Parks Canada Parcs Canada

Ya Ha Tinda Ranch staff housing and utility upgrade

A&E Design.

STATEMENT OF WORK

September 27, 2023

1 PROJECT DESCRIPTION

1.1.1 Exectutive Summary

This Request for Proposal is for the design of a triplex staff accommodation building, design for septic field rehabilitation and for new water lines servicing the residential buildings from a newly drilled water well. The project is situated at the Ya Ha Tinda Ranch, located 84 km East of Sundre AB.

1.1.2 Background Information

The Ya Ha Tinda Ranch, covering 3,945 hectares and spanning 27 km along the north bank of the Red Deer River, is the only federally operated working horse ranch in Canada. This beautiful area, including natural grassland and mixed forests surrounded by snow covered mountains, serves as a vital facility for training and wintering horses which play an essential role in the patrolling and protection of Canada's Western National Parks. Parks Canada staff live in on-site housing year-round. In addition to the three full time staff that live and work at the ranch, there are an additional 6-10 staff residing there during the spring and summer seasons of peak training & operations. Also, external researchers stay at the ranch in order to study elk and bison populations.

Staff Housing

As part of the continuing effort to ensure the optimal operation of the ranch, the Asset Management department has determined that one of the staff accommodation buildings has now reached the end of its useful life span, no longer serves the needs of the facility in its current state and should be replaced with a structure that conforms to current codes and standards for building performance. The new building will also be required to house, in a separated space the water treatment equipment used to treat raw water supplied from a new planned well, north of the ranch buildings.

Wastewater collection and disposal.

There are two collection fields on the property of unknown age, composition and performance. There are no records of the field(s) ever being assessed for performance or effluent strength measurements being taken or any indication whether the existing field(s) are sized appropriately to process the current volume of wastewater. The distribution network of sanitary lines is noted as 100mm lines but are of unknown material or quality. There is a diversion line from one house that may indicate the abandonment of one of the fields.

1.2 Project Objective

The intent of this RFP is to engage a multi disciplined consultant team to work collaboratively with PCA in the design development and delivery of Issued for Tender packages for the following;

- a new triplex staff accommodation building located on the existing site,
- evaluate, design and deliver IFT packages for an adequately sized septic field to serve the site,
- evaluate the exisitng sanitary distribution system potentially providing design for layout and upgrade/replacement,
- provide design solutions and mapping for new potable water lines to be installed from the new well to the new house and beyond to the existing residential buildings.

Wherever possible, due to the remote location of the ranch, building components should be designed to be prefabricated off site to reduce on site construction at the ranch. The building should also be designed to be durable and have ease of maintenance in mind to maximise their lifespans. The ranch has a finite energy supply in the form of a the generator/solar array power delivery system The building should thus be designed to be as energy efficient as reasonable building practice allows to reduce the energy load placed on this system.

The proponent will be required to review the project requirements and existing site information, lead a conceptual planning process with a successful design to be chosen by PCA and then complete a detailed design leading to the required tender packages. PCA is a unique client with specific requirements and deep involvement in the planning and design process. The proponents process to complete the project must be tailored to suit PCA's established project delivery process.

There is to be a conceptual phase where the proponent will create three unique conceptual designs for the new triplex for PCA to select from. This conceptual phase will allow the team to explore different design options and configurations before settling on a final design to detail. Investigatory work and reporting is to be completed on the septic fields and distribution system with detailed design on upgrade/replacement as required.

A complete design package for the new triplex, and (if needed) design package for septic fields and distribution system replacement/upgrades is required to go to construction. The design contract will require a thorough and client specific design process, including all tasks from the conceptual phase, through the tender phases of the project.

The proponent is also asked to submit optional prices for tendering support and construction support.

1.3 Challenges and Constraints

The proponent will be required to become familiar with the project site at the ranch. Design shall be tailored to suit the needs of the location. Access to the ranch is via a two lane gravel road that contours the side of a hill up to the property. Delivery of construction materials and equipment must be suited to use this as it is the only access to the building site. There is no cell or land line connection in the area.

The tender packages must incorporate required environmental, archaeological and paleontological mitigations provided by PCA for construction work on a recognised heritage and archeologically important site.

Codes and standards to be followed are referenced below.

1.4 Site Conditions

The proponent will be responsible to review the provided reports and recommend any additional geotechnical investigations, if required. If any additional geotechnical investigations are required, the proponent must inform PCA as early as possible and no later than the design kickoff meeting**.**

2 DESIGN REQUIREMENTS

STAFF HOUSING

2.1 General requirements

The following sections will provide the details on the requirements for the design of the new building. Planning septic evaluations and specifying/mapping new water/wastewater lines as required are included below.

2.2 Accessibility Requirements

One unit of the proposed building is to be partially accessible as per CSA B651 Accessible Design for the Built Environment. Accessibility requirements are to be explored during detailed design.

2.3 Foundation design

The proponent is to provide appropriate foundation designs for the location of the proposed new building. The existing foundation comprises of spread footings and cast in-place walls. The foundation can be similar in nature or consist of appropriately sized screw or concrete piles overlain with footings and cast in place walls depending on the review of the geotech report provided by

PCA. Terrain elevations encourage a walk-out style foundation. Final foundation location and type is to be determined in detailed design and is subject to PCA review and approval.

2.4 Building structure

The new triplex shall consist of three units at 650-850 sq ft per unit and each unit shall be adjacent to the other in a townhouse style. The exact footprint is to be determined in detailed design and confirmed in writing by PCA. The triplex shall be 1 story above highest grade with one story below in a walk out basement style and shall be designed with inclusion, accessibility and level entry in mind. Interior stairwells to a common basement will be provided to each unit. The overall appearance of the structure shall be designed to be sympathetic with the surrounding buildings, physical conditions of the location, and overall heritage character of the ranch site.

The triplex shall have a ashphalt, composite shingle or metal roof and fire resistant siding. Final colour chips for chosen building colors shall be supplied to PCA to accept. Wood accenting will be acceptable, as long as it is not the main external siding material. The building shall be design to allow for the replacement of building components with basic tools. Building materials shall be common where possible to allow for ease of sourcing replacement material and ease of construction. Any place where equivalent material can be considered should be noted in specifications and on drawings. Any proprietary materials should be explicitly called out in specifications and on drawings.

The triplex shall be insulated to maximise energy efficiency as per Greening Government Directive for Real Property and be designed with climate resiliency in mind. The proponent is encouraged to provide design solutions for wall assemblies that incorporate air and vapor tight pre- fabrication with elevated insulative properties. The interior finishes of the building shall be high quality, durable and of a nature that is common to residential buildings.

2.5 Heating, hot water and ventilation

The proponent will provide an options analysis for heating the building with propane powered heat sources, furnaces with air handlers and ducting, boilers (stand alone or in series) with radiant floor or radiating units or other means. Each tenant is to have the means to control the temperature in their own unit via thermostat.

Ventilation shall be be designed to provide good air quality and adequate air exchange in each unit in kitchen, bathroom and main living spaces.

Hot water shall be provided to each unit. The design of the delivery system shall be energy efficient to reduce power use and if possible take advantage of already in place building heating systems such as combi boilers with dedicated radiant heat runs and hot water supply to receptacles.

The options analysis shall be provided in a separate document prior to the 30% design review and an independent meeting shall be conducted to review the findings. Ease of use, maintainability, reliability, safety, greenhouse gas emissions, initial cost and operating cost are to be considered in this analysis.

2.6 Electrical and Solar

The building shall be designed with an electrical system for residential occupancy that conforms to the Alberta residential Electrical Code, and may also incorporate the use of roof mounted solar power and storage of that power via a power bank. The site currently employs two diesel generators and a 24 kW PV solar array to provide power, relieving the use of the diesel generators during the summer months. Analysis during the conceptual design stage is required to determine whether to include additional PV panels on the proposed building will have any effect of adding overall capacity to the array in winter months and whether it will adversely affect the fuel efficiency of the generators during this time.

2.7 Doors and windows

Exterior doors shall be insulated metal with wood frames and low profile thresholds for accessibility, feature half light windows with integrated blinds, have

double or triple glazing, include integral weatherstripping and be furnished with an exterior rated lever and deadbolt.

Windows shall be triple glazed, frames constructed with vinyl, white or beige, have crank style openings and include screens.

2.8 Flooring

Flooring will be resistant to moisture and dirt at the entry points, kitchens and bathrooms. Flooring for bedrooms and main floors will be an aetherstically pleasing wood, imitation wood or vinyl product.

2.9 Interior Fittings and fixtures

2.9.1 Doors

Interior doors will be standard dimensions and to be sized and handed for various rooms depending on their purpose. Doors shall be equipped with handles, hinges and strike plates in the same color and finish. Door openings are to be clad with a paint grade flat stock trim. Windows and baseboards to be similar trim level. Closet doors are to be bi-fold with similar hardware and trim specifications.

2.9.2 Kitchens

Kitchens will be designed with price efficiency in mind and should provide a reasonable amount of draw and cupboard storage with work tops that are melamine and backsplashes that are of simple tile design.

2.9.3 Bathrooms

Each unit will have one full bathroom with a full shower tub, vanity with sink and simple backsplash and water efficient toilet and appropriate fixtures and fittings. One unit is to have a fully accessible bathroom as per CSA B651 Accessible Design for the Built Environment.

2.9.4 Appliances

To reduce power consumption, appliances should be specified to be propane fueled wherever possible.

2.9.5 Water treatment room

A portion of the basement is to be reserved and physicaly separated from the rest of the triplex for the purpose of housing water treatment equipment that will be disinfecting the incoming raw water supply from the well. This room is to be independently heated, ventilated and gas tight from the rest of the building as Chlorine may be present for water treatment purposes.

2.10 Exluded from Scope

The following items are excluded from scope:

1. Anything in relation to the demolition of the exisiting building.
2. Site restoration design (to be completed by PCA.)
3. Location and design of water well.

SEPTIC AND WASTEWATER EVALUATION

There are 2 septic fields in the area which service 4 buildings on the property. One may or may not be abandoned. Each building has a sanitary line connecting to these fields that are of unknown age and quality. The proponent shall conduct an evaluation of the exisiting condition of the lines and fields to determine whether they;

1. fall within acceptable criteria within the Alberta Private Sewage Systems Standard of Practice for continued use,
2. whether the size and condition of the field(s) support the anticipated occupancy load of the site,
3. require additional supplemental treatment processes (sand filters) to improve the efficiencies of the fields.

The evaluation shall consist of such means as test pits, soils evaluation for appropriate draining materials, visual inspection of current infrastructure and downslope testing for effluent strength. The proponent will provide a technical

memo recommending appropriate measures to ensure that septic infrastructure meets APSSoP for future use and proceed to providing appropriate design details to support construction activities should this not be the case.

POTABLE WATER

PCA intends to install a new water well prior to construction, supplying drinking water to the residents of the new building and also the residents of the existing dwellings. The exisitng water supply system originates from a GWUDI source that unsupported by adequate treatment protocols. The distribution of water from the well is to be separate from the exisitng system to maintain high quality drinking water. To support this the proponent shall provide design for the location, pathway and detailed specifications for possible groundworks or trenchless solutions for water lines to be installed from the well location to the new staff house and beyond to the existing residential buildings.

3 DESIGN PHASE AND DELIVERABLES

The proponent is to provide complete architectural and engineering design for this project. The proponent will not be approved to proceed with the detailed design until the scope and initial cost estimate has been approved by Parks after presentation of the three conceptual designs.

3.1 Codes and Standards

The design of the triplex shall follow relevant residential building codes and standards. The codes listed below are to be followed unless exceptions are brought forward and approved by PCA.

1. National Building Codes of Canada or Alberta Building Code, whichever is more strict.
2. National Energy Code of Canada for Buildings, 2020.
3. Green Building Directive, Parks Canada.
4. Alberta Private Sewage System Standard of Practice 2021.
5. CSA B651 Accessible Design for the Built Environment.

The proponent shall have on their design team architectural, engineering, geotechnical and water/wastewater professionals that are registered to practice in the province of Alberta.

3.2 Project meetings

Throughout the duration of the design process there are to be several, regular formal and informal meetings between the proponent and PCA. These meetings can be attended in person at the Parks Canada Banff Compound or virtually.

1. Bi-weekly design update discussion ongoing for the duration of design,
2. Design Start Up Meeting – Kickoff of project,
3. Conceptual Designs Review Meeting – presentation of 3 conceptual designs,
4. Selected Design Kickoff Meeting – Kickoff of selected design,
5. Triplex 30%, 60% 90% design and specification reviews,
6. Septic and distribution 30%, 60%, 90% design and specification reviews,
7. HVAC options analysis review meeting and decision finalization meeting,
8. Solar system design reviews at 30%, 60%, 90% design completion if selected,
9. Accessibility of design review session,
10. Tender package review meetings upon completion of tender packages,
11. Design closeout meeting.

Meeting minutes shall be distributed by the proponent within 48 hours of the meeting.
Additional detailed discipline specific design meetings that require PCA input are not listed but will be required, i.e. materials selection, etc.

3.3 Required Design Services

The proponent is responsible to prepare issue for tender ready specifications, drawings and tender packages for the construction of a new triplex, upgrades to the septic field(s) and distribution system (if required) at Ya Ha Tnda Ranch, compliant with the requirements outlined in this request for proposal. These deliverables should be complete, concise and clear to ensure the construction can be tendered and executed to the schedule outlined in the milestone schedule attached. The proponent will act as the prime consultant,

consolidating the work of the entire team, including any sub consultants they bring on. The final deliverable should be fully complete and constructible with all details required to execute the work. The expected deliverables are detailed below:

1. Three conceptual designs including floor plans, orthographic drawings or 3D renders, rough dimensions, window and door locations, internal and external fittings and furnishings. The conceptual designs should be unique with genuine differences between each design.
   Advantages and disadvantages are to be listed. Conceptual designs shall be detailed enough for PCA to be able to evaluate the merits of each concept. Class D estimates for each option are to be provided.
   Evaluation and reporting on the condition of the existing septic field(s) and distribution lines with recommendations on proposed upgrades (if required.) *Note*, activities involved with evaluating the existing conditions of sanitary infrastructure will occur once seasonal conditions allow and are not expected to run parallel with the triplex design. Should the existing condition of sanitary infrastructure require design to IFT then it shall follow the 30-60-90% stages in the same manner as the triplex design.
2. Design drawings and specifications (including but not limited to: site plan, floor plans, elevations, material descriptions, foundation drawings and sections, layout drawings, HVAC and Mechanical plans, reflected electrical ceiling and equipment plans, 3D models, roof plan, wall sections, building envelope design, standard details and cross sections, NMS specifications, bill of materials) for review at 30%, 60% and 90% stages for selected triplex design option.
   Septic field design, standard details and cross sections, potable water line trenching geographical layouts, depths, insulation and backfill requirements and sanitary line specifications, geographical layouts, depths, and backfill requirements.
   A class C estimate is to be prepared at the 60% design review stage.
3. Running comments log listing all comments and responses to questions given during and after the 30%, 60% and 90% review stages.
4. HVAC options analysis for review and selection. Ease of use, maintainability, reliability, safety, greenhouse gas emissions, initial cost and operating cost are to be considered in this analysis.

5. Solar options analysis for including a PV array on the building, including load analysis, battery capacity calculations, solar generation assumptions, component selections and feasibility for tie back to the existing stand alone PV array.
6. Final Issued for Tender packages for selected triplex design option and septic distribution and disposal components including a class A estimate. All drawings, specifications, details, sections, layouts, 3D models, NMS specifications are to be included. The documents shall provide clear explanation of the construction process and are to be used to establish a construction contract. There will be environmental mitigations and conditions provided by PCA that must be incorporated into the tender package.
7. A listing of all major components and expected lifespans. At a minimum this must include: foundations, roof system, solar system components (panels, controller, inverter, batteries), heating and ventilation system, siding, flooring, windows and any major subcomponents of those items.
8. A list of recommended spares for the building (flooring material, siding material, batteries, windows etc.) if applicable. This is intended to be added to the construction tender documents to be purchased at time of construction.
9. Operations and maintenance manuals for all components, where applicable.
10. Final files for all deliverables shall be provided in both native .dwg (or other native format) and pdfs.

Note that any deliverable associated with a meeting is to be provided to PCA 3 business days prior to the meeting date. Any comments provided after each review shall be responded to and incorporated in the subsequent design review. A running comment log shall be maintained by the proponent documenting comments and how they were addressed received during and after design reviews. PCA will endeavour to return comments to proponent 7 days after meetings are held.
A project execution plan is to be created by the proponent and will be submitted 3 business days before the design start up meeting. This execution plan shall be updated and maintained during the duration of the project.
A monthly report will be prepared and submitted no later than 7 days after the conclusion of each month detailing the progress made over the last month,

documenting any outstanding information, design holdups, meetings or reviews that have taken place, envisioned changes or any other relevant information. While PCA acknowledges the proponent's obligations to meet project requirements, the project delivery process entitles PCA to review work. PCA reserves the right to reject undesirable or unsatisfactory work. The proponent must obtain Park Canada Project Manager acceptances for each deliverable prior to proceeding to the next Phase.

3.4 OPTIONAL SERVICES

3.4.1 Construction Tender Support

PCA will undertake a public tendering of the scopes of work. The proponents tender documents will be used for the tenders. The proponent must attend (virtually) any bidder's conferences or tender meetings. All technical enquiries and clarifications from bidders will be sent for response by proponent.

If required, addenda to tender documents are to be produced by the proponent and submitted to the PCA project manager for distribution to the bidders.

3.4.2 Construction Support

In general, the proponent will be required to perform the following services:

Pre-Construction

Once the construction contract has been awarded, PCA will coordinate a pre-construction meeting with the General Contractor, their main sub contractors and the Construction Contract Administration Consultants to discuss; Operations Requirements and Coordination, Phasing of Work/Site Use Plans, Submittals (pre-construction and construction), Communications, Schedule, Progress Meetings, Progress Payments, CCNs, COs, Health & Safety Requirements, Environmental Procedures, Record Drawings, Substantial & Certificate of Completion, Warranties, Inspection & Testing, Permits. Following this meeting and prior to construction, PCA will also coordinate a meeting with the General Contractor, Construction Contract Administration Consultants and key PCA Operations and Maintenance staff to discuss and coordinate the specific operational and access requirements.

Construction

1. Ensure contractor is providing all necessary submittals and collecting all necessary information to meet project submittal and close out requirements.
2. Review and process shop drawings in a timely manner. On completion of construction, include the final shop drawings in the operating and maintenance manual.
3. Establish a written understanding with the contractors as to what stages or aspect of the work are to be inspected, i.e. an Inspection and Test Plan (ITP.)
4. Validate and provide comments on construction schedule provided by construction contractor. Provide advice to PCA project manager prior to proponent approving the construction schedule.
5. Monitor the progress of the contractor's work, compliance with all drawings and specifications, schedule compliance, quality standards and progress through periodic site visits during construction. Site visits will be coordinate with PCA and contractor due to the required helicopter access.
6. Prepare and provide to the PCA project manager detailed drawings, clarification advice, site instructions, contemplated change orders and change orders and other related documents during the construction process.
7. Reply to requests for information.
8. Observe quality assurance testing where required.
9. Review and make recommendations on progress claims.
10. Issue interim and final deficiency reports.
11. Recommend release of holdback upon substantial completion.
12. Arrange meetings during the construction phase, organize participants from PCA, designer, constructor and any other involved party. The proponent shall record meeting minutes and issue action items to all participants within 48 hours of meeting taking place.
13. Be available, and have any subcontractor available to respond to any inquires that arise during the construction process.
14. Use the approved schedule as a basis to monitor and evaluate progress on the work.
15. Keep accurate records of causes of delays.

16. Any recommendations, clarifications or deficiency lists shall be issued in writing to the PCA project manager with a copy to the contractor.
17. Monitor and support contractor commissioning of all installations to ensure proper completion and timely resolution of any issues encountered.
18. Sign off on certificate of substantial completion.

Post-Construction

1. Perform final inspection and prepare record drawings and specifications based on Contractors provided redline drawings as well as inspector observations and updates to drawings.
2. Provide PCA with updated drawings in both PDF and CAD file formats.
3. Review and approve the Operation and Maintenance Manual.
4. Assist PCA in preparation of the Final Certificate of Completion and sign off.
5. Provide engineer and architect sign off of all aspects of construction assuring that the work meets applicable codes, best practices and design guidelines. This will be required for PCA to issue the occupancy permit.

Warranty Services

1. Monitor and certify rectification of deficiencies before expiry of warranty.
2. Sign off on the Final Completion of the construction contract.
3. Participate in warranty inspection with PCA representative.
4. Provide warranty deficiency list.
5. Provide Final Warranty Review report.

3.5 Schedule

3.5.1 Design and Construction Milestones

See the below milestones for contract milestones as well as construction milestones for information. Proponent is to review the milestones and confirm if acceptable, or propose new milestones to be accepted by PCA before commencing work.

Triplex Design Milestones	Contract dates	Comments
Design proponent contract award	JAN 2024	
Design start up meeting	+1 week	
Triplex concept design review	+7 weeks	
Selected Triplex design kick off meeting	+9 weeks	
30% Triplex design review	+17 weeks	
60% Triplex design review	+25 weeks	
90% Triplex design review	+33 weks	
100% Triplex design review/Tender Package Final review	+37 weeks	
Design close out meeting	40 weeks	

Septic, distribution and potable water design milestones	Contract dates	Coments
Design proponent contract award	JAN 2024	
Begin on ground investigations	+14 weeks	
Submit evaluations and recommendations	+16 weeks	
30% design review	+20 weeks	
60% design review	+25 weeks	
90% design review	+30 weeks	
100% design review Tender Package final review	+34 weeks	
Design close out meeting	+40 weeks	

End of Section.