



Indian and Northern  
Affairs Canada

Affaires indiennes  
et du Nord Canada

# TECHNICAL SUPPORT DOCUMENT

CAPITAL PROJECT EVALUATION GUIDELINE

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CAPITAL PROJECT EVALUATION GUIDELINE

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CAPITAL PROJECT EVALUATION GUIDELINE1.0 INTRODUCTION1.1 Background

With the increasing emphasis on accountability within the public sector, the delivery of capital projects in an efficient, effective and economic manner is of increasing concern. This concern has lead to increased usage of such concepts as facility life-cycle costing and cost/benefit ratio in the decision making process. However, these tools do not recognize the differences between planned and actual results. Thus, there is a need to systematically review and analyse information on the project delivery process including project planning, design, construction and commissioning, in order to improve the management and delivery process of future projects.

1.2 Purpose

This document supports DRM 10-7/6, Functional Review and Capital Project Evaluations. Its purpose is to provide the evaluation team with sufficient guidance to carry out a thorough and professional evaluation of capital projects and prepare a report which will help to improve the project delivery process in the future.

1.3 Users

This document is for the use of all departmental staff and consulting firms involved in the capital project evaluation program.

1.4 Scope

The main objective of the capital project evaluation program is to improve the project delivery process. By appraising the results of current policies, procedures and standards, changes can be made to project planning and delivery. The scope of an evaluation includes project initiation, technical planning, design, construction, hand-over procedures and subsequent technical operations.

### 1.5 Definitions

Capital project: the construction of a facility with an established objective, scope, completion date and budget.

Evaluation: a systematic accumulation of valid and reliable evidence on the manner and extent to which activities satisfy prescribed objectives, including the identification of variances and their effects, together with recommendations designed to improve future implementation.

Functional operation: the carrying out of day-to-day activities for which the facility was designed, for example, the functional operation of a school is education.

Technical operation: the proper technical functioning of the facility and its ancillary equipment in support of functional operations, for example a ventilation system must be operating.

### 1.6 Policy

DRM 10-7/6 details the departmental policy for a capital project evaluation program. Also, Chapter 145 of the Treasury Board Administrative Policy Manual requires that capital project evaluations be undertaken and the projects be evaluated in terms of:

- a. attainment of overall project objectives and the resources required;
- b. meeting target dates and costs throughout the project;
- c. responsiveness to user needs;
- d. quality of workmanship;
- e. adherence to policies, standards, guidelines and specifications;
- f. deficiencies and problems; and
- g. recommendations which might affect future projects.

The Memorandum of Understanding between DIAND and Public Works Canada (PWC), dated June 16, 1978 paragraph 10 states that DIAND shall, in collaboration with the PWC design and construction manager, prepare an evaluation of the entire implementation process for each completed PWC project.

DRM 10-7/9, Procedures for Implementing Projects through the General Services Agreement requires capital project evaluations for projects implemented for DIAND by the Governments of the Northwest Territories and/or the Yukon.

1.7 Authority

Capital project evaluations are carried out under the authority of the Director-General, Technical Services and Contracts (TS&C) Branch and the regional directors and managers of engineering and architecture (E&A).

1.8 Resources

Project evaluations can be undertaken by TS&C or regional E&A personnel, or by engaging a private consulting firm. The decision will be based on availability of staff and local consulting firms and budgetary considerations. All costs will be borne by either TS&C or regional E&A budgets and will be programmed for on an annual basis. PWC costs will be negotiated between TS&C or regional E&A and their PWC counterpart.

1.9 Project Selection

Ideally all projects should be subject to a capital project evaluation but, owing to the size and diversity of the capital program, this would prove impossible with the available resources. Therefore, only a representative sample of projects completed in any one year in each region will be evaluated.

The projects to be evaluated will be subject to the following:

- a. A maximum of two projects undertaken by PWC on behalf of DIAND should be evaluated in each region. These reviews will be undertaken jointly

by either the TS&C Branch and PWC headquarters, or by the regional E&A unit and the PWC design and construction manager.

- b. A minimum of three Vote 10, Vote 15 or Vote 25 projects should be evaluated annually by the regional engineering and architecture unit.
- c. TS&C Branch should evaluate annually, with regional engineering and architecture support, one project in each region, exclusive of PWC projects.

In choosing projects to be evaluated as part of the annual program, the following factors should be used to obtain the widest range of projects possible:

- a. technical disciplines (architecture, water and sewer, etc.);
- b. location (urban, rural, remote);
- c. project complexity; and
- d. project cost.

#### 1.10 Evaluation Timing

Projects completed in one fiscal year should be examined in the first fiscal year that meets the following criteria:

- a. The facility has been operational for a minimum of 12 months; or,
- b. if the facility is subject to seasonal variations, it has operated through the most severe season.
- c. If site work is involved, the site should be free of snow cover so as to permit inspection.

#### 1.11 Consultant Selection

If consulting firms are selected to carry out project evaluations, the terms of reference written for the contract proposal should specify the skills and

knowledge required to successfully meet the objectives of the evaluation process. This should include the following:

- a. knowledge of project management techniques;
- b. knowledge of federal government practices in the construction field, in particular those of DIAND; and
- c. technical knowledge in the discipline of the project to be evaluated.

Appendix D contains sample terms of reference for the hiring of a consultant.

#### 1.12 Project Evaluation Team

The team should be composed of a team leader and as many team members as required by the size and complexity of the project. For most projects, the team will consist of only two people. For PWC projects, the team should be augmented by a representative from PWC. At headquarters, the team leader will report to the division chief and director who is functionally responsible for the subject of the evaluation. At the regional level, the team leader will report directly to the regional director, E&A.

Members of the project team for design and construction will not normally be members of the evaluation team.

For evaluations carried out by consultant, the size and scope of the evaluation team will be as specified in the contract proposal. It will depend on such factors as:

- a. the complexity and size of the project; and
- b. the range of abilities of the individual employee.

#### 1.13 Activities

A project evaluation will consist of the following activities:

- a. writing and approval of terms of reference;



- b. a pre-visit document review;
- c. a field visit including document review, interviews and a project site visit;
- d. writing and approval of the draft report;
- e. approval of the final report; and
- f. its distribution.

The following additional activities are required when a consultant is hired to carry out the evaluation:

- a. the calling for proposals, evaluation of proposals and the award of the contract;
- b. the coaching of the consultant to ensure that the objectives are being met; and
- c. the financial control of the contract.

#### 1.14 Enquiries

All enquiries concerning the project evaluation process should be directed to the Head, Functional Review and Evaluation Section, TS&C Branch, or the regional equivalent.

### 2.0 RESPONSIBILITIES

#### 2.1 Team Leader

The team leader is responsible to the functional division chief for TS&C evaluation, or to the regional director, E&A for regional evaluations. The team leader must ensure that the entire evaluation is carried out in a thorough and professional manner. This includes:

- a. planning the evaluation, and scheduling the visit to the region/district and to the project site;
- b. writing the terms of reference;

- c. ensuring that adequate study and research of applicable policies, standards and guidelines, and project documents is carried out by the entire team;
- d. contacting the region/district/band and establishing lines of communication -- for TS&C evaluations, the regional coordinator will contact the band;
- e. ensuring that all administrative arrangements are made (budget, travel, typing, etc.);
- f. participating in the selection of team members;
- g. controlling and coordinating the duties of the team members;
- h. chairing all briefing and debriefing sessions;
- i. coordinating the writing of the report and obtaining all required comments and approvals; and
- j. meeting all milestones and deadlines.

## 2.2 Team Members

Team members are responsible to the team leader for:

- a. actively pursuing the objectives of the evaluation;
- b. actively participating in all evaluation activities;
- c. studying and researching all relevant policies, standards, guidelines, and project documents;
- d. meeting deadlines assigned by the team leader; and
- e. making personal travel arrangements (travel demand, travel claim, etc.).

## 2.3 Regional/District Coordinator

If required, a regional or district coordinator should be named by the regional director, E&A, whose responsibilities will include:

- a. obtaining and collecting all relevant project documents -- this may include forwarding of documents as requested to the team leader prior to the field visit;
- b. obtaining permission from the band to enter the reserve to visit the project, where applicable;
- c. assisting the team leader in scheduling the interviews with appropriate region/district/band staffs and ensuring that they are available as requested; and
- d. making administrative arrangements (booking conference rooms, reserving department vehicles, arranging for airplane charters to remote sites, etc.).

#### 2.4 Capital Project Evaluation Program Coordinators

The capital project evaluation program coordinators will assist the evaluation teams within the Branch as follows:

- a. maintaining a schedule of activities for each evaluation;
- b. reviewing the terms of reference and advising the author of any problems;
- c. reviewing the draft report and providing assistance to the team leader in maintaining a high standard; and
- d. reviewing the final report and advising the proper authority that the Branch standards have been achieved.

#### 3.0 TERMS OF REFERENCE

Terms of reference are the responsibility of the functional manager and the team leader. They are normally drafted by the team leader under guidance from the functional manager. At TS&C Branch, the appropriate director will sign the covering letter sent with the



terms of reference to the region, thereby approving them. At the region, the director/manager, E&A will approve the terms of reference by means of a memorandum to the team leader. The terms of reference should include the following:

- a. the objectives of the evaluation in specific terms;
- b. a brief description of the project;
- c. a list of the relevant policies, standards and guidelines to be used for the evaluation;
- d. a detailed list of all pertinent documents required for the pre-evaluation document review and the field visit;
- e. the members of the evaluation team;
- f. the names and titles of all the personnel to be interviewed;
- g. a schedule including detailed timings for the field visit and all important milestones;
- h. a checklist to serve as a memory aid for the team members (Appendix B gives a checklist that could be used); and
- i. any particular information or objectives that differentiates the evaluation from a standard one.

The terms of reference should be approved at least 4 weeks prior to the field visit. This will allow the region/district staff sufficient time to collect the relevant documents and the evaluation team sufficient time to do a pre-evaluation study.

For TS&C evaluations, the terms of reference should be sent to the regional director E&A 4 weeks prior to the field visit, and any conflict with the region should be resolved by the Director, Professional Services, prior to the field visit.

Appendix A shows a recommended format which can be modified to suit the particular evaluation. The objectives, as shown, will normally be used unless a particular requirement exists.

#### 4.0 PRE-VISIT DOCUMENT REVIEW

The project documents, as requested in the terms of reference, should be available to the team at least two weeks prior to the field visit. This could include the following:

- a. the DIAND project brief, program and/or PWC project brief;
- b. all Project Identification and Change Documents (PICD's);
- c. a complete set of the contract plans and specifications and the "as-constructed" plans;
- d. the contribution agreement and technical terms and conditions (if appropriate); and
- e. the completion report (if available).

These documents and all relevant policies, standards, and guidelines will be reviewed by all team members to fully acquaint themselves with the project. The project documents will be returned to the evaluation coordinator after the field visit.

#### 5.0 FIELD VISIT

The field visit by the evaluation team will normally require 3 to 5 days including travel time and will consist of the following stages.

##### 5.1 Briefing

The team leader will brief the regional director, E&A as soon as possible upon arriving at the regional office. This meeting will provide a convenient means of

introducing the team, reviewing the objectives and scope of the evaluation, and confirming the schedule and availability of the E&A and program staff. Any particular aspect of the project that the regional director wishes to have investigated can also be presented at this time.

For regional evaluations, and where district offices exist, this briefing will take place at the district office with the district manager.

## 5.2 Document Review

The evaluation team will require access to all files, documents, and correspondence related to the project. This will normally be found in the following files:

- a. the project file,
- b. the contract administration contract file,
- c. the program manager's file, and
- d. the central registry file.

The following are some of the documents that should be verified (for a more complete list of what a project file should contain see TSD-4-3, Project Files):

- a. all contract documents, consultant and/or construction, including contract amendments, and interim and final acceptance;
- b. all fund certifications and PICDs;
- c. all construction reports including field notes and minutes of site meetings;
- d. all PWC physical and financial reports;
- e. all schedules including overall project schedules, construction schedules and cash flow predictions;
- f. as-constructed plans;
- g. PAS computer read-outs;
- h. post-construction reports; and



i. Band Council Resolutions.

The purpose of the document review is:

- a. to gain more data in order to achieve a complete picture of the project and the project delivery process used on this project;
- b. to evaluate the quality of the file systems used by the project manager and the contract administration section; and
- c. to evaluate the cost, quality, and time controls used and their compliance with established policy, in particular DRM 10-7/4, Project Management.

5.3 Interviews

The interviewing of management, supervisory and operating personnel is one of the most effective methods of gathering facts, if used objectively. The reviewer is, however, cautioned that in an interview, opinions and comments must be assessed in relation to other factual information and must not be used exclusively to formulate conclusions.

In conducting an interview, the following techniques are recommended:

- a. Establish a friendly and relaxed atmosphere, and, if at all possible, conduct the interview in a location that affords some privacy and freedom from interruption.
- b. State the purpose of the interview at the outset.
- c. Listen attentively and carefully; note the answers and opinions given.
- d. Do not make comments, commitments, or recommendations which might bias the responses.
- e. Ask questions that will get answers by:
  - (1) deciding beforehand what information is required;

- (2) keeping the questions simple;
- (3) wording each question in a clear, concise manner, so it is recognized as a question;
- (4) avoiding the use of the word "because";
- (5) waiting for a response, once a question has been asked; and
- (6) forming the questions to encourage detailed responses. Use open-ended questions (beginning with how, what or why) to probe for more information and close-ended questions (beginning with do, will, or are) to establish position or commitment.

#### 5.4 Site Visit

It is essential that a site visit be made for a capital project evaluation by the evaluation team. The purpose is:

- a. to provide the team with a better appreciation of the scope and nature of the project, its location, site conditions and overall suitability to the site;
- b. to interview the user client, including territorial government, band chief, band manager, maintenance supervisor, band members and employees to ascertain user satisfaction and/or problems;
- c. to verify that the initial project objectives have been attained; and
- d. to verify the quality of design and construction in relation to plans and specifications, policies, standards, and guidelines.

The DIAND project manager should participate in the site visit as well as the PWC design and construction manager (if applicable).

### 5.5 Preliminary Draft of Recommendations

After completing the document review, interviews and a site visit, the evaluation team should have a clear and complete understanding of the management process used and of the final constructed product.

The team should meet to review all the information now available, review the checklist and the objectives of the evaluations and establish the major findings and recommendations.

### 5.6 Debriefing

Before leaving the regional headquarters, the evaluation team leader should meet with the regional director, E&A to discuss the findings of the team. The major recommendations should be addressed at the time and the comments noted and resolved.

This same procedure will apply for regional evaluations at the district level.

## 6.0 CAPITAL PROJECT EVALUATION REPORT

### 6.1 Organization of Work

Immediately following the field visit, the team leader should organize the team to ensure that the report will be written in the most efficient, logical, and professional manner. Each member should be given specific writing tasks. The team leader should not write the report in isolation from the team members. It is imperative that the team follow a consistent format and writing style so that rewrites and revisions are kept to a minimum.

### 6.2 Report Format

The format in the following sections should be adhered to as closely as possible. Deviations should be made only in exceptional circumstances.



### 6.3 Report Number and Text Numbering

For TS&C evaluations, the cover for both draft and final reports will be as specified by the Technical Information and Publications Section. The text will be numbered as shown below.

For regional evaluations and consultant reports, the established regional procedures apply.

### 6.4 Language

Reports will be written in French for projects in Quebec and in English for all other regions.

### 6.5 Index

Immediately following the covering page, there will be an index listing all the sections and the annexes.

### 6.6 Management Summary (Section 1.0)

This section will contain a brief resumé of the evaluation report. A summary of the key findings and recommendations should be made as well as an overall assessment of the evaluation. This is an excellent place to highlight the positive aspects of the evaluation. Remember, the management summary is an abstract that should induce the reader into reading the complete report or allow the busy reader to get the important recommendations quickly, so it should be made interesting. To be effective, it should normally not exceed one page.

### 6.7 Introduction (Section 2.0)

This section should include the following sub-sections:

#### a. General Remarks (2.1)

This should be a short paragraph stating the subject of the evaluation, where the project is located, when the field visit was done and who was on the team.

b. Objectives (2.2)

This paragraph should repeat the objectives, as stated in the terms of reference, and if necessary, any changes that were made to these objectives and why.

c. Scope (2.3)

This can be a short statement, specifying what aspects of the project were investigated, for example, design and construction only, or preliminary planning, detailed planning, preliminary design, detail design, tendering and contract award, construction and operation.

d. Participants (2.4)

The names of all people interviewed should be listed as well as their position title. The names of the evaluation team should be restated.

e. Procedures (2.5)

This includes a description of how the evaluation was carried out, for example, document review, interviews, site visits, etc.

f. Background (2.6)

If there is something particularly different about this project because of some external fact or event this can be shown here, for example, a major restructuring of regional headquarters during project implementation or a significant change in E&A staff.

This section is optional.

6.8 History of Project (Section 3.0)

This should be a short narrative about the project and include:

- a. a technical description of the project, for example, a sewer collection system, with hook-ups

to 53 lot lines, 2 lift stations with 2 electric pumps each and a two cell lagoon located 4 km west of the community;

- b. a summary of the major events, participants and agencies involved starting as far back as possible, such as the five-year plan, and ending at the hand-over session -- it should be in chronological order and should concentrate on events that directly affect the management process, for example:
  - (1) initial PICD,
  - (2) feasibility studies,
  - (3) Treasury Board Authorizations (preliminary and effective),
  - (4) Design - consultant contract - start and finish, and
  - (5) contract award; and
- c. a summary of all costs and budgets including a comparison of class D, C, B and A estimates, and final costs. All changes in estimates and budgets should be noted.

Remember, a project evaluation is not a project audit. Only information relevant to the project management process is important. Information such as the consultant's name and address or the sub-contractors are not required for a project evaluation.

## 6.9 Findings and Recommendations (Section 4.0)

### 6.9.1 General Remarks

This section should be sub-divided in accordance with each objective as stated in the terms of reference and Section 2.2 of the evaluation report. Each objective will become a sub-section to be titled and numbered, for example, 4.4 Quality of Work.



This section of the report is the most difficult one to write because it is essentially the basis of the evaluation process. Without constructive recommendations, the report becomes merely a record of facts.

Also, it is important to stress that the writing style is critical to the success of this report. Each lead paragraph will be titled "Finding" and will contain only facts that support one and only one idea or concept. The recommendations that follow immediately after the finding must flow naturally and logically from that finding. After reading the findings, the reader will know already what recommendations will follow and should be convinced of their validity. Each recommendation is entitled "Recommendation" and numbered sequentially in relation to the subsection, for example 4.4.1.

All recommendations must designate a staff member, by position, to take the required action. Except under exceptional circumstances, each recommendation will have only one designate.

Each objective of the evaluation must be addressed in a clear and concise manner. The following are elaborations of these objectives.

#### 6.9.2 Attainment of Overall Project Objectives

This section requires a brief description of the original capital project objectives. This should be available from the project brief, the PICD, and/or the Treasury Board submissions. Combined with information obtained on the site, a comparison can be made to show any changes during the course of the project and to show that the final product met the original project objectives.

#### 6.9.3 Effective Use of Available Resources

This section requires a discussion of the materiel, human and financial resources that were available to the project manager. Then a comparison can be made to show what resources were employed on the project, and how effectively they were used to deliver the facility in the shortest time for the least cost and to the highest quality possible.

#### 6.9.4 Cost and Schedule Control

On the project, were all the established systems for cost and schedule control used? What was the result of these controls? Was the project on time and within budget?

#### 6.9.5 Responsiveness to Users' Needs

Were the users consulted at all stages of the project from initiation to commissioning? Did the project team respond positively to the users' opinions? Was a user a member of the project team? Were any changes implemented specifically at the request of the users?

#### 6.9.6 Quality of Work

Was the quality of work in the facility reasonable for the type of construction? Was it "state of the art?"

#### 6.9.7 Adherence to Policies, Standards, Guidelines and Specifications

What are the applicable policies, standards and guidelines for the project? Were they followed? If not, why not? Is there a need for changes or additions to existing policies, standards and guidelines that this project brings to light? Were the specifications strictly followed? If not, why not?

#### 6.9.8 Deficiencies and Problems

Are there any outstanding deficiencies on the project that have not been resolved? Did the user highlight any errors or omissions in the design? Did the evaluation team observe any problem areas. Was the facility and the related infrastructure operating properly? If there are deficiencies and problems, why did they occur? Is it a result of bad design, bad supervision or bad construction techniques? Can these mistakes be avoided next time?

#### 6.9.8 Recommendations Affecting Future Projects

This section can be used to make recommendations, supported by findings, of any aspect of the project that does not fit into the preceding sections.

## 6.10 Annexes

The use of annexes should be limited to relevant information that will substantiate the findings in section 4.0 of the report. The only mandatory annex is the terms of reference. Do not include additional annexes to increase the size of the report or simply to prove the existence of a document. All annexes must be referenced somewhere in the report.

## 7.0 TS&C REPORT APPROVAL PROCEDURE

### 7.1 Milestones

Every report will be controlled by two milestones, the approval by the Director of Policy Services of the draft report and the approval by the Director General of the final report.

### 7.2 Responsibilities

The team leader has the ultimate responsibility to ensure the quality of the report and its completion on schedule.

The following people will be responsible to assist the team leader in the control of quality and time:

- a. team members;
- b. division chief (functional);
- c. Director, Professional Services;
- d. Head, Functional Review and Evaluation;
- e. Senior Policy Adviser; and
- f. appropriate regional director, E&A.

### 7.3 Authority

The Director, Professional Services at TS&C Branch should authorize the release of the draft report to the region for their comments, and should also sign the covering letter.

The Director General, TS&C Branch will authorize the release of the final report for publication and distribution.

#### 7.4 Timing

Under normal circumstances, the following time will be allocated to the production of the report:

- a. draft report - 5 weeks after return from field visit; and
- b. final report - 6 weeks after draft report milestone.

#### 7.5 Typing

The word processing pool will be used in order to facilitate corrections and revisions. The draft report should be double-spaced and the final report should be single-spaced.

#### 7.6 Covering Letters

The covering letter for the release of the draft report should be kept simple. Appendix C gives a sample. The region should be allowed no more than two weeks to respond, and if required, a reminder should be sent under the authority of the Director, Professional Services.

The covering letter for the release of the final report is the personal letter of the Director General and must be written as such. It should stress the recommendations that require immediate action or are of a serious nature. The recommendations that apply to headquarters should be summarized and dates given for their implementation.

#### 7.7 Activities

The activities related to the writing and approval of the report are numerous and, without proper care and attention, the established timetable will not be met. Appendix E shows a schematic diagram of the normal sequence of events and the minimum and maximum days that could be involved.

### 7.8 Distribution

Two copies of the draft report will be sent to the regional director, E&A. The original will remain with the team leader.

Two copies of the final report will be sent to the regional director, E&A, one copy each to the Director, Professional Services, the Director, Technical Services, the Director, Contract Services, and the Head, Functional Review and Evaluation. Four copies and the original will be given to the Technical Information and Publications Section for storage.



Appendix A

SAMPLE LETTER TO REGIONAL DIRECTOR OF E&A

OTTAWA, Ontario K1A 0H4

Regional Director,  
Engineering and Architecture  
Region

A-1733-5

Capital Project Evaluation of .

This will confirm that the above referenced Project Evaluation will be carried out in your Region by \_\_\_\_\_ during the period \_\_\_\_\_.

Attached for your information are the proposed Terms of Reference for the conduct of the evaluation including:

- applicable policies, standards and guidelines (Attachment 1);
- key project documents (Attachment 2);
- key participants who will be interviewed (Attachment 3).

Also attached for your review and concurrence are:

- the action plan and proposed agenda for the evaluation (Attachment 4);
- the proposed checklist (Optional);
- HQ and Regional members of the evaluation team (Attachment 5).

If you have not already done so would you please identify a regional co-ordinating officer for project evaluations and forward his/her name to HQ. Would you also arrange for the documents identified in Attachment 2 paragraph 1 of the Terms of Reference to be available in the Regional/District office, and for those identified in Attachment 2 paragraph 2 to be forwarded to HQ. They should be sent by courier to \_\_\_\_\_ (name of officer responsible) by \_\_\_\_\_ (date) to enable team members to familiarize themselves in advance with the basic project information.

(SIGNATURE BLOCK OF  
DIRECTOR OF  
PROFESSIONAL SERVICE))

01/10/84

## Appendix A

### TERMS OF REFERENCE PROJECT EVALUATION

#### 1. PURPOSE

The project is to be evaluated to assess the effectiveness of the capital project delivery process with respect to:

- a) the attainment of overall project objectives;
- b) the effective use of available resources;
- c) cost and schedule control;
- d) responsiveness to users needs;
- e) quality of workmanship;
- f) adherence to policies, standards, guidelines and specifications;
- g) deficiencies and problems; and
- h) recommendations affecting future projects.

The objective of the evaluation is to focus on the features of the project delivery process that contributed to the effectiveness of the project in order that those features may be repeated in future projects; and to identify and make recommendations concerning features of the project delivery process that should be avoided in the future.

#### 2. PROJECT IDENTIFICATION

(Insert under this heading a brief paragraph describing essential details of the project such as location, scope of work, project cost, method of implementation, completion date, etc.)

#### 3. POLICIES, STANDARDS, GUIDELINES

Policies, standards and guidelines that will be referenced during this evaluation are listed in Attachment 1.

## Appendix A

4. EVALUATION METHODOLOGY

In general the evaluation will be carried out in 4 phases:

- a) a planning phase;
- b) an investigation phase;
- c) a preliminary report; and
- d) a final report.

The investigation phase will include a review of project documentation supplied from the Region in accordance with Attachment 2. In addition to a review of project documentation and interviews with key participants in the project (Attachment 3), a site visit is required.

On completion of the investigation phase a preliminary report will be submitted to the Region and the responsible Directorate for review and comments.

Following the review of the preliminary report a final project evaluation report will be submitted to the Region and appropriate personnel in HQ.

5. REPORT FORMAT

The report structure will be, as a minimum: Table of Contents, Management Summary, Introduction, Findings and Recommendations and Appendices. The findings and recommendation portion of the report will address items (a) to (h) of Section 1 of these Terms of Reference.

6. SCHEDULE

The final project evaluation report will be submitted by (date) with interim milestones as specified in the project evaluation plan. (Attachment 4)

Appendix A

7. ATTACHMENTS

1. Policies, Standards and Guidelines
2. Key Project Documents
3. Key Participants
4. Action Plan and Agenda
5. Members of the Evaluation Team

Appendix A  
Attachment 1

POLICIES, STANDARDS AND GUIDELINES

The following is a listing of policies, standards and guidelines that apply to this project;

- DRM 10-7 (Specify Sections and Titles)
- Project Control System Manual
- DRM 10-7/8, Procedures for Implementing Projects through PWC (PWC projects only)
- FD-5
- Cost Control Directive
- (List others as required).



KEY PROJECT DOCUMENTS

1. The following documents should be made available in the Regional or District Office for use by the evaluation team:
  - the Project Identification and Change Document or the Project Authorization;
  - the Project Manager or Project Officers Terms of Reference;
  - the Project Team Terms of Reference;
  - the Project Control Chart;
  - the Project Schedule(s).
  - (list others as required).
2. The following documents should be dispatched to TS&C at HQ by courier for review by the project evaluation team:
  - the project brief;
  - plans, specifications, feasibility studies and consultants' reports; and
  - the Contribution Arrangement and technical terms and conditions (list others as required).

KEY PARTICIPANTS

The following is a list of individuals who will be interviewed during the course of the evaluation. (Individuals should be identified by name, function and location):

- Director, E&A
- Project Manager/officer
- Designer
- Responsibility Centre Manager
- Program Activity Manager
- District Manager
- Band Chief
- Facility occupants/users
- Officials of other departments who may have involvement in project (e.g. HWC, EC etc.)
- Maintenance Supervisor

(add and delete as required).

ACTION PLAN AND AGENDA  
CAPITAL PROJECT EVALUATION  
(Insert Project Name)

(DATE) TERMS OF REFERENCE SENT

(DATE) PRE-VISIT DOCUMENTS SENT

(DATE) TRAVEL TO REGIONAL/DISTRICT OFFICE

(DATE) BRIEF REGIONAL DIRECTOR/DISTRICT MANAGER  
(TIME)

(TIME) DOCUMENT REVIEW/INTERVIEWS

(DATE) TRAVEL TO PROJECT SITE  
(TIME)

(DATE) DOCUMENT REVIEWS/INTERVIEWS  
(TIME) AT PROJECT SITE

(DATE) RETURN TO REGIONAL/DISTRICT OFFICE  
(TIME)

(DATE) DOCUMENT REVIEW/INTERVIEW  
(TIME)

(DATE) DE-BRIEFING REGIONAL DIRECTOR/  
(TIME) DISTRICT MANAGER

(DATE) RETURN TRAVEL  
(TIME)

(DATE) REPORT TO BRANCH MANAGERS' MEETING

(DATE) DRAFT REPORT SENT TO REGIONAL DISTRICT  
FOR COMMENTS

(DATE) FINAL REPORT PUBLISHED AND DISTRIBUTED

Appendix A  
Attachment 5

MEMBERS OF THE EVALUATION TEAM  
CAPITAL PROJECT EVALUATION  
(Insert Project Name)

TEAM LEADER \_\_\_\_\_  
TEAM MEMBER (HQ) \_\_\_\_\_  
TEAM MEMBER (HQ) \_\_\_\_\_  
TEAM MEMBER (REG) \_\_\_\_\_ (OPTIONAL)  
TEAM MEMBER (DISTRICT) \_\_\_\_\_ (OPTIONAL)  
TEAM MEMBER (PWC) \_\_\_\_\_ (OPTIONAL)

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## Appendix B

### PROJECT EVALUATION CHECKLIST

#### I. GENERAL (applies to all projects)

##### A. Needs Identification:

1. How was project first identified?
  - included in a 5-year program forecast?
2. How/when were user needs/ desires established?
  - Program?
  - Band?
  - facility size/capacity?
3. Relationship to master/ community plan?
4. Appointment of project manager?
  - how?
  - terms of reference?
  - review/acceptance of project?
5. Establishment/membership of project team?
6. Technical feasibility analysis?
  - results?
7. Cost Estimates
8. Risk analysis

##### B. Approval-in-principle:

1. PICD properly completed?



## Appendix B

C. Project Acceptance:

1. How was policy/objective conflict resolved?
2. How was user input obtained?
3. How was client input obtained?
4. How was technical information assembled?
  - a) geotechnical data
  - b) environmental base data
  - c) zoning regulations/bylaws
    - did they exist?
    - followed?
  - d) building regulations (code)
    - existed?
    - followed?
  - e) design standards?  
(DRM, others)
5. What technical feasibility assessment/studies were made?  
  
How and by whom?
6. Alternate facility options?
  - how was choice made? By whom?
7. Study of material and labour availability?
  - How and by whom?
  - results?

## Appendix B

## 8. Schedule evaluated?

- by whom?

## 9. Budget evaluated?

- by whom?

D. Project Planning:

## 1. Project schedule prepared?

- by whom?

## 2. Budget ("C" Estimate) prepared?

- by whom?

## 3. User/client input (design requirements) obtained?

- how?

- by whom?

- Band involvement?

## 4. Functional operation plan?

## 5. Target dates/schedule?

- how?

- by whom?

6. When/how decided Public  
Works Canada (PWC) or  
DIAND, Vote 10, Vote 15 or Vote 25?

## 7. Alternate site evaluation?

- access

- services

## Appendix B

8. Legal survey?
9. Land acquisitions?
10. Legal requirements?
11. Detailed site investigation?
  - soil
  - services
  - topographic survey
12. Alternate facility design/program:
  - a) alternate considered?
  - b) basis for final solution?
  - c) Were all relevant factors fully considered in the analysis, for example:
    - location (remote or sensitive)
    - environmental impact
    - socio-economic impact
    - adaptability to other uses or extension of service
    - accessibility
    - construction costs
    - life cycle costs
    - O&M costs to support operation of facility in the future
    - technical feasibility

## Appendix B

- non-capital program objectives
  - joint funding available
  - phasing
  - infrastructure required
  - impact and other facilities presently serving need
  - reasonable assessment of risk (contingencies)
  - Band participation
13. Type of construction determined (day labour or contract)?
- how (decision criteria)?
  - by whom?
14. Life cycle cost evaluation?
15. Capital, O&M cost analysis?
16. T.B. Submission (preliminary and effective approval)
- Prepared by whom?
  - resubmittal required?
  - risk analysis?

E. Project Brief:

1. Prepared by whom?
  - how? (involvement of Band, PWC, Program?)
2. Design and construction agencies?

## Appendix B

3. Comprehensiveness of data?
4. Functional operational plan?
5. Policies/standards/guidelines referenced?
  - departmental?
  - other (which)?
  - copies to PWC?
6. Facility construction method?
7. Provision for future expansion?
8. Cost estimate ("C")?
9. Schedule and milestones?
10. Acceptance, comments, resolution, by:
  - Band?
  - Program?
  - Design team?
11. Design team selection process?
  - in-house?
  - consultants?
  - DIAND & Band Involvement?
  - Costs within budget?
12. PWC informed of project?
  - accepted it?
  - reporting relationship established?



## Appendix B

- followed?
- studies requested of PWC and timing, budget?
- delivered within dates and budget?

F. Designa. Preliminary:

1. Site visits (records)?
2. Cost and program reports?
  - variance reports?
3. Functional and cost analysis of alternative designs?
4. Energy considerations/ analysis?
5. No. (stages) and types of reviews of design by:
  - E&A?
  - Band?
  - Client?
6. Design review comments/ approvals?
7. "B" estimate preparation/ review
  - by whom?
  - PWC or DIAND? reasons for deviation?
8. Final design selection/ approval
  - client?
  - \*- user (BCR)
  - DIAND - E&A

## Appendix B

9. Comparison of final design with project brief?

- changes/additions?

10. Compatibility with other facilities?

11. Life cycle cost analysis?

b. Working Drawing Stage:

1. Design schedule?

- variance reports?

2. Additional data?

- need identification?

- how obtained?

3. Design reviews and requested changes

- 33%

- 66%

- 99%

- 100%

- Use of local materials and labour?

4. Band involvement?

5. Program involvement?

6. Value engineering analysis?

7. Life cycle cost analysis?

- O&M costs?

## Appendix B

8. Approvals
  - Fire Commissioner of Canada (FC)?
  - Health and Welfare Canada (HWC)?
  - Environment Canada (EC)?
9. Comments/design corrections/ modifications?
10. Cost estimate revisions?
11. T.B. Submission (revised)?
12. Final design comparison with project brief/preliminary design?
  - scope?
  - level of service?
  - changes/additions?
  - policies, standards, guidelines?
  - functional requirements?
  - use of NBC or provincial/municipal codes?
  - use of GMS/NMS/DIAND specifications?
  - guideline drawings?
13. Meetings to discuss/review design progress/problems?
  - Minutes?
14. Process for problem resolution/changes?
15. "A" estimate?

## Appendix B

G. Tendering:

1. Preparation of tender documents?
  - labour rates, etc.
  - review by project officer?
2. Tendering procedures
  - document displayed at Band office?
  - addenda?
3. Tender closing
  - extension? (why?)
4. Tender receipt and evaluation
  - time extension
  - P.O. involved?
  - unsolicited alternative prices?
  - how handled?
5. Bid selection/rejection
6. T.B. submission? (change in costs/scope?)
7. Funds confirmation?
8. Contract authorization/award?
  - time lapse from tender closing?

## Appendix B

### H. Construction

#### i. Physical Construction:

1. Schedule delays?
  - time lapse award/start construction?
  - causes?
2. Change orders? (list with descriptions, costs and reasons)
  - final costs?
  - T.B. submission?
3. Quality control procedures?
  - a) site inspection frequency/reports/cost
    - PWC
    - Consultant
    - DIAND
  - b) material testing?
  - c) equipment testing?
  - d) other?
4. Site accidents?
5. Site clean-up?
6. Deficiency list/correction procedures?
7. Certificate(s) of completion?
  - interim

## Appendix B

- final
- 8. Suitability of site personnel? (design, contractor, etc.)
- 9. Design agency/user/client/E&A interface?
- 10. Contractor/user/client interface?
- ii. Construction Management:
  - 1. Confirmation of funds?
  - 2. Cash flow plan?
  - 3. Construction scheduling?
    - variance reports?
  - 4. Project accounting procedures?
  - 5. Status reports?
    - timing
    - information contained?
    - actions taken?
    - physical & financial status reconciled?
  - 6. Payment certificate processing?
  - 7. Site (& other) meetings?
    - required action identification and resolution?
  - 8. Shop drawing processing?
  - 9. Claims, disputes, settlements?
  - 10. Contract defaults?

## Appendix B

11. O&M training?
12. O&M Manual(s)?
13. As-built drawings?
14. Warranties/guarantees?
  - all received as called for?
15. Project completion report?
16. Any serious complaints by client group about project delivery?

### 1. Facility:

1. Quality of work (general)?
2. Unresolved design/construction deficiencies?
3. Functional operation/ suitability?
  - client/user satisfaction?
  - circulation problems?
  - adequacy of space?
4. Technical operation?
5. Maintenance budget/costs?
6. Maintenance adequacy?
  - O&M manual adequate?
  - any safety problems?
  - any serious problems, down-time?
  - spare parts problems?



## Appendix B

- user complaints?
- discomfort due to temperature, humidity, drafts, odours, noise?
- 7. Warranty/guarantee problems?
- 8. Adherence to policies, standards, guidelines?
  - project brief?
- 9. Comparison with initial requirements? (project brief, BCR, etc)
- 10. Any modifications since completion?
  - why?
  - how/by whom?
- 11. Any major design/construction faults apparent?
  - causes?
- 12. Construction impact on existing systems?
  - access
  - drainage/sewer
  - lighting/electrical
  - water
  - existing building use?

## Appendix B

II. VOTE 15 PROJECTS (Additional items)A. Needs Identification:

1. Appointment of project officer (P.O.) (DIAND)?
2. Appointment of project manager (Band)?
  - related experience?
  - mutually agreed - Band/P.O.
  - Terms of reference?
3. Technical definition/feasibility study?
  - Class 'C' estimate -  
prepared?
  - approved?
4. Contribution arrangement (Negotiation/development/acceptance)
  - DRM 10-7/10, Sample Technical Terms and Conditions for Contribution Arrangements with Band Councils
  - standards, codes
  - financial arrangements
  - technical inspections, approvals
  - technical records
  - method of implementation
  - contracting procedures
  - construction safety
  - workers' compensation
  - liability insurance
  - labour rates, employee benefits

## Appendix B

- who prepared?
- who signed?

### B. Approval-in-Principle:

1. Technical terms and conditions?
2. Risk analysis?
3. Approval level? (Regional, HQ., T.B.)

### C. Project Acceptance:

1. Appointment of design agency?
2. Technical feasibility analysis?
3. Construction method decision/agreement?

### D. Project Planning:

1. Expenditure plan?
2. Design and Construction schedule?

### E. Project Brief

1. Preparation by whom?
2. Departmental input
3. Departmental approval?

### F. Design

#### a. Preliminary Design

1. Departmental reviews/acceptance?
2. Preliminary contribution payment? (timing, processing, information provided, etc.)

Appendix B

b. Working Drawing Stage:

1. Departmental participation in reviews/acceptance?
2. Satisfaction of technical terms and conditions?
  - codes & standards
  - deviations?
3. Band approval?
4. Contribution progress payment?
5. Class 'B' estimate?

G. Tendering:

1. Procedures?
2. Departmental review/acceptance?
3. Contract signing?

H. Construction

i. Physical Construction:

1. Departmental inspections? (timing/extent/results)
  - reports?
  - site meetings - minutes
2. Band progress reporting?
  - submitted as required?
  - actual vs. planned progress/expenditures
3. Site supervision - inspectors
  - clerk
  - resident

## Appendix B

ii. Construction Management:

1. Contribution payments?
  - site inspections by consultant
  - proof of payment by Band?
  - holdback
  - conditions of release
  - record of over-expenditures/under-expenditures
  - actions to correct
2. Changes in scope/design?
3. Conflict resolution?
4. Local labour - qualified
5. Final Acceptance - P.O. & Responsibility Centre Manager (RCM) concurrence
  - Release holdback

I. Facility

- a. Changes in design/scope
- b. Satisfaction of Technical Terms and Conditions?
- c. Maintenance budget contribution arrangement?
- d. Maintenance staff adequately trained?
- e. Operational and Maintenance manuals received?

J. Other

- a. assessment of process?  
(efficiency/effectiveness)
- b. Band technical training/technology transfer

Appendix B

Capital Project Evaluation  
Municipal Services Checklist

- A. Water Supply
1. What alternatives were studied
    - piped
    - trucked
    - self serve
    - wells
  2. What was final decision based on
    - socio-economic considerations
    - program requirements
    - technical considerations
    - cost
  3. Who made final decision?
  4. Was structural fire protection considered  
What standard was followed?
  5. What technical standards and guidelines were used as design criteria?
  6. If DRM 10-7/40, Water Supply and Distribution not used, why not. Where they in conflict with Item 5?

Appendix B

7. Were provincial standards used?
8. What pressure acceptance tests were done. Are results available?
9. Do pressure tests satisfy DRM requirements?
10. How was water demand calculated?
11. Does water quality satisfy Canadian drinking water standards? What problems exist, if any?
12. Do as-built drawings indicate any deviation from original. Why?
13. Is water quality regularly tested?
14. Are there significant pressure drops noted?



Appendix B

15. Are there complaints about water quality? Have they been investigated?
16. What is the frequency of breakdown. What are the causes?
17. Are there acceptance tests for fire pumps?
18. What maintenance problems have been encountered with the system?
19. Were there problems of:
  - design?
  - operation and maintenance?
20. Is the design considered complex?
21. Is the system difficult to operate?

Appendix B

22. Has the operator been trained. By whom?

23. Are maintenance manuals and as-built plans available to the operator?

B. Pollution Control

1. What alternatives were studied?

- mechanical
- lagoon
- septic tanks
- privies
- holding tanks

2. What was the final decision based on?

- socio-economic considerations
- program requirements
- technical considerations
- cost
- other

3. Who made the final decision?

## Appendix B

4. What technical standards and guidelines were used as design criteria. If DRM 10-7/41, Wastewater Collection, Treatment and Disposal was not used, why not and were they in conflict?
5. What provincial standards were used. Were they of a higher or lower standard?
6. What approval or comments were required or sought from provincial and federal environmental agencies?
7. Were exfiltration and infiltration tests conducted. Are results available. Who did them?
8. How was sewage demand calculated?
9. Were any characteristic studies done?
10. Do as-built drawings indicate any deviation from the original. Why?

Appendix B

11. Have there been any BOD<sub>5</sub> samples taken. By whom and with what results?
12. Are there any complaints of odour?
13. Is higher flow detected in springtime?
14. What is the frequency of breakdown?
15. Have any blockages been reported?
16. What maintenance problems have been encountered with the system?
17. Were the problems related to:
  - design,
  - operation and maintenance?

## Appendix B

18. Is the system difficult to operate?
19. Has the operator been trained. By whom and with what results?
20. Are maintenance manuals and as-built drawings available to operator?

C. Power Generation and Distribution

1. What generation alternatives were studied:
  - wind
  - diesel
  - peat
  - solar
  - hydro?
2. What was final decision based on:
  - socio-economic considerations
  - program requirements
  - technical considerations
  - cost?
3. Who made the final decision?
4. What technical standards and guides were used as design criteria. If DRM 10-7/43, Electrical Power Supply and Distribution not used, why not and were they in conflict?
5. What provincial standards were used. Were they of a higher or lower standard? Do the generation and distribution systems meet B.C. Hydro Standards?

## Appendix B

6. What approval or comments were required or sought from provincial and federal environmental agencies?
7. Were hydrology studies carried out?
8. How was electrical load demand calculated? How was the type of generator and other equipment selected? How were the generating and distribution voltages selected?
9. What acceptance tests were done. Are results available? Were provincial inspectors invited?
10. Do as-built drawings indicate any deviation from the original. Why?
11. Have there been any water storage or dam studies?
12. Are frequency voltage and output regularly tested? Are there significant variations?
13. What is the possibility of increasing the capacity of the power house?
14. What were the considerations pertaining to distances between the power house and load, and supply of water?
15. Are there complaints about electrical quality. Have they been investigated?
16. What is the frequency of breakdown. What are the causes? Have any ice, freeze-up or other defects/blockages been reported?
17. Are there acceptance tests for switchgear, equipment etc.?
18. What maintenance problems have been encountered with the system?
19. Were there problems of:
  - design
  - operation and maintenance?

## Appendix B

20. Is the design considered complex?
21. Is the system difficult to operate?
22. Has the operator been trained. By whom?
23. Are maintenance manuals and as-built plans available to the operator?



Appendix C

OTTAWA, Ontario K1A 0H4  
(DATE)

Regional Director,  
(Engineering and Architecture)

A-1733-5

Project Evaluation - (PROJECT NAME) (REPORT NUMBER)

Attached for your review and comment are two copies of the draft report on the above evaluation.

May we have your comments and observations by (DATE)

On behalf of the evaluation team, I would like to thank you and all others contacted in the Region for their excellent cooperation.

(SIGNATURE BLOCK  
OF DIRECTOR)  
PROFESSIONAL SERVICES

Attach.  
c.c. (AUTHOR)  
(FUNC REV OFF WITH COPY OF REPORT)

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## Appendix D

### TERMS OF REFERENCE

Capital project Evaluation  
(Name of Project(s))

### BACKGROUND

The Capital Project Evaluation Program is concerned with improving the project delivery system of the Department of Indian Affairs and Northern Development (DIAND) capital projects. This is accomplished by systematically reviewing and synthesizing information on the project delivery process including project planning, design, construction and commissioning in order to improve the management and delivery process for future projects.

### OBJECTIVE

The objective of the evaluation is to focus on the features of the project delivery process that contributed to the effectiveness of the project in order that these features may be repeated in future projects as well as identifying and making recommendations concerning features of the project that should be avoided in future projects.

### EVALUATION METHODOLOGY AND REPORT FORMAT

The evaluation methodology and the format are outlined in the attached DIAND document TSD-6-2 Capital Project Evaluation. Prior to commencing the evaluation, a plan must be prepared and submitted to the Director, Engineering and Architecture (E&A), \_\_\_\_\_ Region, DIAND, for approval. The plan should include at least a schedule for the evaluation and an indication of the resources proposed (budget and team members) to conduct the evaluation.

A preliminary report is required and will be submitted to the Director, E&A for comments and approval. Following this review, a final report will be submitted.

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## Appendix D

SCHEDULE

The final project evaluation report is to be submitted  
by \_\_\_\_\_.

PROJECT BACKGROUND

(PROJECT NAME)

(Provide a short description of project and location).

## Appendix D

PROPOSAL EVALUATION CRITERIA

The following criteria will be used to evaluate the proposals.

1) Contractor/Firm

Experience and satisfactory performance on similar projects in the same subject area.

2) Project Team

The number, qualifications and experience of personnel to be assigned or made available to the job.

3) Proposal

The depth and detail of the submission which indicates the understanding of the size, complexity and time constraints of the job.

4) Schedule

The proposed time schedule for work in relation to the time schedule proposed by the department.

5) Control

The management of the work delegation of responsibility, work plans, scheduling and cost control, reporting and quality control.

6) Methods

The methodology proposed, the technical methods to be utilized in the performance of the work and any innovative and constructive ideas presented.

7) Costs

The total cost of the work and the proposed fees.

# FUNCTIONAL REVIEW OR CAPITAL PROJECT EVALUATION

## HEADQUARTERS SEQUENCE OF ACTIVITIES

