff and definition of user roles and access rights by user roles |
| 1. Problem record | Contact Centre staff creates a problem log when reported by user either via phone call or email. Each problem log will contain unique problem reference number, user name and contact details, date & time problem reported, problem description, category of problem, initial advice provided, severity of problem, (high, medium, low), target fix date, problem status code, and description of final resolution. |
| 1. Status of Problem log | MNSW assigns each problem log status of “Open” when log is first created. As problem resolution progresses, MNSW will allow for status of problem log to be updated: in progress, user error, fixed, validated, deferred. Time stamp will be recorded for each change of status. |
| 1. Access to problem logs by end users | End users will have read only access to view list of problem logs on MNSW. |
| 1. Assign problem owner | For each problem log, Contact Centre staff will be able to assign problem owner from defined list of MNSW staff. Problem owners can be changed and the MNSW will maintain a list of problem owners assigned to each problem log. Problem owners are not visible to end users. |
| 1. End user update | For each problem log, Contact Centre staff can record communications with user consisting of description, type of interaction (phone, email) and time stamp. |
| 1. Problem Resolution | When problem has been fixed, Help Desk staff will record details, status will be updated and problem resolution will be communicated to end user. |
| 1. Contact Centre Staff Queries and Reports | The module will enable various problem tracking queries and reports to be produced, e.g.   * + List of open problems sorted by severity level and aged   + List of problems fixed   + List of problems in progress   + List of problems where fixes have not been accepted by user |
| 1. Management Queries and Reports | Managers will be able to query and generate reports on the following:   * Receive alerts that are automatically generated on overdue responses * overdue responses to help requests * follow-up an over-due response * performance statistics – per type or request, type of resolution, trader, date and time and other attributes |

1. Component #3: Capacity building and training

The selected bidder shall provide hands-on training to (a) MNSW staff (b) CBRAs (c) Cargo handlers MPL and MACL. Training scope shall relate to the solution supplied and other requisite skills so as to make them well conversant with the functionalities, features and processes built in the MNSW system and Hel Desk operation. The selected bidder shall carry out the following as part of the training and capacity building activity:

(a) **Developing the training content** – Bidder shall ensure that the training content is relevant to the target trainees and relevant to the specific roles of trainees.

(b) The selected bidder shall submit the training content to the client for approval. It shall be submitted at least 3 weeks in advance before the conduction of the training. The client will review and provide comments on the training content. Selected bidder shall incorporate and implement changes suggested by the client in training delivery and content.

(c) **Prepare Training Schedule** - A detailed training schedule will be prepared by Selected Bidder after consultation and approval from the client. Any update in the training schedule shall require approval by the client at least 1 month before the conduction of training.

(d) **Training venue and other logistical arrangements**

1. The number of end users and location wise distribution of these users will be communicated by the client to the selected bidder.
2. Selected Bidder needs to submit training completion report at end of training.
3. Training shall take place at the location identified by the client.
4. Venues for the training will be borne by the client.
5. Selected bidder is responsible for trainers, all equipment, software, hardware etc. required for the training, at no cost to the client.
6. Providing Hard copies of training material to participants shall be responsibility of selected bidder and the cost for the same must be included in the training costs as proposed by bidder in their proposal.

(e) **Identification of Training Participants** – The client shall be responsible for identifying the participants for the training.

(f) **Circulating pre-training material** - selected bidder shall make adequate provision for circulating pre-training material to all the participants at least seven (7) days before the conduction of the training.

The pre-training material may be circulated in electronic form and hard copy form to the client.

(g) **Language for delivery of training** - The mode of training delivery shall be in English.

(h) **Type of training and other logistical arrangements**: Some of the key features of the training and capacity building program are:

* Training program will be a combination of classroom training and hands-on training to the participants as nominated by the client.
* Selected bidder will conduct class room training centrally at MNSW Operator for the identified officials. Training program

|  |  |  |  |
| --- | --- | --- | --- |
| Category of Training Course | List of Training courses | Duration | Total No. of Participants |
| Train the trainers Training course for system users | MNSW system usage and operations course for system users at MNSW, CBRAs, MPL, and MACL | 5 days | 70 participants (specific to MNSW, CBRA, MPL, MACL) |
| Training course for system administrators | MNSW system administration and maintenance for technical staff | 15 days | 5 |
| Training course for Contact Centre staff | Training on Contact Centre operation | 10 days | 6 |

* The content of the training plan and schedule shall be mutually decided by MNSW Operator and the selected bidder.

**MNSW system usage and operations course**

The MNSW system will be utilised by the staff at MNSW, CBRAs, MPL, and MACL for performing key functions related to registration of users, application submission and processing, providing application status etc. The training of these system users will need to be customised based on the specific functionality offered to the users. The training content needs to be developed and customised based on the specific users and their allocated functions.

|  |  |
| --- | --- |
| **Business Objectives** | The training course shall equip the participants with good understanding of functionality of the MNSW system to enable the staff to:   * Perform day to day transactions using IT system * To generate required reports using IT system * Make use of the system in line with the defined operational and security measures etc. |
| **Target Audience** | Staff from MNSW, MCS, MDNS, MED, MFDA, MOFA |
| **Course Duration** | 5 days |
| **Knowledge to be acquired by participants** | * Functions and services of the system applicable to the respective departments * Processes for administration of service delivery to traders * Report generation capabilities in proposed IT system * Operations and information security measures for utilization of proposed IT system. |
| **Skills to be acquired by participants** | * Processing of transactions using MNSW * Report generation using MNSW |

**SWC system administration and maintenance course**

While the vendor will provide warranty support for the MNSW system, the day to day maintenance activities will be carried out by the respective technical staff in the MNSW. To enable such designated technical staff in performing system administration and maintenance, vendor needs to provide sufficient training to cover the areas described below.

|  |  |
| --- | --- |
| **Business Objectives** | The training course shall equip the participants with a comprehensive understanding and skills set to perform day to day system administration related activities including the following:   * Administration of users and access rights * Configuration changes to the system * Installation and configuration of the systems * Data backup, archival and restoration * Systems performance monitoring and fine tuning etc. |
| **Target Audience** | Technical staff of MNSW operator |
| **Course Duration** | 15 days |
| **Knowledge to be acquired by participants** | * IT system management fundamentals and best practices * Information security management fundamentals and best practices * Database administration and management fundamentals and best practices * Application software functional and technical features etc. |
| **Skills to be acquired by participants** | * Installation, configuration of the IT System * Addition of users, modification of user access rights and permissions * IT system administration and maintenance * IT system installation, configuration and implementation * Information Security Management and monitoring * Data base administration and monitoring * Data backup, archival and retrieval etc. |

**Training on Contact Centre Operations**

Training of the Contact Centre staff requires an exhaustive program for Contact Centre staff on the functioning of the MNSW. An overview of the training curriculum is discussed below. This will be finalized during the implementation of the SWC system in discussion with the vendor.

|  |  |
| --- | --- |
| **Business Objectives** | The training course shall equip the participants with (i) a thorough understanding of features of the MNSW that will be used by traders, CBRAs and cargo handlers (ii) role of Contact Centre in properly responding to MNSW user queries for information, operational assistance and recording of problems (iii) utilization of the Contact Centre tools. Areas to be covered during the training shall include:   * Soft skills and inter-personal skills for Contact Centre staff * Providing information and transaction services * Handling of IT equipment * Complaints handling including logging, follow-up and closing of complaints * Handling dissatisfied users, active listening |
| **Target Audience** | Contact Centre staff of MNSW operator |
| **Course Duration** | 15 days |

**Knowledge Transfer**

The capacity building responsibilities shall include essential knowledge transfer to the MNSW operator.

Selected Bidder will undertake the following activities as demanded by to ensure that the knowledge about the entire ICT System including but not limited to the infrastructure at Data Centre, Disaster recovery Centre, the Network, Applications, customized solution, the design and operational characteristics of these systems are transferred to the MNSW staff. The activities will be aimed at:

1. Knowledge transfer of operations.
2. Knowledge transfer of technology.
3. Knowledge transfer of processes.
4. Knowledge transfer of any other processes etc. not covered by (i) to (iii) above.

Some of the key activities to be carried out by Selected Bidder for knowledge transfer will include: -

1. Assign MNSW staff to work with Selected Bidder Personnel to facilitate knowledge transfer
2. Documents walkthrough to explain design and characteristics.
3. Joint operations of key activities or services.
4. Briefing sessions on process and process Documentation.
5. The code walkthrough to explain the characteristics of the software applications.
6. Walkthrough of selected bugs and the changes to the codes in order to fix the problems.
7. Briefing sessions on applications, the way these are deployed and integrated.
8. Component #4: Implementation Manager and Project Implementation

For reference purposes, the requirements for **Implementation Manager** are referred to as PM.01.

The selected bidder shall propose the services of an experienced Implementation Manager who will be responsible for the rollout of the two phases of the MNSW.

The Implementation Manager will be responsible to:

* Plan, organize, lead, and control the MNSW project efficiently and effectively
* Oversee and monitor the deliverables of the bidder’s staff
* Oversee and monitor deliverables of MNSW operator technical staff
* Work closely with local MNSW operator technical manager in order to build local capacity and transfer skills for a smooth transition of responsibilities after end of term of Implementation Manager

The specific roles and responsibilities of the Implementation manager shall include:

* Develop and maintain all project plans and ensure compliance to timeframe and collaborate with implementing agencies for all implementation processes.
* Monitor all implementation requests and administer staff working and assist team and senior technical managers and provide required coaching for same.
* Evaluate all management information reports and ensure achievement of all team objectives and provide support to senior implementation manager.
* Evaluate all processes and provide technical support to all technical managers and establish all client configuration requirements.
* Collaborate with system integration team and ensure compliance to all MNSW requirements and provide appropriate training to clients and ensure efficient implementation of all systems.
* Develop all processes and tools for customer implementation lifecycle and identify all defects and provide an efficient interface with all marketing and technical departments.

Qualifications of the Implementation Manager: Graduate (preferably post graduate) degree with at least 15 years’ experience including at least 10 years of experience in IT system development and implementation. He/ She should have at least 3 years of experience in implementing NSW within a country with similar level of development to Maldives and with similar set of features being rolled out.

**Project Implementation**

**Project Management Methodology and Project Plan – PM.02**

Project Management (PM) Methodology needs to be documented:

* Description of the Project Management methodology that will be adopted
* The PM methodology shall include description of project risk management process
* Communications and Escalation process
* Standards for the Project Management methodology: PRINCE 2, PMI PMBOK or other standard

The Project Plan shall include the following:

* work breakdown structure, sequencing and time frame for every activity
* milestones, reviews, signoffs, are expected to be reflected in the project plan
* Proposed staffing plan including numbers, roles, responsibilities of team members, allocation of staff resources to activities

**Testing and Acceptance Plan – PM.03**

The Testing and Acceptance Plan shall include description of the following:

* Unit testing
* Integration Test
* System Test
* Acceptance Test
* Performance Test

**Change Management Process – PM.04**

Change Management process shall describe the approach to managing changes to the deliverables, review and approval process, impact analysis, acceptance and implementation of changes.

**Transition Plan – PM.05**

The transition plan shall identify the team responsible for successful transition, the tools, techniques, and methodologies required.

Other components that are expected in the transition plan include:

* Governance model and Project Transition team
* Problem tracking and issue management
* contingency planning and risk mitigation
* An impact statement is formulated in the plan that outlines the potential impact of the transition to the existing infrastructure, operations and support team, and to the users.

C. Other Technical Requirements

**Non-Functional Technical Requirements**

1. Non-Functional Technical requirements

This section lists the non-functional technical requirements which must be supplied.

Fore Reference purposes, EN.01 includes Sections 7.1, 7.2, and 7.3 below

* 1. General Technical Requirements

7.1.1 Language Support: End user interface for MNSW must support English and Dhivehi (Maldives national language). End user interface includes menus, data capture screens, data display screens, queries, reports, messages and manuals.

7.1.2 DATES: All information technologies MUST properly display, calculate, and transmit date data, including, but not restricted to 21st-Century date data.

7.1.3 Electrical Power: All active (powered) equipment must operate on 220v +/- 20v, 50Hz +/- 2Hz. All active equipment must include power plugs standard in Maldives.

7.1.4 Environmental: Unless otherwise specified, all equipment must operate in environments of 10-30 degrees centigrade, 20-80 percent relative humidity, and 0-40 grams per cubic meter of dust

7.1.5 Safety:

Unless otherwise specified, all equipment must operate at noise levels no greater than 55  decibels.

All electronic equipment that emits electromagnetic energy must be certified as meeting EN 55022 and EN 50082-1 or equivalent, emission standards.

* 1. Computing Infrastructure Requirements

**Infrastructure Requirements**

Bidders shall provide a new hardware infrastructure consisting of servers, storage, networking and security devices and associated system software to support the MNSW in a **highly available, reliable and secure environment**.

Redundancy is expected at all levels by duplicating critical components such as database, messaging and application servers. Data storage is expected to incorporate RAID configurations, with RAID 10 or RAID 50 preferred.

Bidders are expected to propose a detailed technical infrastructure to meet the needs of the new MNSW system and the expected demands of the stakeholders. Bidders are expected to properly justify their choice for any specific hardware and to clearly demonstrate how they arrive to proposed hardware specifications.

**Operating Environment**

The proposed MNSW system should be hosted onto suitably sized server environment. Bidders are invited to propose the best tested and recommended operating system for the deployment of the proposed MNSW system. Bidders need to ensure the proposed operating system is one that is robust and scalable enough so the system runs without any issues of portability or performance degradation. Any third party software required, for the proper operation of the system, must be clearly indicated and supplied.

The server infrastructure will be hosted at the premises of the MNSW operator and will be accessible via its own Virtual Private Network (VPN).

All application user interfaces will be enabled through a graphical user environment, providing windowing features.

**Historisation**

The system should not allow the deletion of data after it has been saved in the system. Once a record is saved it should remain in the system. Records in the system can be altered. If alteration of a record takes place, the original record remains unchanged; the altered record becomes the valid record.

This historisation procedure is valid for all data in the system, reference data as well as transaction data.

Historisation shall take place using validity periods for the data (“Valid From” and “Valid To”) as well as the date alteration has taken place.

The system should provide for audit trail facility to enable tacking of all transactions that bring about any changes to the database or state of the system.

**Platforms and Installation Requirements**

The system shall be easy to deploy and Installation scripts should be provided wherever necessary to automate the installation tasks.

The system shall provide tools and scripts to automate the backup and the building of the entire database schema from scratch. The system shall provide a deployment guide and an installation guide as well as a set of wizards where necessary to ensure that the system deployment is as easy to achieve as possible.

The system should outline the recommended platform minimum requirements in terms of hardware and software requirements as well as any third party software components that may be required.

The system should provide all minimum telecommunication requirements including the minimal VPN setup required for secure communication.

The system must be compatible with the existing telecommunication infrastructure and must be able to re-use as much of this infrastructure as possible.

The system shall provide for a program requirement check at the installation of the thin-client or on loading of the web-client on the end users computers in order to check that all required components are installed and if not then to alert the user of what components need to be installed.

**Localization and Internationalization Requirements**

The system, where possible, shall provide for the possibility of having a multi-lingual user interface but the primary user interface language shall be British English and the labels shall be as per the WCO standards for the data elements.

The system shall ensure that all data is captured and sent in utf-8 and Unicode formats as well as strict adherence to international HTML schemas for web interfaces and XML schemas and DTDs for XML data messages and to UNEDIFACT and UNCEFACT standards for all EDIFACT-based messages.

Bidders are expected to provide details about the recommended environmental conditions for proper operation of the computer hardware. Information such as optimal ambient temperature range, required humidity level and maximum heat dissipation for each hardware should be specified.

**Design and Implementation Constraints and Assumptions**

Proprietary software and hardware components shall not be used for the deployment of the system. All components of the deployment must conform to open and widely supported open standards and shall be made available to the Client technical staff.

It will utilise “open systems” standards and architectures in order to ensure interoperability with any future system that is developed.

**Relational Database Management System (RDBMS)**

It is expected that the application software will use a relational data base management system (RDBMS). The Bidder’s proposal must indicate the RDBMS system being proposed for use with its proposed software and must define the database or file processing characteristics of all software proposed in responding to this RFP.

Information on the RDBMS must include:

* List all RDBMS engines that can drive your proposed module(s).
* State which of the RDBMS engines is your recommended or preferred platform and why.
* Explain how referential integrity is enforced at the RDBMS level.
* Describe features in RDBMS or solution that aid in recovery procedures (rollback and recovery).
* Capability of storing searchable free-form data elements.
* Capability of referencing image-based documents and performing context-based searches in image based documents.

**Server Sizing and Architectural Requirements**

The Bidder shall **ensure** that its recommended hardware solutions perform with the solution as expected and warranted. This responsibility shall be based on current and identified future environment characteristics. This performance responsibility shall be expected through production implementation providing that all contract requirements have not changed.

The Bidder’s proposal must describe the methodology used for sizing the proposed solution server computing platforms, whether for Web, application or database servers.

The Bidder must include a description of any necessary server clustering technology for any proposed and future proposed solution platform architecture, specifying load balancing, performance scaling and hot switchover technologies for the processor and memory. Rack mounted solutions are required for servers.

An external disk array with appropriate RAID configuration to be used with the database server will have to be proposed. It is preferred that the database server be UNIX based for performance considerations, other proposals will however be considered.

The computing platform shall be required to include external uninterruptible power supply (UPS) power units for the servers and workstations.

**Desktop Configuration**

All end users of the software will interface to the application through Windows-based desktops. The Bidder must specify how this function shall be accomplished, including the operating system requirements.

For Web-based functions, users must interface to the solution through a Web Browser such as Microsoft Internet Explorer, and similar tools.

The Bidder’s proposal must specify the minimum recommended workstation configuration (module by module if appropriate) including CPU(s), processor speed, memory, disk space, monitor, operating system, and any additional hardware required.

The Bidder must also supply the required software that must exist on the desktop in order to support the functionality that shall be provided by the solution.

**End User Interface**

All application user interfaces will be enabled through a graphical user environment, providing windowing features.

**Backup and Recovery Requirements**

Bidders are required to propose a centralized and automated backup system. The backup system must be able to perform scheduled unattended backup of the data files and system files. Bidders are invited to propose the most convenient and effective backup strategy so as to allow for minimal backup window size and to reduce impact on production system when backup is carried out.

The system shall have an automatic rollback of the data backup on extreme disasters to the last point where data and system integrity was still retained.

The system shall create an archive of data on a prescribed frequency as part of its database cleanup and compression mechanisms that shall be easily accessible on demand.

A disaster recovery (DR) system is required and will take over from the main site in case of a major disaster. The capacity of the DR instance is to be 60% of capacity of primary system.

Recovery Time Objective (RTO), i.e. time to restore to normal operations, is 2 hours. Recovery Point Objective (RPO), i.e. maximum allowable data loss from time of failure to last valid backup, is 4 hours.

* 1. Network and Communications

**Network Architecture Components**

The following chart illustrates the expected components of the network and system that will make up the MNSW solution. Bidders may propose own specific design which are more effective and efficient in order to attain the MNSW operational objectives.



Bidder must propose a design for the recommended network for the proposed solution and quote for all components of the recommended network. The Bidder must define the required elements of the proposed solution’s network design including the data center network operations, communication hardware, local building and/or campus network (inter-site) components (e.g. structured cabling, category 6 wiring, T1). These designs must be compatible with industry standard technologies.

The Bidder must indicate the type of local network connection, enabling communications between the client workstation, Web, application and/or database server(s), supporting the appropriate network and application protocols. These environmental elements shall include specifications of the cabling to be installed, local network backbone and all local installations of hubs, switches and/or routers.

The Bidder must detail the bandwidth required by the software and compatibility of the network provided by its solution. The bidder will undertake planning, installation, configuration and testing of both active and passive components. The bidder must clearly state the connectivity requirements (dial-up, leased lines, fibre optic links, …) for the different site locations (airport, MPL, etc….).

It is proposed that the network architecture include a DMZ (demilitarised zone) of two firewalls which houses the web server. Remaining servers and the internal LAN will be housed behind the internal firewall.

**Software Quality Attributes**

The system shall satisfy all common software quality metrics including but not limited to adaptability, availability, correctness, flexibility, interoperability, maintainability, portability, reliability, reusability, robustness, testability, and usability.

The system shall provide for authenticated super-user intervention to cancel, modify or correct, or start certain business processes on behalf of any of the user categories that can use the system.

The system shall provide 100% login capability for the super-user account even in the worst disaster possible in order to provide for an account that can start correction procedures.

**Safety Requirements**

The system shall ensure the atomicity of all transactions; failure of one part of a transaction must result in the previous steps being rolled back in order to preserve data integrity.

**Document Handling**

Stakeholders may submit supporting documents as scanned images. The system should include solutions for speedy access to documents and should incorporate image compression tools for efficient utilization of storage.

**Indicative list of Hardware components – EN.02**

The following are indicative hardware specifications for the various components of the technical solution to be provided:

* These are indicative specifications of equipment; the vendor should amend the specifications to provide a cost-effective configuration that delivers the performance expectations of the Client.
* Components can be added or removed as per requirements of the solution.
* Any reference to specific brand names are for descriptive purposes only and are not restrictive, except where explicitly stated.

| **Component Description** | **Quantity** | **Specifications are indicative only- bidders to quote as per proposed custom solution** |
| --- | --- | --- |
| Web server(s) | Quantities as per bidder custom solution | 1 RISC 16-core 4.13 GHz processor, Memory 256 GB (8 x 32 GB DIMMs), Mass Storage 2 x 600 GB 10,000 RPM 2.5-inch SAS disks, 2X 1 port fiber card 8GB/s |
| Database server(s) | 1 RISC 16-core 4.13 GHz processor Memory 128 GB (8 x 16 GB DIMMs), Mass Storage 4 x 600 GB 10,000 RPM 2.5-inch SAS disks 2X 1 port fiber card 8GB/s |
| Application server(s) | 1 RISC 16-core 4.13 GHz processor, Memory 64 GB (4 x 16 GB DIMMs), Mass Storage 4 x 600 GB 10,000 RPM 2.5-inch SAS disks 2X 1 port fiber card 8GB/s |
| Mail Server(s) | 1 RISC 16-core 4.13 GHz processor Memory 128 GB (8 x 16 GB DIMMs), Mass Storage 4 x 600 GB 10,000 RPM 2.5-inch SAS disks 2X 1 port fiber card 8GB/s |
| Load Balancer(s) | Processor Intel Xeon E5-2690, 2.6 GHz Memory 16GB DDR4--2X4GB 1,600 DIMM, Mass storage 3X 300 GB 10,000 rpm 2.5-inch SAS-2 disk |
| Firewall(s) | Specifications as per bidder custom solution |
| Router(s) |
| Switch(s) |
| SAN Storage(s) |
| Rack(s) |
| True online UPS (for data center equipment) | UPS with online double-conversion topology with one hour standby power to enable orderly shutdown of servers and other critical data center equipment |
| Disaster Recovery Server(s) | Note to Bidder: DR site configured to support 60% of capacity of main system |
| Other |  |

Other Computing equipment - For MNSW staff office use

| **Component Description** | **Quantity** | **Specifications are indicative only- bidders can propose alternate specs as appropriate** |
| --- | --- | --- |
| Desktops | 12 | INTEL(R) CORE I7 or higher Processor CPU @ 3.30 Ghz. Preinstalled Windows 10 professional \*64 bit, at least 16 GB RAM., at least 500 GB Hard Disk Space, 21-inch Monitor, HD Graphics chip support, VGA, DVI, HDMI, USB, Ethernet, SD ports, Inbuilt speakers on either the Monitor or System Unit, Monitor size –19.5”, Windows 10 professional 64 bit |
| Laptops | 16 | CPU Intel Core i7 or higher, Graphics 520 (2.3 GHz, up to 2.8 GHz), Windows 10 Pro 64, Display 15 inch, flat LED backlit, at least 16 GB RAM, Storage min 500 GB SATA, Wireless Intel Dual Band Wireless-AC 8260 802.11a/b/g/n/ac, Bluetooth 4.2, Camera 720p HD webcam, Keyboard Touchpad with support for multi gestures, two-finger scroll, pinch/zoom, edge swipe |
| Printer for 25+ users | 1 | Print Technology: Laser  Functions: Print, Copy, Scan  Resolution technology: FastRes 1200; 1200 x 1200 dpi  Paper handling input, standard: 100-sheet multipurpose feeder, 550-sheet input feeder, 150-sheet automatic document feeder  Paper handling output, standard: 500-sheet output feeder, two-sided printing  Print speed, black (normal): Up to 65 ppm.  Monthly page volume: up to 30,000 |
| Printer for 10+ users | 1 | Print Technology: Laser  Functions: Print, Copy, Scan  Resolution: Up to 1200 x 1200 dpi  Paper handling input, standard: 1 x 550-sheet input tray; 1 x 100-sheet multipurpose tray; 3 x optional additional 550-sheet input trays  Paper handling output, standard: 250 output bin  Print speed, black (normal): Up to 45 ppm.  Monthly page volume: up to 7,500 |
| Projectors | 2 | 2,800 Lumen, USB Port roof mountable Type EB-518 or equivalent including HDMI cable |
|  |  |  |

* 1. Functional Performance Requirements of the System

The performance requirements for MNSW, referenced as EN.03 are as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Parameter** | **Description** | **Average Response Time** |
| FP1 | Request -Response Time for online Submission of data | The time is the elapsed time between the submission of application form is submitted to the time the response (acknowledgement) is sent back. The time includes the cumulative time of sending the request from the requestor over internet on 256 kbps (minimum) link to the time the acknowledgement page fully loads on the requestor machine | Baseline: Transactions should take less than 5 seconds |
| Low Performance: Transactions take less than or equal to 7 seconds |
| Breach: Transactions take more than 7 seconds |
| FP2 | Request - Response Time for upload of  attachments | The time is the elapsed time between the upload of attachments to the time the upload is completed. The time includes the cumulative time of sending the request from the requestor over internet on 256 kbps (minimum) link to the time the acknowledgement page fully loads on the requestor machine | Baseline: (Size of the file in KBs X 8/ 128) seconds |
| Low Performance: (Size of the file in KBs X 8/ 128) x 1.3 seconds |
| Breach: time exceeds (Size of the file in KBs X 8/ 128) x 1.3 seconds |
| FP3 | Request – Response Time  for generation of standard reports | The time is the elapsed time between the time the request (submission of request) is submitted to the time the response (report generated after data collation and analysis) is sent back. The time includes the cumulative time of sending the request from the requestor over internet on 256 kbps (minimum) link to the time the acknowledgement page fully loads on the requestor machine | Baseline: (Size of the file in KBs X 8/ 128) + 1 seconds |
| Low Performance: {(Size of the file in KBs X 8/ 128) x 1.3} + 1 seconds |
| Breach: time exceeds {(Size of the file in KBs X 8/ 128) x 1.3} + 1 seconds |

* 1. System Management, Administration, and Security Requirements

For reference purposes the system administration functionalities are EN.04.

General Requirements: In addition to the management, administration, and security requirements specified in each section covering the various hardware and software components of the System, the System must also provide for the following management, administration, and security features at the overall system level.

- Technical management and troubleshooting:

- User and usage administration:

- Security:

The system administration aspects should be manageable from a single control panel provided by the system.

The database management aspects should be manageable from a single control panel.

Bidders should describe how the proposed system provides the necessary tools to allow system administrators carry day-to-day system admin tasks including, but not limited to:

* Manage and execute jobs, reports (including report manager), roles, and shared schedules by creating, viewing, deleting, cancelling and modifying while maintaining history (audit trail).
* Analyse system and security logs and identifying potential issues with computer systems, provide notification / alert for serious system or security issue.
* Backup and restore including backup and restore testing
* Login and password Management
* Bandwidth and Network monitoring including
* Disk space monitoring
* Monitoring log files including core files generated in root file system
* Housekeeping of files
* Perform routine audits of systems and software.
* Apply operating system updates, patches, and configuration changes.
* Install and configure existing and new hardware and software
* Ensure that licenses are paid for and up to date for software that need it, maintaining the standards for server installations and application systems, notify / alert for an expected expiry dates.

**Database administration function: -**

The MNSW shall allow the Database Administrator to do the following: -

* Provide Database performance optimization and turning tools.
* Use database monitoring tools
* Provide ability to transferring and Replicating Data from one database to another and exporting data to other applications.
* Maintaining database and ensuring its availability to users, notify and alert when database availability to users is at risk.
* Control privileges and permissions to database users and issue alert when there is an attempt of unauthorized access.
* Provide Database backup and recovery tools
* Provide notification and alerts on any abnormal database performance

**SECURITY**

For reference purposes the system administration functionalities are EN.05.

User Name and Password over a secure connection shall be used to authenticate users and systems communicating to the MNSW.

User name and passwords shall be encrypted.

Access to the data shall be suitably protected through access control mechanisms providing user-based and role-based security.

User administration, authentication and authorization shall be centrally managed independently of the individual applications that might form the System.

There shall only be a single password per user.

In order to provide enhanced security for system access, bidders must provide means for two factor authentication which must be flexible and portable with minimal setup requirements. This enhanced security will not apply to all user categories and the Client can selectively determine for which user category this two factor authentication must apply.

The systems must not be open to manipulation. Data must be secure both internally *and* externally and *there* must be extensive audit trails on what is done by whom. This applies to actions through the front end and backend of the systems.

The system shall provide for software security elements including access control (e.g. single sign on) to ensure that all users are correctly authenticated and authorized to access the system functionality (up to the transaction and record level) they are supposed to access and the system shall provide for possibilities of integrating with the Active Directory users of the Client wherever possible.

The system shall use a combination of IP-level access restriction and VPN-level encryption to ensure the safe transmission of data.

The system shall ensure that all interfaces to external systems are secured using the appropriate levels of encryption and authentication mechanisms. This shall include all messages sent and received.

The application code should be free of OWASP top ten vulnerabilities.

Audit Trails

The application shall provide security logs to store details of all access to all parts of the data and message transactions including attempted security breaches.

The system should have comprehensive auditing and logging feature, where the actions performed by the users are logged with time stamp at the application level.

Audit trails shall be maintained for any changes made to sensitive data in the central database.

The system shall put into place mechanisms to thwart all common forms of attacks including but not limited to SQL injection attacks, cross-site scripting attacks and Denial of Service attacks.

The system shall put into place an intrusion prevention and detection system and ensure that all publicly accessible sections of the system are run from a demilitarized zone. Suppliers are invited to adopt the concept of militarized zone (MZ) and demilitarized zone (DMZ) to implement different security levels for each category of users. Suppliers are also expected to demonstrate how information is exchanged between the MZ and DMZ.

The system shall automatically require users to change their passwords at given intervals. The intervals should be configurable by selected System Administrators

The system shall automatically disable the UserId of any user who does not sign-on to the MNSW within a given interval. This interval shall be configurable by selected System Administrators.

The system should also include hardware security features and device hardening.

**Virus, Spam-ware and Spy-ware Protection**

The system shall deploy or shall work with common software anti-virus packages to ensure the operation of the system is uninterrupted by virus infections, spam-ware infections or spy-ware infections.

The system shall ensure all publicly accessible sections of the system are sufficiently protected against viruses, spam-ware and spy-ware attacks.

The system shall ensure that all web-based sections of the system are sufficiently protected from infection by worms and are sufficiently protected from hackers.

* 1. Service Specifications
* **System Integration**: functional and technical integration of MNSW with stakeholder systems: MCS ASYCUDAWORLD, MPL system, MACL system, ePayment services, …
* **Training and Training Materials:**

**User:** classroom and user manual. Content must include application software end user functions.

**Technical**: System administration, database management, network management, security features, and disaster recovery. Technical manuals, administration manuals and classroom training must be delivered.

**Management:** Training on online queries to access key management tools and generation of management reports

The supplier shall provide all material for all aspects of training, including the provision of user training manuals, and where possible CD-based tutorials and online training for dissemination.

The supplier shall include, within the training program, the training of all system administrators, network administrators, and database administrators. The Client reserves the right to reproduce the training materials for subsequent in-house training of other staff and external users.

The training plan must include assessments to measure the success of training and knowledge transfer. The assessment results must be submitted to the Client for review and confirmation that the knowledge transfer has been successful.

2.5.3 Technical Support:

2.5.3.1 Warranty Service: 1 year for application software, 3 years for servers, workstations, and notebooks, 1 year on other hardware equipment.

2.5.3.2 User support / hot line: Available during business hours 8am to 5 pm, on-call support after business hours

2.5.3.3 Post-warranty maintenance services: As per Section 8

...

* 1. Data Migration / Conversion

The system shall have easy to use tools and scripts to assist in the easy data migration and conversion to the MNSW.

The system shall provide documentation on its database schema vis a vis AsycudaWorld database schema and other relevant stakeholder systems. All relevant SQL scripts and procedures required to undertake the data migration and conversion.

The data migration and conversion to the MNSW database schema shall not result in any loss whatsoever and any modifications and data conversions undertaken to ensure this is a key consideration for the system deployment.

* 1. Documentation Requirements

2.6.1 END-User documents: Two manuals are to be provided: (i) Guide and tips on common use functions (ii) Comprehensive detailed user guide. Documents must be provided in English version

2.6.2 Technical Documents: One complete set of hardcopy documents and one set of documents on CD

Bidders shall provide configuration documentation with regards to the users of the system, their permissions, their roles and the functionality they are allowed to access.

The system shall be provided with documentation of all infrastructure configurations, including VPN configurations, network configurations, server configurations, client configurations and any other aspect in this regard including all relevant scripts/configuration files needed.

Application system documentation must be provided and relevant plans and guidelines must be used to compile documentation about changes to business processes, to basic functions and to interfaces.

User manuals in hardcopy and softcopy format shall be provided to give detailed description of features and guidance on the use of the features.

Data dictionary with proper documentation must also be provided so that the Client can generate ad hoc reports.

The language to be used throughout the MNSW and all its related documentation shall be English.

D. Implementation Schedule

## Implementation Approach and Schedule

**Implementation Phases**

It is proposed that key system features be delivered in phases as described below. The features listed in the phases below is not exhaustive of all the features as requested in this tender document. During project initiation, the phases for those features that are not listed below will be agreed with selected bidder as part of overall project plan preparation. Bidders may propose alternative implementation phases that they view as being more advantageous to the Purchaser who will choose whether to consider such alternate phases or maintain phases below. The “x” in T+ X refer to months for completion phase counting from project start date.

The implementation of deliverables in Phase 1 is key to demonstrate early proof of concept and to secure ongoing buy-in of all stakeholders.

* Phase 1
  + Distribution of Manifest from AsycudaWorld to MPL and MACL systems
  + Receipt of Electronic Customs Release from AsycudaWorld and distribution to other stakeholders
  + Online Permit Processing for CBRAs
  + ePayment interface with BML payment gateway
* Phase 2
  + Gate Out messages from MPL and MACL system to AsycudaWorld
  + Electronic Delivery Order
  + Coordinated Border Management features

Given the dynamic nature of business environment, the features to be delivered within the above phases may be modified subject to agreement between client and selected bidder.

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Milestone** | **Deliverables from Selected Bidder** | **Timeline (T+months)** |
|  | Commencement date | * Signed agreement * Performance bank guarantee | T |
|  | Submission and approval of detailed project plan and inception report | * Project Inception Report | T+1 |
|  | Completion of the detailed process study | * Revised Functional Requirements Specifications Report | T+2 |
|  | Submission of report on system requirements specifications for the MNSW and Contact Centre system | * System Requirements Specifications Report | T+3.5 |
|  | Sign-off on requirements specifications for the MNSW and Contact Centre system | * None (Deliverables for this milestone shall be responsibility of Client) | T+4 |
|  | Submission and sign-off of system design/customizations documents & testing approach & plan documents | * Technical / System Design Document * Traceability Matrix * Test Strategy and Test Plans * Data Migration Plan | T+5 |
|  | Development/customization of application software and approval of solution for UAT | * Prototypes of proposed solution based on the agreed SRS and system design * Test cases, test logs detailing the testing performed and providing evidence of the results achieved | T+9 |
|  | End – user training and Sign- off on completion of training | * Delivery of end user training material * Completion of basic IT training for all the concerned users * Completion of the MNSW system training * Completion of IT system administrator training * Completion of training of agents on Contact centre operation | T+10 |
|  | Configuration & implementation of MNSW system and Call center for Pilot testing | * Deployment plan * Final production deployed source codes bundles * Configured MNSW system in production instance * Migration of data to production instance * Updated & Final System Requirements and Design Documents * Updated project documentation  including Maintenance Manuals for Administration and Maintenance | T+11 |
|  | Pilot Testing (Phase 1) | * Report on outcome of pilot test, error logs, and fixes to problems encountered | T+12 |
|  | Configuration & implementation of MNSW system and Contact Centre in production  environment | * Same as Step 9 | T+16 |
|  | Go Live Phase 1 | N/A | T+16 |
|  | Preparation for Phase 2 | Steps 4 – 9 repeated | T+26 |
|  | Pilot Testing (Phase 2) | * Report on outcome of pilot test, error logs, and fixes to problems encountered | T+26 |
|  | Configuration & implementation of MNSW system for Phase 2 | * Same as Step 11 | T+30 |
|  | Go Live Phase 2 | N/A | T+30 |

E. Maintenance and Support Services

1. Maintenance and Support Requirements and Performance based payment mechanism

The following outlines the overview of maintenance and support services to be provided by Selected Bidder for the MNSW system and related hardware, system software etc. implemented by Selected Bidder.

The Selected Bidder shall address all the errors/bugs/gaps in the functionality offered by the system (vis-à-vis the SRS signed off) during the maintenance and support period.

Selected Bidder should provide the latest updates, patches/ fixes, version updates relevant for the software components. This will also include installation of the necessary patches and application updates at all required locations

For performing of any functional changes to system, which deviates from the signed-off Functional Requirements/System Requirements, a separate Change Control Note (CCN) shall be prepared by Selected Bidder and effort & cost estimates shall be mutually agreed between Selected Bidder and Client at the man-day cost quoted by Selected Bidder for software development/changes in its commercial quote. This cost shall be unchanged during the contract period.

Any changes/upgrades to the software performed during the maintenance and support services shall be subjected to the comprehensive & integrated testing by Selected Bidder to ensure that the changes implemented in the system meets the desired and specified requirements of the Client and doesn’t impact any other function of the system.

Selected Bidder **MUST** prepare detailed proposals on System Maintenance and Support Services in addition to the default OEM warranty. Maintenance and Support services should start from the date of the operational acceptance of the phase 1. Maintenance should be proactively done by the Selected Bidder as per SLA and service should be on-call basis. These proposals should reflect best industry practices and address at least the items discussed in the following sections. During the pilot phase and warranty and maintenance period, Selected Bidder must provide technical Support Services without any additional cost to the CLIENT. Support services requests shall be recorded and the penalties incurred shall be deducted from the payment against the invoice submitted for the specific period of operation and maintenance. The Selected Bidder shall provide the hourly rate for the calculation of the penalties.

**1.1 Principal Period of Support (PPS) Requirements**

The Principal Period of Support (PPS) is from 08:00 a.m. to 05:00 p.m. Sunday through Thursday excluding Public Holidays (Maldives’s Local Time). Selected Bidder **will** provide System Maintenance and Support Services during the above stipulated times.

**1.2 On-Call Services Requirements**

Selected Bidder **will** make qualified personnel available to the Client by telephone, email and / or web access for the reporting and resolution of non-conformities or other problems with the System. Dedicated telephone numbers, emails or URLs should be available for reporting issues. CLIENT will nominate the personnel who are authorized to report non-conformities or other problems with the system. Reporting of non – conformities includes requests by the CLIENT to apply software updates.

If problems have not been corrected within two (2) hours of the initial contact, the Selected Bidder shall send qualified maintenance personnel to the CLIENT’s site to update, correct, repair or replace the affected hardware / software. Such maintenance personnel must arrive on-site within the time limits in the On-Call Service Response Tables for critical and non-critical components, shown below.

If problems are not corrected within the time limits specified in the On-Call Service Response Tables, the CLIENT shall be entitled to a penalty payment (or credit against amounts payable to the Selected Bidder) for each hour that the Selected Bidder fails to resolve the problem or non-conformity.

Selected Bidder notification can occur outside Principal Period of Support (PPS) time. However, “Time to Arrive On-Site” starts from Principal Period of Support (PPS) starting time. “Time to Resolve the Problem” is Principal Period of Support (PPS) time starting from the actual time of arrival on site.

The on-site arrival and problem resolution time limits and penalty amounts are shown below.

On-Call Service Response Table for Critical Components

| ***Site Level*** | ***Time to Arrive***  ***On Site***  ***(in Hours)*** | ***Time to Resolve the Problem***  ***(in Hours)*** | ***Penalties for Delays***  ***(per hour)*** |
| --- | --- | --- | --- |
| Maldives NSWS Data Center and software operation site- CLIENT | 1 | 4 | Hourly rate of senior specialist |

On-Call Service Response Table for Non-Critical Components

| ***Site Level*** | ***Time to Arrive***  ***On Site***  *(in Hours)* | | ***Time to Resolve the Problem***  ***(in Hours)*** | ***Penalties for Delays***  ***(per hour)*** |
| --- | --- | --- | --- | --- |
| CLIENT Maldives NSWS Data Center and software operation site | 2 | 6 | | Half the hourly rate of senior specialist |

The following table defines critical components of the system. By default, any other component not included in this table will be considered as non-critical.

Critical Components

| ***Component*** | ***Description*** |
| --- | --- |
| Software and Servers | The problem causes a total system outage or it severely impairs key functional aspects of the Maldives NSWS. Work cannot reasonably continue; the operation is mission critical to the operation of the Maldives NSWS. |
| Switch, Hubs | The problem causes a total system outage or it severely impairs key functional aspects of the Maldives NSWS. Work cannot reasonably continue; the operation is mission critical to the operation of the Maldives NSWS. |
| Routers | The problem causes a total system outage or it severely impairs key functional aspects of the Maldives NSWS. Work cannot reasonably continue; the operation is mission critical to the operation of the Maldives NSWS. |

**1.3 Help Desk Service Requirements**

The Selected Bidder **will** maintain a Help Desk facility mainly to provide offsite support. The Help Desk facility should be staffed with engineers who will take problem reports, answer technical questions and attempt to resolve problems and non-conformities over the telephone. Help Desk problem resolution time limits and penalty amounts are similar to that of ‘On-Call Service Requirements’ and are given in the tables below.

The engineers should initiate remote problem diagnostic routines and attempt to correct the problems or guide the CLIENT personnel through problem resolution.

Help Desk services and On-Call services must be coordinated by the Selected Bidder in such a way that Help-Desk-initiated calls which may require On-Call services are treated as such and resolved as described in the corresponding On-Call Response Tables.

Help Desk Service Response Table for Critical Components

| ***Site Level*** | ***Time to Resolve the Problem***  ***(in Hours)*** | ***Penalties for Delays***  ***(per hour)*** |
| --- | --- | --- |
| Maldives NSWS Data Center and software operation site- CLIENT | 4 | Hourly rate of senior specialist |

Help Desk Response Table for Non-Critical Components

| ***Site Level*** | ***Time to Resolve the Problem***  ***(in Hours)*** | ***Penalties for Delays***  ***(per hour)*** | |
| --- | --- | --- | --- |
| Maldives NSWS Data Center and software operation site- CLIENT | 6 | | Half the hourly rate of senior specialist |

The following table defines critical components of the system. By default, any other component not included in this table will be considered as non-critical.

Critical Components

| ***Component*** | ***Description*** |
| --- | --- |
| Software and Servers | The problem causes a total system outage or it severely impairs key functional aspects of the Maldives NSWS. Work cannot reasonably continue; the operation is mission critical to the operation of the Maldives NSWS. |
| Switch, Hubs | The problem causes a total system outage or it severely impairs key functional aspects of the Maldives NSWS. Work cannot reasonably continue; the operation is mission critical to the operation of the Maldives NSWS. |
| Routers | The problem causes a total system outage or it severely impairs key functional aspects of the Maldives NSWS. Work cannot reasonably continue; the operation is mission critical to the operation of the Maldives NSWS. |

**1.4 System Availability Requirements**

The system availability is defined in terms of the time that the system, including each one of its components, remains fully operational. The system availability is measured against the operational schedule established by the CLIENT. The planned operational schedule (number of operational hours) by type of site is shown in the following table “Planned Operational Schedule”.

Downtime means that period of time (in hours and whole minutes) during which an error or problem within the scope of the Selected Bidder’s warranty obligations is causing or threatening to cause a disruption to the CLIENT’s normal course of business or operations.

Downtime shall be measured from the time CLIENT makes a bona fide attempt to notify Selected Bidder, either orally or in writing, of a problem, and shall continue until the affected component is fully operational in accordance with the Technical Specifications. Any period of time during which the CLIENT is not carrying on normal business operations shall be excluded from the computation of Downtime.

The CLIENT can claim a Downtime penalty for each hour or fraction thereof for which it is not able to use the system in excess of the total number of hours of Allowable Downtime, as defined in the table “Maximum Allowable Downtime Per Month”. It shall be noted that down time penalties and delay penalties described in “Section 1.3 On-Call Services Requirements” above are independent and cumulative.

Planned Operational Schedule

|  | ***Maldives NSWS Data Center and NSWS software - CLIENT*** | |
| --- | --- | --- |
| ***Days of the Week*** | Sunday – Saturday | Saturday (maintenance) |
| ***Hours/Day*** | 24 | 4 hours system down for maintenance |
| ***Hours/Week*** | 164 |  |
| ***Total Hours/Week*** | 164 |  |
|  |  | |
| ***Total Hours/Month*** | 656+ | |

Maximum Allowable Downtime per Month (in Operational Hours) and the related penalties for any additional downtime are given in the below “Maximum Allowable Down Time and Penalties” table.

Maximum Allowable Down Time and Penalties

|  |  |  |
| --- | --- | --- |
|  | ***Maldives NSWS Data Center – CLIENT*** | ***Penalties for Additional Down Times***  ***(per hour)*** |
| ***Critical Components*** | 2 | One and half times the hourly rate of remuneration of a Senior Consultant |
| ***Non-Critical Components*** | 4 | 75% of the rate of a Senior Consultant |

**1.5 Critical Problem Support Requirements**

In addition to the foregoing, if the CLIENT determines, in its reasonable judgment, that a non-conformity or problem is causing or threatening to cause a disruption in the CLIENT’s business operation (a Critical Problem) at any site, the CLIENT reserves the right to declare a non-critical component as a critical component and request that the component be provided with Maintenance and Support services accordingly, as determined by the previous schedules.

In this case of a conversion of a component from non-critical to critical, the CLIENT will pay the Selected Bidder the Maintenance and Support fees corresponding to the critical components.

**1.6 Reporting Requirements**

The Selected Bidder should provide software programs to measure and report statistics on repair, downtime, maintenance notices, engineers’ arrival on-site, and mean time to repair.

**1.7 Preventive Maintenance Requirements**

The Selected Bidder **will** propose a preventive maintenance program for all critical components in the system. This program should provide at least on a semi-quarterly basis preventive maintenance service to these components and include repair or replacement of parts or components that are likely to fail.

**1.8 Support Structure and Escalation Procedures Requirements**

The Selected Bidder **need to** describe the maintenance support structure that shall be put in place to provide the services described in this Section, identifying which resources will be dedicated to each service at each of the CLIENT sites. The support structure must include facilities for remote technical assistance.

The Selected Bidder **need to** also describe a problem or non-conformity escalation procedure, which shall ensure that the required CLIENT system availability is maintained.

**1.9 Access to Technical Bulletins and Alerts Requirements**

Selected Bidder **will** provide access to technical bulletins and alerts, new and maintenance release and product availability information, and problem resolution and configuration assistance through electronic mail, Internet or BBS (bulletin board service) to the CLIENT. Such a service should be available on a twenty-four (24) hour, seven (7) day basis.

**2.0 On-Site Services Requirements**

In the Piloting phase of the System, Selected Bidder **will** make available onsite technical support personnel without any additional cost to the CLIENT, at locations where the System is implemented. Onsite technical support personnel must provide ‘Handholding’ to users during this period in order for the users to better acquaint themselves with the system.

Selected Bidder **will** also transfer adequate knowledge and skills to the users of the CLIENT and the Operation and Maintenance (O&M) firm appointed by CLIENT during the Pilot phase and during warranty period, in order for them to administer and manage the system on their own after warranty period.

**3.0 Integration, Data Conversion and Migration:**

It is necessary to populate and integrate the Maldives NSWS with existing other systems such as ASYCUDAWorld and other systems, CLIENT website and existing applications of agencies. CLIENT would provide the Selected Bidder access to the existing ASYCUDAWorld, other systems, and Website and its data structure at the time of system study. Selected Bidder is expected to perform the following functions:

3.1 Selected Bidder **need to** perform quality assurance and validation of the data being migrated at least to the same extent as that required for newly entered data of the same kind.

3.2 Selected Bidder **need to** successfully integrate and extract the relevant existing data from the ASYCUDAWorld and other systems, and CLIENT Website, and populate and seamlessly integrate with the Maldives NSWS.

**4.0 Post-Warranty services Period:**

The Selected Bidder MUST be obligated to provide software license/s, maintenance, and/or technical support services for the System during Post-Warranty Services Period specified below:

* + - 1. The Post-Warranty Services Period is **24 months** starting with the completion of the Warranty Period for Servers and Communications/Network Equipment.
      2. The Post-Warranty Services Period is 24 **months** starting with the completion of the Warranty Period for Printers and all other Products.
      3. The Post-Warranty Services Period is 24 **months** starting with the completion of the Warranty Period for Standard and Custom Software.

**5.0 Extended Service Period**

The Extended Service Period shall be 05 (five) years from the date of expiry of Post-Warranty Services Period (the “Extended Service Period”). The Selected Bidder must propose in its bid, an annual fee for software license/s, maintenance, and/or technical support services for the System for the duration of the Extended Service Period, (to the same level of maintenance and service as that of the “Post Warranty Service Period”). The Client shall have the option to accept or reject the maintenance and service component for the Extended Service Period at its discretion.

F. Project Team

1. Team Composition and Qualifications

The requirements of key professional staff from the Selected Bidder is indicated below. The Selected Bidder may modify and improve as they deem best for the assignment.

|  |  |  |
| --- | --- | --- |
| **#** | **Key Professional Staff** | **Qualifications** |
|  | Team Leader | Graduate (preferably post graduate) degree with at least 15 years’ experience including at least 10 years of experience in IT system development. He/ She should have at least 5 years of experience in IT system development in government/public sector preferably in MNSW system design and implementation. Experience in similar assignments is desirable. |
|  | Domain experts in National Single Window | Graduate (preferably post graduate) degree with at least 5 years’ experience in NSW system design. Experience on advising/working for government agencies in reforming the business environment including conceptualization and design of NSW system Experience in at least 1 similar assignment is desirable. |
|  | Business Analysts | Graduate degree with at least 4 years of experience in business process analysis, mapping, documentation etc. in government/public sector agencies. Experience in similar assignments is desirable. |
|  | Application Software Architect | Graduate (post graduate preferred) degree in computer science, computer engineering or a related discipline with at least 10 years’ experience including at least 7 years of experience in application software architecture design. He/ She should have experience of working in government/public sector agencies. Experience in similar assignments is desirable. |
|  | Database Experts | Graduate degree in computer science, computer engineering or a related discipline with at least 7 years of experience including at least 7 years of experience in database design and management. He/ She should have experience of working in government/public sector agencies. Experience in similar assignments is desirable. |
|  | Application Software Development Team Members | Graduate degree in computer science, computer engineering or a related discipline with at least 5 years’ experience in IT system development. He/ She should have experience of working in government/public sector agencies. Experience in similar assignments is desirable. |
|  | Network Engineer | Graduate degree in computer science or computer engineering with at least 5 years’ experience in design, implementation and troubleshooting of network environment. He/ She should have experience of working in government/public sector agencies. Experience in similar assignments is desirable. |
|  | System Security Expert | Graduate degree in computer science or computer engineering with at least 5 years’ experience in planning, securing and monitoring ICT infrastructure. He/ She should have experience of working in government/public sector agencies. Experience in similar assignments is desirable. |
|  | Quality Assurance Engineers | Graduate degree in computer science, computer engineering or a related discipline with at least 5 years’ experience in software testing and quality assurance role. He/ She should have experience of working in government/public sector agencies. Experience in similar assignments is desirable. |
|  | Project Manager Maintenance services | Graduate (preferably post graduate) degree with at least 7 years’ experience including at least 5 years of experience in IT system development, operation & maintenance in government/public sector preferably in MNSW system. Experience in similar assignments is desirable. |
|  | Call Centre Executive | Graduate degree or equivalent with at least 2 years of experience as call centre executive. Proficient in IT system and knowledge of call centre telephony and technology. |

G. Process Flow Descriptions

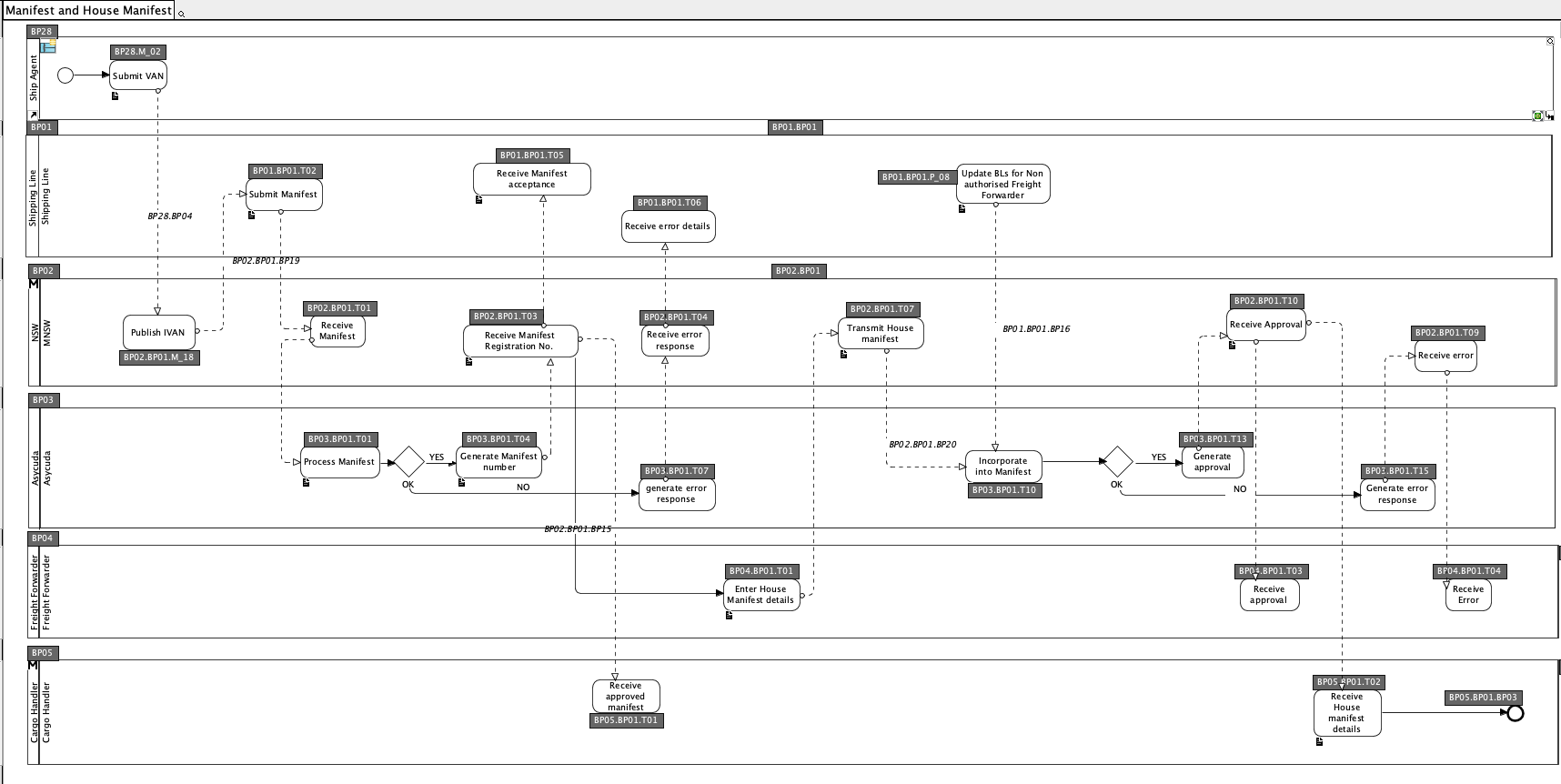
The process flows for specific procedures are described below. This supplementary information is provided to bidders so as to clarify the context for the specific features that are requested.

1. **Manifest Processes**

The main processes for submission of cargo manifest and house manifest are listed below

The process is initiated with submission of cargo manifest from shipping line or airline / airline’s representative.

Once Cargo manifest has been approved by Customs, Freight Forwarders are responsible to enter house manifest details. Shipping Lines, Airlines and Freight Forwarders are required, as per Customs regulations, to submit cargo manifest and house manifest within specific deadlines as per vessel arrival.

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** 1. Submit VAN**

ID: BP28.M\_02

Ship Agent submits vessel arrival notice (VAN) that contains voyage number, expected time of arrival, and number of containers in vessel, by Shipping line. (Ship Agent acts on behalf of feeder vessel operator). VAN notice is available for general access on NSW. VAN must be submitted prior to vessel arrival as per requirements of Maldives authorities.

 2. **Submit** **Manifest**

ID: BP01.BP01.T02

One or more shipping Line submits to NSW general manifest for VAN in format as required by Maldives Customs. Once all manifest information has been submitted by shipping lines, the NSW will transmit manifest to Customs.

 3. **Process** **Manifest**

ID: BP03.BP01.T01

AsycudaWorld provides manifest registration number. Else Error message generated with error details.

** 4. Receive Manifest acceptance**

ID: BP01.BP01.T05

Shipping Line receives manifest registration no. as per approval from MCS.

** 5. Receive approved manifest**

ID: BP05.BP01.T01

Cargo Handler (MPL or MACL) receive manifest approved by MCS.

** 6. Enter House Manifest details**

ID: BP04.BP01.T01

Once shipping line manifest has been approved by MCS, Freight Forwarder enters house BLs for consolidated cargo within time limits to be prescribed by new Customs regulations. NSW will authorise house manifest data entry only from Freight Forwarder associated with BL.

** 7. Shipping Line enters House Manifest details**

ID: BP01.BP01.P\_08

Shipping line enters House manifest details in case of issues with designated Freight Forwarder.

** 8. Transmit House Manifest**

ID: BP01.BP01.T07

NSW transmits to Customs house manifest from Freight Forwarder.

**9. Receive House manifest approval from Customs**

ID: BP02.BP01.T10

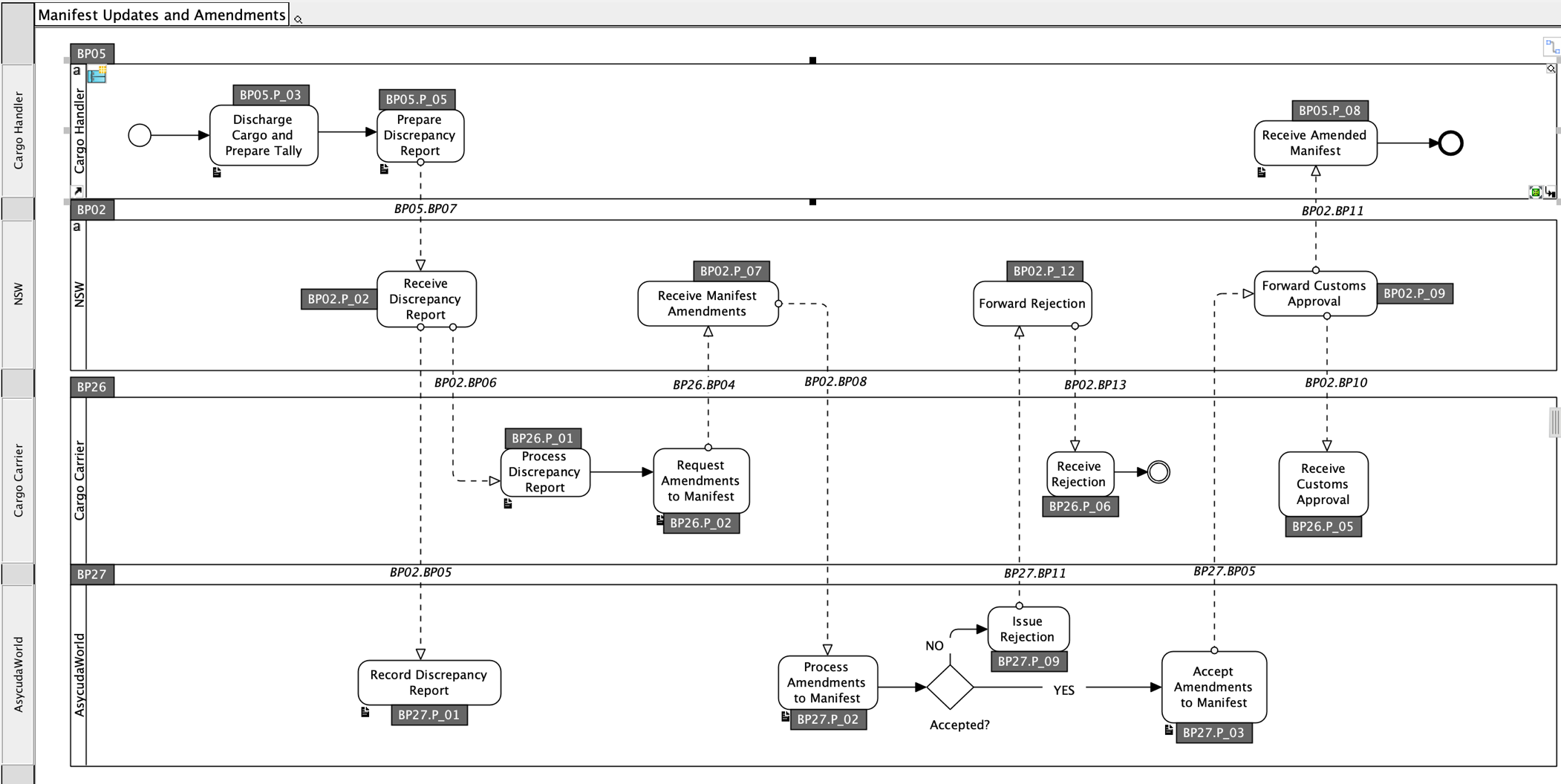
NSW receives from Customs approval of House Manifest. NSW transmits to Freight Forwarder Customs approval and transmits to Cargo Handlers House Manifest details.

** 10. Receive House manifest details**

ID: BP05.BP01.T02

Cargo Handler receives house manifest details as approved by Customs.

**Updates to Manifest**



NSW needs to support the following requirements for the above process flow:

 **1. Submit Discrepancy Report**

ID: BP05.BP\_07

As a result of tally of discharged cargo, MPL / MACL prepares and submits a discrepancy report to submit to Customs and carrier (Shipping Line or airline)

 2. Record Discrepancy Report

ID: BP27.P\_01

Customs receives discrepancy report from MPL / MACL to compare against future request from MPL / MACL for amendments to manifest.

 3. Request Amendments to Manifest

ID: BP26.P\_02

Shipping Line or airline submits amendments to manifest as a result of discrepancy report received from MPL / MACL or other information received by Ship Agent.

 4. Reject Amendments to Manifest

ID: BP27.P\_02

Customs rejects requests for amendments to manifest.

 5. Accept Amendments to Manifest

ID: BP27.BP05

Customs notifies Shipping Line amendments to manifest approved

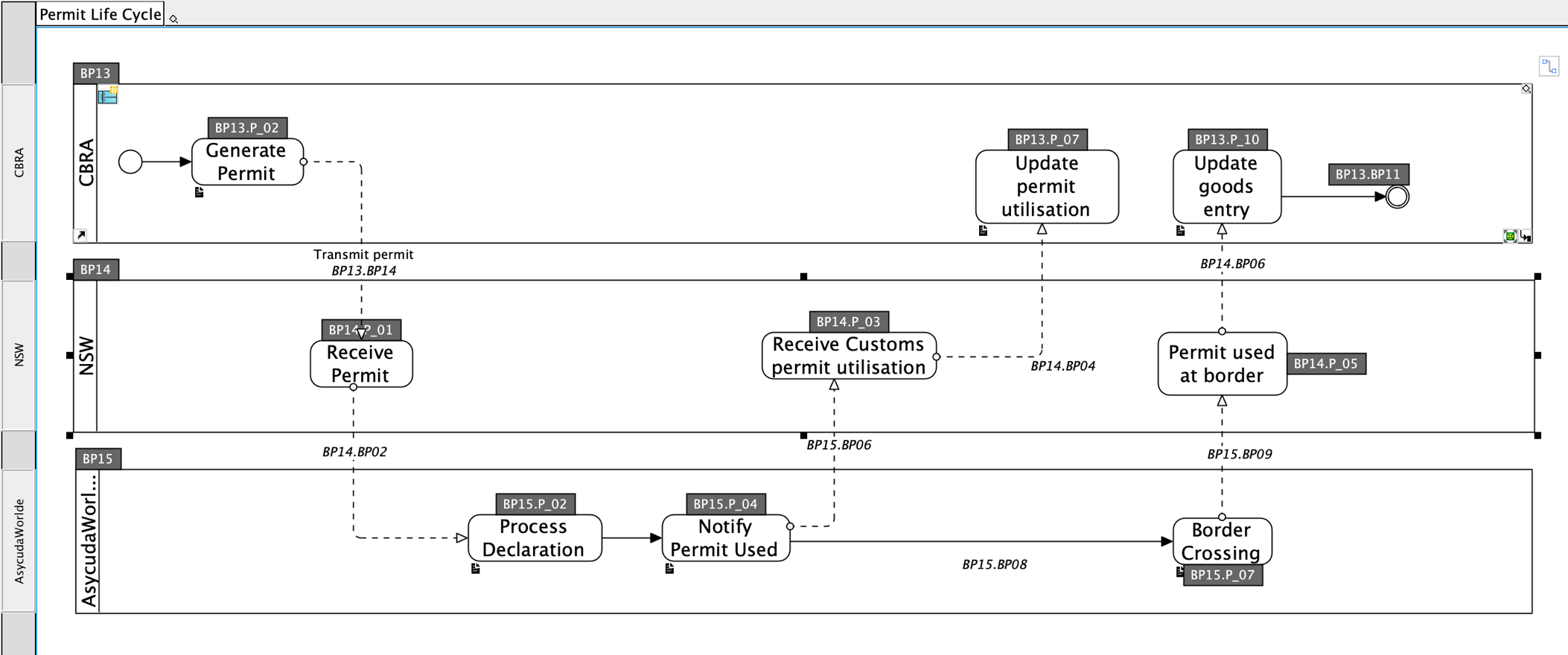
 7. Receive Amended Manifest

ID: BP02.BP11

MPL / MACL receives updated and amended manifest as approved by Customs

1. **Utilisation** **of** **LPCO**

After an LPCO has been issued by a trader, it will eventually be used for import or export transactions. The MNSW shall support the following features that are associated with the use of the LPCO by the trader to support an import / export declaration and by MCS when validating that required LPCO(s) have been obtained for controlled products.



NSW must support the following requirements that are associated with the above process flow:

 1. Transmit Permit

ID: BP13.BP14

CBRA transmits permit to NSW permit

 2. Process Declaration

ID: BP15.P\_04

Using UCR within declaration, Customs can retrieve from NSW all permits associated with the consignment.

 3. Notify Permit Used

ID: BP15.P\_04

NSW sends to CBRA information on (a) permit id utilized (b) quantity imported (c) relevant information from declaration

**** 4. Permit utilisation for declaration

ID: BP13.P\_07

CBRA receives permit utilised, quantity of goods imported / exported, etc...

 5. Permit at Border Crossing

ID: BP15.P\_07

Customs transmits via NSW goods that have crossed border and actual quantity used against permit

 6. Receive goods crossing

ID: BP13.P\_10

CBRA receives from NSW actual quantity of goods that crossed border

1. **Coordinated** **Border** **Management** **Process** **Flow**

To harmonise control of products entering and leaving Maldives borders, CBRAs will align with MCS HScode scheme. The harmonised codification scheme will enable integrated border control actions by MCS and CBRAs. Extension of the HSCode (additional digits) may be required to accommodate commodity sub-categories.

MCS will encode within AsycudaWorld control requirements by HScode as per CBRA specifications. AsycudaWorld controls will be kept updated with CBRA requirements that may evolve.

5 CBRAs have been identified for eventual interaction with the MNSW. The system implementation must be flexible such that MNSW System Administrators can easily add or remove CBRAs as control requirements evolve over time.

For products that are subject to border control by one or more CBRAs, the intended process flow is as follows:

1. The ePermit will be transmitted to the CA and AsycudaWorld. AsycudaWorld will store permit references within a CBRA permit database. Permit reference information issued by CBRAs will include unique permit number, TIN of applicant, validity period of permit and HS code. Depending on the type of permit, additional conditions for permit may include volume or weight allowed, permission to import / export multiple shipments. MCS will match declarations and permits issued by CBRAs and validate permits being referenced by Clearing Agent in declaration. AsycudaWorld will enforce mandatory use of permits since the control requirements will be encoded by HScode.
2. The Clearing Agent will submit a Customs declaration in AsycudaWorld together with the permit(s) reference numbers obtained from CBRA(s).

AsycudaWorld will validates the control requirements for the product(s) declared based on the control requirements that have been pre-established with all CBRAs against the CBRA permit database.

If permit(s) are missing or if there is conflicting information within permit reference, AsycudaWorld will reject the declaration, indicating permit(s) missing or incorrect information.

1. For declarations that have been submitted with necessary permit references, AsycudaWorld will communicate, via MNSW to relevant CBRA(s) subset of declaration information that is required by CBRA(s) as well as any permit reference submitted.
2. CBRA(s) will receive declaration information and permit reference from MNSW.

Upon review of the declaration and permit reference submitted within the declaration by the CFA, and after review of prior application information submitted by the CFA, the CBRA will determine control to be exercised for the product(s) declared. This may include inspection, sampling, etc… or no control required.

The CBRA will transmit its requirement for control to MCS, via the MNSW.

MCS collects and consolidates all CBRA(s) control requirements and integrates with its own control requirements.

1. If one or more CBRA (including MCS Customs) has determined that the consignment needs to be inspected, coordination of inspection will be carried out to optimise presence of clearing agent during inspection. The MNSW control requirements will identify consignment, desired date / time for availability of consignment, government agencies involved, and examination area, if inspection required.
2. Once all inspections have been carried out, MNSW will provide an online interface for each CBRA to enter release or hold for consignment. MNSW will notify outcome of the inspection(s) to the clearing agent. Consignment will be held if any such request is made by one or more CBRAs or MCS’s own internal control. MCS will issue an electronic release message to the MNSW when all CBRAs have approved release.
3. MCS AsycudaWorld will submit release authorisation or hold information for each declaration to MNSW. MNSW will transmit the release / hold information to relevant stakeholders, such as MPL, MACL, the trader, customs brokers (declarants), and other cargo handlers. Cargo handlers that do not have an internal system can have online access to the MNSW to retrieve release authorization message for the consignment

