



APPENDIX G

Infrastructure Asset
Management Procedures

1 Introduction

Asset management procedures outline the tasks to be performed during the entire life cycle of infrastructure, as shown in Figure G-1, to effectively implement the asset management policy. The procedures focus on collecting and managing key information about assets to make timely and informed investment decisions. The procedures also act as a control and monitoring tool for management to provide good governance. Adherence to these procedures will help to make reliable, rational, and optimal decisions during the entire life cycle of assets, including acquisition, operation and maintenance, and disposal of assets.

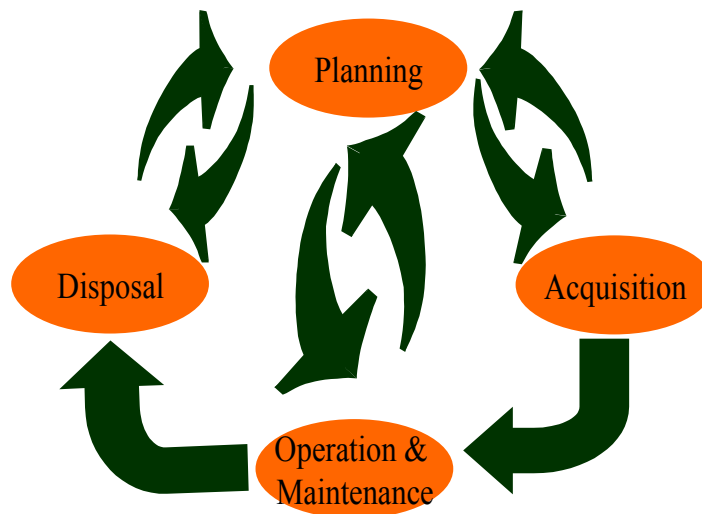


Figure G-1: Asset Life Cycle Management

The following asset management procedures should be undertaken to achieve cost efficient and effective use of infrastructure:

- a. maintain complete and up-to-date information related to infrastructure assets
- b. determine the operating condition of assets using accurate and objective techniques
- c. accurately establish the investment requirements for asset maintenance, renewal, and replacement
- d. develop capital budgets based on optimal timing and scope of investments for asset renewal or rehabilitation and environmentally friendly disposal of assets when assets present unacceptably high risk of failure in service.

2 Asset records management

For each infrastructure asset, the department responsible for the asset should create a file with all pertinent information about the asset, including the technical specifications, design drawings, as-built drawings and the maintenance plan for the asset. Asset records can be kept as an electronic file with scanned images of drawings, specifications, asset nameplate data etc.

The responsible department should also keep an electronic asset logbook containing all relevant operating information about assets, recorded chronologically, including asset performance records, asset maintenance records, asset condition assessment results, and asset failure (if the asset fails in service).

The logbook records are intended to serve as institutional memory. Matching the asset requirements to its actual service delivery should result in the assets being correctly specified in terms of required capacity, performance, and environmental resiliency.

3 Asset procurement plan — technical standards and specifications

The department responsible for managing the infrastructure should ensure that during procurement, construction, and installation that the technical specifications and construction standards take into account any lessons learned from use of similar assets in the past, including asset operation in a harsh climate and corrosive operating conditions. For example, equipment housing and enclosures should be either stainless steel or the thickness of the enclosure should be increased to compensate for the high corrosion rate or corrosion-resistant coatings and paints should be specified.

It is highly desirable to use standardized specifications and construction designs. Construction standards and standardized procurement specifications should be developed for infrastructure assets. There is also a need for national building code to standardize construction.

4 Asset maintenance plan

For each asset in service, the department responsible for the infrastructure should prepare and implement an asset maintenance plan, specifying maintenance activities and the intervals they should be undertaken. Asset maintenance plans take into account equipment manufacturer's recommendations. Appendix B provides guidelines for developing maintenance plans for various assets.

The department responsible for each infrastructure assets should undertake all maintenance activities required by the maintenance plan and keep records of maintenance in a logbook. For each asset in service, the operating department must prepare a maintenance budget annually for the following year.

5 Asset disposal plan

For each asset in service, the department responsible for asset management shall prepare and implement an asset disposal plan. The asset disposal plan must include specific activities needed to salvage recyclable components and dispose of the waste in a safe and environmentally sound way when an asset is retired from service, particularly assets containing hazardous materials. Appropriate disposal costs related to assets being retired should be included in cost estimates of asset renewal projects.

6 Benchmarking service level performance

For each asset class, the responsible department should establish transparent and objective criteria for benchmarking service level performance in form of service level index. The service level should be based on the relevant service level indicators for that asset, such as the number of safety incidents, accidents, reliability, operating costs, public complaints, and the results of stakeholder interviews and surveys.

Where service level benchmarking requires stakeholder or asset user surveys, both women and men should be included in the survey in equal ratios to prevent survey bias.

The responsible department should also perform service level performance assessment for each asset class annually and record the service level index for each asset class in the asset log book.

7 Asset capacity assessment

For each asset class, the responsible department should establish transparent and objective criteria for capacity adequacy assessment of assets in the form of capacity adequacy index. Assessment criteria should detail the gap between supply and demand for services provided by the asset class. Guidelines for benchmarking asset capacity for different asset classes are documented in Appendix E.

The responsible department should undertake the adequacy of asset capacity for each asset class annually and record the capacity adequacy index in the master asset logbook. Table G-1 shows the interpretation of capacity adequacy index results and the required action for asset classes in different capacity adequacy categories.

Table G-1: Capacity adequacy index interpretation and required action

Capacity Adequacy Index	Interpretation	Required Action
1	Very Poor	Prepare NPP for addition of new assets (high priority)
2	Poor	Prepare NPP for addition of new assets (high priority)
3	Fair	No Action Required
4	Good	No Action Required
5	Very Good	No Action Required

8 Asset condition assessment

For each infrastructure asset, the responsible department for an asset's management should establish transparent and objective criteria to assess the condition of the asset. Asset condition assessment criteria should include all relevant information on an asset's condition collected from visual inspections and testing and, where applicable, also include asset maintenance history and an obsolescence ranking. By applying appropriate weights to various condition indicators, an asset's Remaining Service Potential (RSP) can be calculated. Guidelines for asset condition assessments and determination of RSPs are documented in Appendix E.

The responsible department should assess an asset's condition at required intervals and record the condition score for each condition indicator, as well as the RSP in the asset register. Table G-2 shows the interpretation of RSP results and the required action.

Table G-2: RSP interpretation and required action

Remaining Service Potential (RSP)	Interpretation	Required Action
0-25	Very Poor	Prepare NPP for asset replacement - (High Priority)
26-50	Poor	Prepare NPP for asset replacement
51-70	Fair	Continue with recommended maintenance
71-85	Good	Continue with recommended maintenance
85-100	Very Good	Continue with recommended maintenance

For complex assets, asset components that can be individually renewed (e.g. roof of a building, or surface seal in case of a road), a condition score of individual components should be reviewed and interpreted for appropriate action, in accordance with Table G-3.

Table G-3: Component condition interpretation and required action

Component Condition	Interpretation	Required Action
1	Very Poor	Prepare NPP for component renewal - (High Priority)
2	Poor	Prepare NPP for component renewal
3	Fair	Continue with recommended maintenance
4	Good	Continue with recommended maintenance
5	Very Good	Continue with recommended maintenance

9 Unit costs for asset replacement and renewal

For each asset in service, the responsible department should maintain accurate unit costs for preparing cost estimates for asset replacement or component renewal.

Estimates of replacement costs should be prepared by applying suitable adjustments for inflation and by including the full cost of asset acquisition, including procurement, transportation, construction, testing and commissioning, as well as the cost of disposal of existing assets that are being retired.

Per unit costs for 2019 used in the asset register are documented in Appendix F and the asset register will automatically calculate asset replacement and component renewal costs.

10 Plan for asset renewal or replacement

For the assets determined to be in “poor” or “very poor” condition, the responsible department should prepare a New Project Proposal (NPP) to renew or replace the asset by considering all alternatives and selecting the optimal solution. Project specifications must take into account the harsh corrosive operating environment in Nauru and any other site-specific operating requirements. When preparing the asset renewal plan, institutional strengthening and capacity building through knowledge transfer and skills development must be incorporated into the asset procurement plans.

For assets involving complex design, consideration should be given to extended parts and labor warranties (3 to 5 years), including on-the-job training for local staff in asset operations, troubleshooting, and repair and maintenance. For the assets being retired from service, adequate funding should be allowed for proper disposal.

A list of the planned investment projects must be submitted to the Department of Infrastructure and Ministry of Finance by the department responsible for the asset.

11 Investment plan for asset renewal or replacement

Using the criteria and process described in detail in Appendix F and by taking into account available funding, the Department of Infrastructure, in conjunction with the Ministry of Finance, will prioritize the investment projects submitted and develop a schedule for project implementation.

12 Maintain the asset register with current information

The purpose of maintaining the asset register with current information is two-fold:

1. to have management control over the assets of significant value and accurately reflect asset values in the asset register (accounting function)
2. to provide an accurate picture of asset performance and condition for financial planning for asset maintenance and renewal.

The following information is required to be kept current in the asset register and the following tasks must be undertaken annually by the Asset Director.

12.1 Tasks at the beginning of each year

- Change the current year in cell “C1” of each worksheet.
- Update the inflation for the previous year in Cells “BI2 through to BS2” in the worksheet titled “Inflation adjustments”. If this information is not available, leave the inflation as the default value of 2.5%, already entered in the worksheet.
- Completing these entries will automatically update the following information for all assets in the asset register:
 - asset gross replacement cost (GRC)
 - annual asset maintenance cost
 - accumulated depreciation
 - current book value.

12.2 Updating asset condition

After asset condition assessment, update the condition of assets using the dropdown menu button (rating scale 0–5).

Updating the asset condition will automatically change the RSP of the assets. When the RSP drops below acceptable levels, the cell color will change, indicating it is time to plan asset renewal or replacement.

12.3 Adding new assets

When a new asset is added to the system, create asset records in the next vacant row. Fill in all the cells colored cream yellow and the locked cells will automatically populate.

For the complex infrastructure assets with multiple components, such as buildings, roads, and the runway, there is no need to enter construction costs. Enter dimensions, such as the number of stories of buildings, the year of construction, and the sub-type of each component, and the worksheet will automatically calculate the construction costs and populate all the cells with financial information. The estimated cost cells can be overridden with the actual construction costs. However, the cost of each asset component must be entered for the model to automatically update the financial data in future.

12.4 Removing an asset when it is retired

When an asset is retired from service, change the asset status from “in service” to “retired”. This change will automatically reduce the maintenance cost for the asset to 0 for future years.