GOVERNMENT OF BERMUDA
Ministry of Public Works

Request for Proposal #2020-004P-MPW Supply and Delivery of Bulk Fuels and Infrastructure Upgrades

Addendum #3

September 8, 2020

Dear Respondents.

This Addendum supersedes information contained in the Request for Proposal ("RFP") to the extent referenced.

This Addendum forms part of the RFP documents and will be subject to all of the conditions set out in the contract conditions.

Replacement of Underground tank at Corrections – Westgate has been added to Annex "C" Scope of Work. Annex "C" has been updated and is attached.

A mandatory site visit for Westgate will be held on Wednesday, September 16 @ 10:00 a.m., at 2 Pender Road Sandy's. The deadline for submitting questions will be on Monday, September 21, 2020 at 4:00 p.m. with a response addendum to be issued on Thursday, September 24, 2020 at 4:00 p.m. The closing date for this RFP has now been extended to Thursday October 15, 2020 at 3:00 p.m.

The specifications for the driveway and paving of DPT Palmetto road have been updated (Annex M) and are attached. (A ground density spectrometer is available for hire from D & J Construction.)

Department of Environmental & Natural Resources Guidance Document for Installation of Above-ground and Underground Petroleum Fuel Storage Annex T is attached.

The Ministry of Public Works received the following questions from interested bidders and offers the following answers that will form Addendum 3

Police Services

Q 1. What is the available working space for the new tank installation?

A 1. Response: See markup aerial photo below. Approximately 30 ft. x 40 ft. The roadway is to be kept clear for police vehicle use at all times. Deliveries and temporary blockage or use of the roadway can be accommodated by coordinating with the BPS Site Manager, Mr. J. Paynter.

Q 2 What are the exact dimensions of the current tank installed?
A 2. Response: The tank has not been accurately site measured but is approximately 28 ft. long x 6.5 ft. wide: Volume 4000 US gallons.

Q 3. What is the age of the tank and why are new tanks required for this site? Details would be very helpful.
A 3. Response: 13 years: facility Built 2007, Fuel Tank Installed 2008. See attached Certificate. Refer also to response to Q63 below.

Q 4. Who has ownership of the tank?
A 4. Response: See Certificate attached

Q 5. What is the frequency of deliveries to this site per month for diesel & gasoline?
A 5. Varies, depends on usage.

Q 6. What is the minimum inventory requirements in terms of week/s supply vs burn rate?
A 6. Response: UNLEADED 2,100 Liters DIESEL 12,000 liters

Q 7. Historically what is the average volume delivered per month for gasoline & diesel?
A 7. Response: APPROX – Unleaded 9,500 liters +/- DIESEL 3,600 Liters +/-

Q 8. Historically what is the maximum volume delivered per month for gasoline & diesel?
A 8. Response: APPROX – Unleaded 13,500 liters +/- DIESEL 4,500 Liters +/-

Q 9. If a new above ground tank is installed must it meet UL-142 or UL-2085?
A 9. Response: See General Comments and DENR Guidance Note endorsed by BFRS and Dept. of Planning. (Attachment)

Q 10. We are requesting aerial images and/or exact GPS coordinates for this site.
A10. Response: All Sites can be located, viewed and measured from the Government Maps ArcGIS website:
https://bdagov.maps.arcgis.com/apps/webappviewer/index.html?id=bc5f33868b7248

38a4e9c875c24d836f

Marine & Ports

Q 11. What are the dimensions and size of the current underground tanks at this location for gasoline & diesel?
A 11. Response: No dimensions available. 2 x 8,000 gal tanks.

Q 12. What is the frequency of deliveries to this site per month for diesel & gasoline?
A 12. Response: 8 – 12 delivers per month, depending on season services.

Q 13. What is the minimum inventory requirements in terms of week/s supply vs burn rate?
A 13. Response: Exact information per week is not available. Current required monthly diesel use to maintain all operations is 115,000 Lt. per month. (Diesel only).

Q 14. Historically what is the average volume delivered per month for gasoline & diesel?
A 14. Response: Diesel Only: 115,000Lt. per month

Q 15. Historically what is the maximum volume delivered per month for gasoline & diesel?
A 15. Response: Currently fuel delivery slips are not logged. This is a requirement and to be addressed in the fuel management system

Q 16. Must the new tank/s meet UL-142 or UL-2085?
A 16. See Guidance for Installing tanks Annex T.

Q 17. Will ferries require unleaded fuel in addition to diesel? If so, we would like to request volume details including seasonal expectations for the unleaded fuel.
A 17. Response: No, Diesel only.

Q 18. While maintaining the existing tank in the Marina, please advise who will assume liability should the tank have a leak?
A 18. Response: Existing tanks remain a risk and liability for Government until replaced. Proponents are expected to assume responsibility to meet DENR RBECA Code requirements when removing the tanks. Liability for meeting RBECA Code requirements during the process of removing the tanks will be with the successful bidder.

Q 19. What is the distance between the filling point to the Marine & Ports harbor?
A 19. Response: Refer to the stamped Registered Surveyor topographical survey (provided).

Public Transportation

Q 20. What is the frequency of deliveries to this site per month for diesel & gasoline?

A 20. Response: Diesel deliveries are three days per week (Monday, Wednesday, and Friday).

Gasoline deliveries are twice a month when level is low.
Q 21. What is the minimum inventory requirements in terms of week/s supply vs burn rate?
A 21. Response: It depends on the amount of buses that are in service as to the amount of fuel used. (Winter schedule vs Summer schedule. Winter schedule demands are greater because of additional school bus services) However management ensure the supply level does not go below six inches.

Q 22. Historically what is the average volume delivered per month for gasoline & diesel?
A 22. Response: Varies: past two months are Gasoline for July 2,250 liters & August 3,500 liters. Diesel for July 7,716.92 liters & August 6,975 liters

Q 23. Historically what is the maximum volume delivered per month for gasoline & diesel?
A 23. Response: Monthly gasoline delivery is 3,500 & Diesel delivery is 69,750

Q 24. The fuel management system and the associated requirements are noted for the Public Transportation department. Please confirm whether the fuel management system is required for any additional sites?
A 24. Response: Other sites that require a fuel management system are listed in Table 2 of Annex C "Scope of Works" They include BPS, Marine & Ports, Corrections (Westgate). Existing fuel management systems are located at Marsh Folly and the Government Quarry, HM Parish.

Q 25. Please confirm and outline each site which will require a fuel management system.
A 25. Response: Refer to Table 2 Annex C "Scope of Work" and above response.

Q 26. Does the fuel management system need to be a standalone system?
A 26. Response: An integrated system across the various sites is preferred. Note however that Officers from each Department at each site will have the responsibility to reconcile the fuel usage and cost for their individual Department into the Government E1 accounting system. Individual tags issued to each Department will allow that reconciliation while still allowing urgent and emergency use at each site. For example, Police should be able to fill up at any site and the usage recorded for later reconciliation or if maintenance is required at one site, other sites remain viable filling points to cover any fuel pump "down time".

Q 27. Will the bus garage need to remain operational during the project?
A 27. Response: Yes. (As noted in Annex C: "Scope of Work").

Q 28. For smaller sites, is it acceptable to submit an alternative that enables

vehicles to fill up at Sol Esso branded service stations?
A 28. Response: Possibly, provided reconciliation of costs with Government E1 accounting system is addressed and endorsed by the Ministry of Finance.

Q 29. Please advise where the supply lines are located to the fire hydrant.
A 29. Response: While a Registered Surveyors drawing has been provided for site information the water supply lines to the fire hydrants are not noted. Proponents should assume that the water supply lines will be encountered during the driveway resurfacing work and respond accordingly. Should as built services drawings become available, these will be supplied to the successful proponent.

Public Works (Marsh Folly & Quarry)

Q 30. What is the date of installation of the underground storage tanks at Public Works, Marsh Folly and Public Works Quarry?

A 30. Response: Installation at Marsh Folly is Oct 2010 and Quarry 2010

Q 31. Who has ownership of the tanks currently installed at these sites (Marsh Folly & Quarry)?
A 31. Rubis

Q 32. Historically what is the average volume delivered per month for gasoline & diesel?

A 32. Quarry – gas – 4,486 liters, diesel – 10,303 liters. Marsh Folly gas – 13,883 liters and diesel 32,229 liters

Q 33. Historically what is the maximum volume delivered per month for gasoline & diesel?

A 33. Quarry – gas 26,150 liters and diesel 58,000 liters. Marsh Folly – gas 31,000 liters and diesel 64,800 liters

Q 34. Are the pipelines single wall or double wall?
A 34. Double wall

Q 35. If new above ground storage tanks are installed, must they meet UL-142 or UL-2085?

A 35. Response: New tanks are not required.

Q 36. What is the frequency of deliveries per month to these sites for gasoline & diesel?

A 36. Deliveries varies depends on usage – average 3 times a week.

Q 37. What is the minimum inventory requirements in terms of week/s supply vs burn rate?

A 37. Depends on usage however management ensure supply level does not go

below 6 inches.

Q 38. Can the RFP submission be made via email? We wish to clarify because one section of the RFP says no but another section says hard copy or email is acceptable.
A 38. Response: E-mail submissions are not accepted.
Q 39. Please provide a copy of the construction contract ("Plant Design-Build Contract") referred to as Annex L in Appendix A of the RFP.
A 39. Appendix A is a sample of what a contract would look like. The actual contract would not be available until the successful respondent has been selected.

Q 40. Please disclose any pre-existing environmental condition at any of the sites object of the RFP.
A. 40 Response: The RFP anticipates future environmental concerns with regard to fuel tanks. The DENR Guidance not attached describes the concerns. Environmental issues from other sources such as sewer and stormwater are being separately addressed and not part of this RFP scope of work.
Q 41. Please provide any monitoring wells installed at the various sites per Table 1 (Participating Agencies)? If yes, please provide details.
A 41. None known at this time.

Q 42. Please disclose the installation date of all underground pipelines at the various sites per Table 1 (Participating Agencies)?
A 42. Response: Vary from 13 years to 20+ years since original installation

Q 43. For new above ground storage tank installation is the requirement UL-142 or UL-2085?
A 43. See Guidance document for installation.

Q 44. Is the successful proponent responsible for maintenance on all the equipment of the sites shown in Table 1 even if the proponent did not install the equipment?
A 44. Response: The successful proponent will be responsible for equipment provided and installed by themselves and that they are required to maintain including any associated services described in the RFP.

Q 45. Is there only a requirement for a Fuel Management System along with the required maintenance for the sites listed in Annex C, sub-section C?
Is there a requirement for a Fuel Management System as listed in Annex C, sub-section C.6 other than the sites identified in Table 2: Major Departments Requiring Infrastructure Upgrades?
A 45. Requirements are as stated in Annex C.

Q 46. Is there any ongoing environmental remediation at any of the sites? If yes, please provide details or an executive summary of the remediation work and status, site by site.

A. 46 None know at this time.

Q 47. Are there any environmental impact assessments on any of the sites? If yes, please provide details.
A 47. No known at this time.

Q 48. Are all fuel tanks currently registered? If yes, please provide the registration information.
A 48. Information not available at this time.

Q 49. Are there other tanks installed at the sites?
A 49. Response: None that form part of this RFP

Q 50. If tanks are found during excavation work that were not identified, how will such tanks be treated? Who will have the associated costs and any liabilities?
A 50. Response: Proponents will not be expected to assume responsibility for any unknown tanks. Should unknown tanks be discovered we reserve the right to negotiate an amendment to any agreement should additional work be required. It is suggested that proponents not price for unforeseen tanks and that any additional works would be handled as a variation using unit rates so that there is a clear understanding of what they have priced if a variation is needed.

Q 51. Are there construction management plans for other related or separate projects? Can these be made available?
A 51. Response: No Construction Management Plans have yet been prepared.

Q 52. Please provide details on the concurrent construction government projects which will need to be managed by the Successful Proponent through a comprehensive project plan. Details with respect to the following would be helpful: project scope; sites impacted; timelines; key dependencies.
A 52. Response: The major site affected by other infrastructure projects is the Marine & Ports site. Proponents have been advised what those projects are and while informed of them; proponents are not expected to manage those projects.

Q 53. The Bermuda government's public commitment to transition to electric vehicle is noted and is likely to impact volumes under the term of the contract. Please provide details on projected timeline for introducing electric vehicles, the transition time and the expected impact on volumes.
A 53. Response: The time line has not been confirmed. Respondents are directed to Table 2 of the NFP (page 7) indicating an aspirational reduction in fuels by 2035 from the 2017 'business as usual' consumption figures (i.e. -34% for diesel, -68% for petrol), page 10 showing the potential to begin more widely adopting electric vehicles in 2022, and page 22 which speaks of progressively converting the fleet of buses to more efficient vehicles and viability of introducing more fuel-efficient ferries. Respondents are advised to consider this information for their submission.

Q 54. Can you please provide a certificate of quality (COQ) as a baseline comparison to demonstrate the product specifications as mentioned in Annex C, sub-section B1 for Diesel and Unleaded fuels?
Are there other sites for equipment upgrades not mentioned in Table 2? If yes, please specify with details.
A 54: Response: No

Q 55. Please provide the maintenance records for all assets that are expected to be maintained.
A 55. Response: This information is currently not available as it requires time to collate from the various Departments.

Q 56. Would Word versions of Appendix B (Submission Form), Appendix E (Certificate of Confirmation of Non-Collusion), Annex B (Pricing Form), and Annex H (Project Personnel Qualifications & References) be available to allow the potential proponent enough room to supply required details, and alleviate any potential errors due to handwriting?
A 56. Response: Word versions of Appendix B, Appendix E, Annex H are not available.

Q 57. Please confirm that the Department of Social Insurance & the Office of the Tax Commissioner should address their Debt Payment Confirmation Letters to the Ministry of Public Works Headquarters?
A 57. Response: Yes they should.

Q 58. Please clarify that the Health & Safety Plan listed as Pre-Conditions of Award (Appendix D-E), only needs to be accepted and reviewed by the Government's Safety and Health Officer before works begin, and is not a mandatory submission requirement like the Construction Management Plan.
A 58. Response: Correct. However, note that it is usual practice for the Health and Safety Plan to be required to be submitted as part of a Building Permit application as well and for the Government's Health and Safety Officer to be consulted by building permit Officers during the review of that Building Permit.

Q 59. Please clarify that the Construction Safety Plan listed as Pre-Conditions of Award (Appendix D-E), only needs to be accepted and reviewed by the Government's Safety and Health Officer before works begin, and is not a mandatory submission requirement like the Construction Management Plan.
A 59. Response: The Construction Safety Plan will be required to be submitted prior to any commencement Inspection on site. This allows for any subcontractors yet to be appointed to provide information to allow a comprehensive Construction Safety Plan to be submitted. Proponents should note their understanding of that requirement in their submission response.

Q 60. We understand that there may be a concrete beam either close to, or above the existing fuel tanks to help keep it in position. This install was required as there may

have been some issues with the face of the dock during excavation for the current fuel storage tanks, and tie rods were installed to hold dock facing. These tie rods may be connected to the concrete beam. The location of these tie rods is visible along the existing sea wall, which is currently compromised.

(a) May we get confirmation of how concrete beam traverses the existing underground fuel storage tanks please?

(b) Are the tie rods that protrude the dock face connected to the concrete beam &/or any other fixture/fitting that is related to the existing underground fuel storage tanks?
If the tie rods are connected to the concrete beam, and the concrete beam must be removed to exhume the underground fuel storage tanks, is the compromised dock face the responsibility of the Proponent if its stability is connected to the tie rods?

(c) Are there site drawings/plans available to review to ensure the Proponent can design an Excavation Management Plan that will not interfere with the compromised dock face?

A 60. Response: Answer for 1 (a), (b) + (c):
Ministry of Works & Engineering Engineers will investigate the structural status of the sea wall and advise. Should any issues become apparent the Engineers will make themselves available to discuss viable methods to safely remove the existing fuel tanks with the successful RFP proponent. It is suggested that proponents not price any unusual stabilizing or remedial works to the dock, and that any additional works would be handled as a variation using unit rates. Their submittal should give a detailed methodology, so that there is a clear understanding of what they have priced if a variation is needed.

Q 61. We understand that there is a BELCO main power cable traversing the top of the existing underground fuel storage tanks to feed the transformer by the vent pipe. Please confirm if this is to be the case.
A 61. Response: Proponents are expected to check the location of all underground services with service providers before work proceeds and to proceed on site with caution. Note: numerous abandoned services may exist and are to be expected.

Q 62. If 3-a-i-2 is correct, who will bear responsibility for either relocating &/or securing the BELCO cable to ensure there is no loss of power to the M&P East Broadway facility?
A 62. Response: The successful proponent must ensure and manage continued operations from the site. The successful proponent will need to work with, and coordinate efforts with, the Marine & Ports Site Manager, Mr. M. Bailey.

Q 63. Please confirm that the RFP intends for the current 13-year old UL-142 listed above-ground storage tank at Police Impound to be upgraded to a UL-2085 above-ground storage tank to meet the current Bermuda Fire Code 2014 even though the existing storage tank has not completed its allowable life expectancy of 30-years as per the Department of Environment & Natural Resources' 2019 January Guidance Document for the Installation of Above-Ground & Under- Ground Petroleum Fuel Storage Tanks and Associated Pipework.

A 63. Response: This requires a coordination between DENR and BRS which is managed during the Planning and Building Permit processing to assist:

a) DENR: does capture fuel tank registration details to try and help manage these potential environmental liabilities. Under the registration scheme for older single walled tanks DENR recommend testing for leaks and 'leakproofness' after 20 years with removal/replacement after 30 years.

b) BFRS: Please note that during redevelopment of a site that comes in through Dept. of Planning DENR and BFRS both provide stakeholder responses that generally require that the UST/AST be replaced with one that complies with the latest standard (i.e. UL-2085 for Protected AST for Flammable and Combustible Liquids). However, in certain instances conditions would be placed on any permit that would allow an existing UL-142 tank to remain in place for a limited time dependent upon the AST lifespan remaining as described by DENR.

Summary: The existing condition would be able to remain and receive a Fire Certificate under the following conditions:

1. The Fire Certificate would be required to be renewed annually
2. The tank and pipework will have to be inspected by an engineer annually
3. Spill containment in accordance with the relevant codes would be required
4. A spill response plan would have to be submitted and approved

Q 64. Please confirm that the RFP intends for the Police Impound site, Marsh Folly Pulverisation Plant site, and W&E Quarry site to be fitted with some form of oil/water separation device.
A 64. Response: Yes, Oily water separators, where not installed are required.

Q 65. If so, may the following documents be provided please?

Site Drainage Plan for Police Impound site, Marsh Folly Pulverisation Plant site, and W&E Quarry site; &

(i) Topographic Survey for Marsh Folly Pulverisation Plant site, and W&E Quarry site

A 65. Response: Existing site Survey information for these sites has been requested and if possible will be provided in due course. If adequate site drainage information is not available on existing surveys proponents will need to rely on their own site inspections.
Q 66. Please confirm that as the Site Operator for each of these refuelling facilities, Government will maintain its responsibilities for the Clean Air Act 1991 - White Oils Storage Facility Operating Licence, and its associated requirements as the Licensee?
A 66. Response: Controlled Plant Licenses will be required for each site. Note: These will be new licenses for some of the facilities. There is a legislative requirement to license fuel distribution facilities.

Q 67. If not, and that responsibility is to fall under the Proponent, please confirm

that Government shall retain its Site Operator responsibilities for:
Ensuring the timely notification of spills at locations under its direct operational control are reported within DENR's Spill Reporting Timeline; &
A 67. Response: Site managers on each site will monitor and report any spills. Spills occurring during refilling of tanks and observed during regular maintenance checks will need to be reported by a representative of the successful RFP proponent. Spill reporting requirements are also listed in the license conditions.

(ii) Q 68. Conducting daily fuel stock reconciliation.
A 68. Response: The automated fuel management system will monitor fuel stock and requests to refill holding tanks will be made by a Department Officer based on the reconciliation of the fuel supply from the fuel management system. Note: similar conditions are already in place for all retail fuel station conditions.
Q 69. Are there separate Operating Licence conditions for Government fuel storage plants, as there are for Retail Service Stations and White Oils Storage Terminals?
A 69. Response: The license conditions will be the same for the Government fleet refueling facilities as they are for retail fuel station facilities. White Oil Storage terminals represent a greater potential risk and have conditions that reflect this.

Q 70. Do all five (5) refuelling installations (M&P East Broadway, DPT Palmetto Road, Police Impound site, Marsh Folly Pulverisation Plant site, and W&E Quarry site) possess a Fire Certificate authorising the use off the Premises for the purpose of fuel storage & refuelling vessels/vehicles?
A 70 Response: Fire Certificates will be required to be updated for M&P and DPT during the Planning and Building Permit application process to replace the fuel tanks. A separate application for a Fire License must be lodged with BFRS at the time of the Planning Permission Application. Proponents are required to apply for the required Fire Licenses for each site in order to update existing Fire Licenses. Note: There is a fee payable to BFRS directly for a Fire license.

Q 71. DPT Palmetto Road, Is the drain in the centre of the refuelling forecourt connected to an oil/water separator or soakaway pit with interceptor?
A 71. Response: Yes. Please note that the line continues beyond and connects into the central waste water system that eventually discharges to the south shore. The intent is to install and redirect the drain and interceptor to a new soakaway so as to avoid adding any potential oily water into the central waste line.

(2) Q 72. M&P's East Broadway, current storage capacity at 100% is 60,562 Litres. With the scope requiring replacement storage tanks to be located in an existing water tank to create a "vault" that provides access for visual inspection, and said vault has a maximum ceiling height of 8-ft 10-in (not including the ceiling beams that protrude below the ceiling):

(a) is Government prepared for M&P's on-site fuel storage capacity to be reduced by approximately 30% to allow for a fuel storage tank that would be able to have anti-corrosion maintenance performed on the underside of the exterior; or
A 72. Response: Yes, a reduction of capacity is understood to be a possibility. The frequency of refilling the fuel tanks would then be increased to maintain operational supply levels.

(b) Q 73. if Government wishes to minimize the amount of reduction in M&P's current storage capacity:

(i) Will Government be comfortable with a fuel storage tank with a flat bottom (& thus no access to the exterior underside for anti-corrosion maintenance)? If yes, who will be responsible for any deterioration to the exterior underside of the fuel storage tank due to the impossibility of any anti-corrosion maintenance for that area being physically performed? Or
A 73. Response: The requirement is for double walled bunded fuel holding tanks (Refer to DENR Guidance Note). There are various options available including flat bottom tanks from various suppliers. Proponents are required to determine the best solution to supply, install and maintain.

Q 74. if Government desires a fuel storage tank solution that provides 360° access for anti-corrosion maintenance, including underneath, will Government permit the raising of the ceiling for the section of the water tank that will be used for the fuel storage tank sufficiently enough, and allow for the planter be removed either in full or partially, & a raised/blocked vehicular access to the roadway between the Corporation of Hamilton Docks and planter? Or

A 74. Response: There is no agreement with the COH to alter or raise the lid level of the existing water tank nor is there any agreement to remove the planter.

Q 75. Will Government consider another underground area that is above the high-tide water level? If yes, please indicate other suitable areas for consideration.
A 75. Response: If proponents have an alternative viable location in mind they are free to propose this. However, finding an alternative location that permits the continued operations at Marine & Ports while the fuel tanks are replaced has not been identified.

Q 76. How far below grade is the ceiling of the underground water tank (i.e. what is the thickness of the slab, and any sub-grade, asphalt, etc. that sits on top)?
A 76. Response: Refer to Brunel drawings already issued.

Q 77. What is M&P's minimum on-site capacity required to meet its obligations under Section 4.6 of Government's National Fuels Policy?

A 77. Response: Current required monthly diesel use to maintain all operations is 115,000 Lt. per month. (Diesel only).

Q 78. If the Proponent wishes to utilize a portion of Government property that is within the existing Corporation of Hamilton Container Docks area, what arrangements will need to be made to use this secured shipping port area, and be in compliance with the International Ship & Port Facility Code?
A 78. Response: Proponents should determine solutions that remain within the existing site boundaries other than the agreed extent of the COH water tank lease area.

D) Q 79. Project Personnel Qualifications & References – Annex H

E) As this Annex pertains to key personnel required to support the implementation of

this project, as it pertains to the part of the project that involves the Supply & Delivery of Bulk Fuels, do you require References of our current employees that deliver the Bulk Fuels, or is the References Section strictly for Sub-Contractors the Proponent may engage in the Infrastructure Upgrades part of the Project?

A 79. Response: We do not require references of current employees that deliver Bulk Fuels.

Q 80. Local Benefits Ownership – Q# 2

i. There is reference to the Bermuda Government's Code of Practice for Project Management and Procurement. On Government's website, there is a document (https://www.gov.bm/sites/default/files/CODE%20OF%20PRACTICE_Final_2.pdf) that is marked as '*Draft for Public Consultation Only*'). Is this the document that this question refers to? If so, there is no mention of the term, '*Specified Business*'.

e) Skill Development – Q# 9

ii. Question 9 states, *'If yes, to questions 8 and 9…'* should the reference to question # 9 be a different question?

A 80. Response: The Bermuda Government's Code of Practice for Project Management and Procurement 2nd Edith, 27 July 2020 is on the Government's website. This document defines the term 'Specified Business'.

Best regards,

Elizabeth Davis-Smith

Assistant Purchasing and Supply Officer
Ministry of Public Works

END OF ADDENDUM # 3

Annex C – Scope of Services

A. INTRODUCTION

In addition to an anticipated long-term contract for the supply and delivery of bulk fuels to Government of Bermuda sites, this invitation involves upgrading the storage, dispensing and management systems of fuels at select Government sites at the Successful Proponent's expense. Respondents are required to analyse what needs to be done and/or equipment to be replaced.

In particular, the Department of Transportation ("DPT") requires the installation of new aboveground fuel tanks while maintaining the existing underground fuel tanks until the new fuel tanks are installed and commissioned. Once commissioned, the Successful Proponent must remove the old fuel tanks and make good the existing paving stone driveway around the new aboveground fuel tanks as well as over the existing underground fuel tanks on completion of the project. For the Department of Marine and Ports ("M&P"), they require the installation of new aboveground fuel tanks while maintaining the existing underground fuel tanks until the new fuel tanks are installed and commissioned. Once commissioned, the Successful Proponent must remove the old fuel tanks.

The Department of Corrections (Westgate facility) requires the installation of new aboveground fuel tanks while maintaining the existing underground fuel tanks until the new fuel tanks are installed and commissioned. Once commissioned, the Successful Proponent must remove the old fuel tanks. The scope of work includes providing an asphalt surface around the new aboveground fuel tanks as well as making good the asphalt driveway over the existing underground fuel tanks on completion of the project.

For the Department of Marine and Ports ("M&P"), they require the installation of new aboveground fuel tanks while maintaining the existing underground fuel tanks until the new fuel tanks are installed and commissioned. Once commissioned, the Successful Proponent must remove the old fuel tanks.

The larger or "major" users/Departments (DPT, M&P, Ministry of Public Works and the Bermuda Police Service, require a computerized fuel management system as well as automatic tank gauges for inventory management and fuel tracking (in some cases, by vehicle/equipment). At present, only the two key Ministry of Public Works sites are equipped with these components and fuel management system.

Submission of this RFP shall constitute a guarantee by the respondent that a stock of replacement parts for the specified equipment, material, product or work product is available to the Government fuelling stations. Captive parts must be held in stock and be available to ensure continued fuel delivery at each site at no less than 50% capacity and without delays to full delivery capability to be restored within 7 days in the event of any failure. The proponent shall provide parts(s) delivery, to include deliveries on Saturday, Sunday and holidays if required for an emergency. If special handling and/or freight are required, the Proponent will assume all charges and fees.

B. SUPPLY AND DELIVERY OF FUEL PRODUCTS

1. Product Specifications

Fuel products shall meet and/or exceed the following grades throughout the term of the contract:

1.1. Diesel – Ultra Low Sulphur Diesel #2

1.2. Unleaded – Premium Unleaded Gasoline [95 unleaded (ULP)]

2. Quality Control

The Successful Proponent agrees that fuel products shall be uniform in quality, shall conform to the specifications provided and shall not be the cause of any damage to Government equipment. In the event that a fuel product does not conform to the specifications, then the Successful Proponent shall remove and replace the non-conforming fuel product and, accordingly, shall repair any equipment that has sustained damage as a result of the non-compliance. The Government and/or its agent reserves the right to take samples of product, at any time, for verification of specifications and/or detect the presence of any contaminants.

Annex C – Scope of Services

3. **Quantities**
Quantities shown in this solicitation are approximate only and shall be used by the Government as a basis for calculation with respect to the financial evaluation of the award (see Table 1). These quantities are based on historical data and are not guaranteed to be accurate and are furnished without any liability on behalf of the Government.

Table 1: Participating Agencies

Department	Location	Annual (litres)[1]	
		Diesel	Unleaded
Bermuda Police Service	10 Headquarters Hill, Devonshire	24,400	150,900
Bermuda Regiment	1 South Road, Warwick	10,200	14,800
Bermuda Zoological Society	40 North Shore Rd., Smith's	12,591	NIL
Corrections	1 Pender Road, Sandys	6,732	9,000
Env. & Natural Resources	169 South Road, Paget	NIL	4,500
Environmental Protection	169 South Road, Paget	NIL	6,500
Golf Course – Ocean View	2 Barkers Hill Road, Devonshire	NIL	12,350
Golf Course – Port Royal	5 Port Royal Golf Course Road, Southampton	11,000	33,500
Marine & Ports	4 Crow Lane, Hamilton	1,378,344	NIL
Public Transportation	26 Palmetto Road, Devonshire	1,150,135	26,400
Public Works – Asphalt Plant	18 Quarry Road, Smiths	69,750	NIL
Public Works – Marsh Folly	Marsh Folly Composting Facility	385,000	169,300
Public Works – Quarry	18 Quarry Road, Smiths	123,637	56,350
Public Works – Tynes Bay	32 Palmetto Road, Devonshire	28,221	NIL
Corrections – Westgate	2 Pender Road Ireland Island Sandy's	4500	4500
	Totals	**3,204,510**	**488,100**

[1] Estimates only; based on deliveries for the 2019 calendar year

4. **Deliveries**

4.1. The Successful Proponent must deliver bulk product to ensure no shortages or inconveniences are experienced by the Government or its agencies. Sites not equipped with remote inventory monitoring systems accessible to the Successful Proponent will send tank ("dip") readings each weekday or on a frequency mutually agreed to between the Successful Proponent and the site. In such arrangements, and under normal conditions, products shall be delivered within one (1) business day following receipt of the tank readings.

4.2. Deliveries will be made during normal working hours. Normal working hours may vary based on site but is typically between the hours of 7:00am and 5:00pm Monday to Friday. Confirmation of site hours of operation to be confirmed between the Successful Proponent and the site manager.

4.3. All bulk products shall be delivered and placed in the appropriate storage tanks at each site and shall only be received by designated staff only. For clarity, transfer of ownership and risk in and to product takes place upon placement in the appropriate storage tanks at each site and delivery had been accepted in writing by a duly authorized person acting on behalf of the Government.

4.4. The Successful Proponent must provide acceptable proof of delivered quantities of product in the form of a meter ticket or invoice, for each product, prepared at the time of delivery.

4.5. The Successful Proponent will be accompanied by an authorized staff member during the delivery to the respective site. The staff member will identify the location, enable access and secure the site after delivery. The staff member must be in attendance during any delivery process which includes, but is not limited to, a tank inventory reading prior to placement and following placement in the respective tank(s) to corroborate with the quantities shown on the

metered ticket/invoice. Variation between the metered ticket/invoice quantity and the receipt volume indicated by the tank inventory readings is permitted within +/- 1% of the delivered quantity without additional cost to the Government or the Successful Proponent.

5. **Emergency Deliveries and Priority Service**

5.1. In the event of an unforeseen circumstance, the Government may require the Successful Proponent to provide an emergency delivery. In the event the Successful Proponent is not able to respond to the emergency situation within the required time, the Government reserves the right to obtain supply from another source of supply of its choosing. The delivery time for emergencies will vary depending on the situation and is at the sole discretion of the Government.

5.2. The Successful Proponent must treat the Government as their top priority client in times of declared emergencies, supplying bulk fuels to the Government agencies before supplying to commercial/retail outlets. Respondents are directed to page 20 of the National Fuels Policy ("NFP") for additional information.

6. **Fuel Measuring**

6.1. Replacement fuel dipsticks must be supplied by the Successful Proponent on request at the Successful Proponent's cost during the contract period but shall not exceed one (1) dipstick per site per fuel type per contract year. Requests for dipsticks beyond this stated amount shall be at the cost of the Government agency.

6.2. Replacement fuel dipsticks must be supplied by the Successful Proponent on request at the Successful Proponent's cost during the contract period but shall not exceed one (1) dipstick per site per fuel type per contract year. Requests for dipsticks beyond this stated amount shall be at the cost of the Government agency.

7. **Pricing**

The Government seeks a pricing scheme from Respondents which will be mutually beneficial and sustainable for both parties. See Annex B, Pricing Form, for additional information. Regardless of method, all fuel products are to be delivered to each site inclusive of all costs including, but not limited to, all freight, insurance, labour, duties, and taxes.

8. **Invoicing**

8.1. Payment to the Successful Proponent will be based on actual quantities received. Unscheduled deliveries and deliveries without an accompanying invoice is not permitted unless mutually agreed to between the Successful Proponent and the site.

8.2. At a minimum, all invoices must show the quantities delivered in litres, net price per litre delivered, type of fuel delivered, delivery location and date of delivery.

9. **Framework Agreement (Contract "Piggyback" Option)**

9.1. Any resultant contract between the Government and the Proponent, including any amendments, may be accessed by any Government agencies not identified herein including, but not limited to, the following:

a. West End Development Corporation ("WEDCO")
b. Bermuda Hospital Board
c. Fire and Rescue Services
d. Bermuda Airport Authority
e. Bermuda Land Development Company ("BLDC")
f. Municipalities

9.2. All provisions, including pricing, will apply to any of the above listed entities opting to access the contract. The Proponent and any additional agencies will enter into the contract through contract amendment(s).

9.3. Where additional Government agencies opt to access the contract and who require infrastructure upgrades, price discounts shall be adjusted through negotiation between the Successful Proponent and the Ministry of Public Works Headquarters to compensate for the infrastructure upgrades.

9.4. The Government reserves the right to add or delete sites and services throughout the term of the contract without affecting the price discounts quoted by the Successful Proponent. The Government, where able, will provide 30 days' notice of any changes to sites or services.

10. Insurance Requirements

10.1. The Successful Proponent, and each of their subcontractors carrying out activities under the Contract, shall provide and maintain during the term of the Contract:
Commercial General Liability insurance subject to limits of not less than Three Million ($3,000,000) inclusive per occurrence. To achieve the desired limit, umbrella or excess liability insurance may be used.

10.2. Coverage shall include but not limited to bodily injury including death, personal injury, damage to property including loss of use thereof, premises and completed operations, contractual liability, contingent employers liability, owner's protective coverage, non-owned automobile and contain a cross liability, severability of insured clause. The Government of Bermuda is to be added as an additional insured but only with respect to liability arising out of the operations of the Named Insured.

10.3. The Success Proponent must provide a copy of their Policy (not Certificate) and that of each of their subcontractors carrying out activities under the Contract as a pre-condition of contract award. On an annual basis, the Successful Proponent must furnish a copy (ies) of the insurance Certificate(s).

11. Worker Qualifications

All personnel engaged in the execution of this contract(s) shall be in the possession of a current license or certificate of competence applicable to the particular function being performed. The Successful Proponent shall provide a competent representative to be constantly on site during the delivery of materials. The Successful Proponent's representative shall, at all times, be in full control and be responsible for all activities and all phases of work, including those portions of the work performed by sub-contractors, as/if applicable.

Annex C – Scope of Services

C. INFRASTRUCTURE UPGRADES

1. Current and Future States

The Participating Agencies require upgrades to their fuel dispensing systems and, in some cases, substantial upgrades. Table 2 identifies larger or "major" users with known and varying upgrade requirements with Table 3 identifying the current configurations. In some instances, the site visits are used to assess the equipment requiring upgrades. However, the Department of Transportation ("DPT") and the Department of Marine and Ports ("M&P") require substantial upgrades and additional details are provided herein. The Successful Proponent shall install fuel storage tanks, management systems, and/or upgrading the storage and dispensing equipment at the Participating Agencies including, but not limited to, the removal and replacement of fuel tanks (aboveground and belowground) and fuel dispensers.

Table 2: Major Departments Requiring Infrastructure Upgrades

Department	Location
Bermuda Police Service	10 Headquarters Hill, Devonshire
Marine & Ports	4 Crow Lane, Hamilton
Public Transportation	26 Palmetto Road, Devonshire DV 05
Public Works – Marsh Folly	Marsh Folly Composting Facility
Public Works – Quarry Stores	18 Quarry Road, Smiths
Corrections: Westgate	2 Pender Road, Ireland Island, Sandy's

Table 3: Current Configurations of Major Departments[2]

Department of Public Transportation	
Fuel Type #1	Diesel
Dispenser	One (1) Gasboy and one (1) SOL; dual nozzles
Tank Type	Two (2) single-walled plasteel (TBD); below ground; circa 1987 (est.)
Tank Size	3,000 AG (each)
Fuel Type #2	Unleaded
Dispenser	One (1) Gasboy single nozzle
Tank Type	One (1) single-walled plasteel (TBD); below ground; circa 1987 (est.)
Tank Size	1,500 AG
Department of Marine and Ports	
Fuel Type #1	Diesel
Dispenser	TBD
Tank Type	TBD
Tank Size	TBD
Fuel Type #2	Unleaded
Dispenser	TBD
Tank Type	TBD
Tank Size	TBD
Public Works (Marsh Folly)	
Fuel Type #1	Diesel
Dispenser	One (1) single nozzle
Tank Type	Two (2) below ground; 64" diameter x 144" long; cylindrical; horizontal orientation
Tank Size	2,001 AG (each)
Fuel Type #2	Unleaded
Dispenser	One (1) single nozzle
Tank Type	One (1) below ground; 64" diameter x 144" long; cylindrical; horizontal orientation
Tank Size	2,001 AG
Public Works (Quarry)	
Fuel Type #1	Diesel

Dispenser	One (1) dual nozzle
Tank Type	One (1) below ground; 64" diameter x 216" long; cylindrical; horizontal orientation
Tank Size	3,008 AG
Fuel Type #2	Unleaded
Dispenser	One (1) dual nozzle
Tank Type	One (1) below ground; 64" diameter x 72" long; cylindrical; horizontal orientation
Tank Size	1,000 AG
Bermuda Police Service	
Fuel Type	Unleaded and Diesel
Dispenser	single nozzle - one (1) each unleaded & diesel
Tank Type	Split tank (3000/1000 - unleaded/diesel)
Tank Size	4000 AG
Department Of Corrections: Westgate	
Fuel Type	Unleaded and Diesel
Dispenser	single nozzle - one (1) each unleaded & diesel
Tank Type	Separate Diesel and unleaded fuel tanks (underground tanks)
Tank Size	4,500 AG each tank

[2] May not be accurate and are furnished without any liability on behalf of the Government

Departments identified in Table 2 require a computerized fuel management system as well as automatic tank gauges ("ATG"). At present, only the 'Public Works-Quarry' and 'Public Works-Marsh Folly' sites are equipped with these components and using PetroLeader® as the fuel management system. For reference purposes, an ATG is an electronic device whose basic function is to monitor the fuel level in the tank over a period of time to see if the tank is leaking and detect if there is any water in the fuel.

2. **Construction Management Plan (RFP submission requirement)**
Throughout the Contract(s), the Successful Proponent shall provide ongoing project management to ensure that a comprehensive Project Plan is developed, executed, monitored, reported on, and maintained. The Vendor(s) shall provide overall project management for all Project Components, including day-to-day management of Vendor(s) staff and production of required deliverables.

Respondents are required to provide a draft Construction Management Plan with their submission which must include the following, at a minimum:

2.1. Gap Analysis to include detailed site assessment of fuelling locations, and current or new Fuel Management System(s).
  2.1.1. For the fuel an implementation plan, include installation of hardware, data conversion, building interfaces, loading software, testing, and system commissioning
2.2. Detailed Project Plan that outlines all tasks needed to complete the Scope of Services.
2.3. Construction timeframes including milestones and critical path items. In terms of priorities of the various sites, the replacement of fuel tanks at M&P is considered urgent due to potential negative environmental impacts posed by the existing tanks. To a lesser degree, the DPT site poses a potential threat to Bermuda's only fresh water lens. Respondents are to analyse the requirements of the Participating Agencies and develop a plan to delineate what work is required and equipment to replace.
2.4. A site safety plan showing work areas and how those areas are separated from other operational areas during the project reflecting the phased nature of the work and clearly indicating the phases proposed.
2.5. A method of maintaining refuelling of buses throughout the works, in the case of DPT, to ensure uninterrupted public bus services that will need to be reviewed and supported by Operations Management at DPT.
2.6. The Respondent's Health and Safety Practice document adapted to the sites specifically. These include method statements on incident and accident reporting noting that OSHA regulations

require a log book to be kept as well the Department of Health OSH Officer to be informed within 24 hours of any incident.

2.7. Statement showing understanding of permits and licenses required.

2.8. Contact list indicating name, phone number and email address for Contract Manager, Site Supervisor, etc...

2.9. Construction access routes, on-site parking and Palmetto Road traffic management plan,

2.10. Construction methodology and mitigation measures to be employed where relevant such as:

2.10.1. Method statement on how to deal with fuel spills with contact information of who to contact at DENR.

2.10.2. Compliance with the RBCA Guidelines for removal of old fuel tanks to be replaced and for monitoring of ground conditions during removal.

Please note that a final Construction Management Plan will need to be submitted to the Department of Planning, Building Controls Section prior to a commencement inspection on each of the sites is requested. This allows for information from subcontractors who may need to be appointed by the successful proponent to provide updated information for a final Construction Management Plan.

3. Permits, Regulations and Related Matters

3.1. The Respondents or Successful Proponent, as the case may be, shall obtain all permits, licences and approvals required in connection with services and works pursuant to this RFP. The costs of obtaining permits, licences and approvals shall be the responsibility of and shall be paid for by the Respondent or successful Proponent.

3.2. Where the Successful Proponent is required by Applicable Laws to hold or obtain any such permit, licence and approval to carry on an activity contemplated in its Proposal or in the Agreement, neither acceptance of the Proposal nor execution of the Agreement by the Government shall be considered an approval by the Government for the Successful Proponent to carry on such activity without the requisite permit, license or approval.

3.3. Permits, regulations, and codes required to be followed by the Successful Proponent include, but are not limited to, the following:

3.3.1. Department of Environment and Natural Resources' 'Risk Based Corrective Action (RBCA) Guidelines

3.3.2. Bermuda (Commercial) Building Code 2012

3.3.3. Bermuda Mechanical Code 2014

3.3.4. Bermuda Fire Code 2014

3.3.5. National Fire Protection Agency Standards (NFPA)

3.3.6. Bermuda Electrical Code 2014

3.3.7. The National Electrical Code (NEC 2011), also known as NFPA 70

3.3.8. Spills On The Sea - Response Procedure

3.3.9. Corporation of Hamilton permits - if required

3.4. Planning Permission

3.4.1. DAP 1 application required

3.4.2. DAP 1 application fee is required

3.4.3. DAP 1 Planning application requires a mandated two-week public notification period. In total a maximum of ten (10) weeks should be anticipated to achieve Planning permission

3.5. Building Permit

3.5.1. Commercial Building Permit is required

3.5.2. As this is a Government Project for Government use, there are no Building Permit fees payable (ref: Building Act 1988, Government is exempt)

3.5.3. Compliance with the Bermuda (Commercial) Building Code 2012

3.5.4. Compliance with the Bermuda Mechanical Code 2014 (Chapter 13 addresses Fuel Piping and Storage)

3.5.5. Stamped certified/registered Engineering drawings are required to be submitted for the Building permit application.

3.6. Fuel tanks and associated pipework must be double walled or suitably bunded and complete with interstitial monitor(s). A Guidance Note on this is available from DENR.

3.7. Fuel tanks must be registered: https://www.gov.bm/online-services/register-petroleum-storage-tank

3.8. Compliance with the Department of Environment and Natural Resources' RBCA Guidelines for removal of old fuel tanks to be replaced or to be left in place and for monitoring of ground conditions.

3.9. Compliance with Bermuda Fire Code 2014, which requires compliance with the National Fire Protection Agency Standards (NFPA). In particular NFPA 30 and NFPA 30A.
- 3.9.1. NFPA 30 "Flammable and Combustible liquids code
  - 3.9.1.1. Ch 12, "Storage of Liquids in Tanks" (All Tanks)
  - 3.9.1.2. Ch 22, "Storage of Liquids in Tanks" (Aboveground Storage Tanks /AST's)
  - 3.9.1.3. Ch 23, 'Storage tank Vaults"
  - 3.9.1.4. Ch 27, "Piping Systems"
- 3.9.2. NFPA 30A
  - 3.9.2.1. Ch 4, "Storage of Liquids"
  - 3.9.2.2. Ch 5, " Piping of Liquids"
  - 3.9.2.3. Ch 6, " Fuel Dispensing Systems"
  - 3.9.2.4. Ch 8 , " Electrical Installations"
  - 3.9.2.5. Ch 9, "Operational Requirements"
  - 3.9.2.6. Compliance with the Bermuda Electrical Code 2014 which modifies and adapts the National Electrical Code (NEC 2011), also known as NFPA 70
  - 3.9.2.7. Article 514 "Motor Fuel Dispensing Facilities"
  - 3.9.2.8. Article 515 " Bulk Storage Plants"

4. DPT Palmetto Road Fuel Tank Replacement

Respondents are directed to the Annex K "Design Documentation" for additional details.

4.1. The project will include the following staged works:
- 4.1.1. Install new aboveground fuel tanks to an area located on the north side of the property between the area designated as Woodland Reserve and the existing north car parking bays.
- 4.1.2. Maintain existing underground fuel tanks until new fuel tanks are installed and commissioned.
- 4.1.3. Observe the Department of Environment and Natural Resources' ("DENR") 'Risk Based Corrective Action (RBCA) Guidelines' ("RBCA Guidelines") during decommissioning and removal of existing underground fuel tanks.
- 4.1.4. The Successful Proponent must make good the existing paving stone driveway around the new aboveground fuel tanks as well as over the existing underground fuel tanks on completion of the project. As it is expected that the brick paving will get torn up by construction traffic during the new installation, the Successful Proponent must repair the driveway paving and strengthen the driveway from the Palmetto Road property entrance to the area of the fuel tanks works.
- 4.1.5. The new bunded AST's must be placed within a low walled containment structure that will contain any potential spill. The containment structure must be connected to a wastewater interceptor and then connected to a new soakaway.

4.2. Notes
- 4.2.1. In terms of design documentation, the Successful Proponent is expected to produce the drawings and specifications required that will meet the Code, Standards and Legislative

requirements. As long as the design complies with these requirements, any alternative solution would be acceptable. Generally, the fuel tanks must be double walled, bunded, aboveground holding tanks with the required ventilation from the sectioned off water tank "vault".

4.2.2. The DENR may accept existing tanks being abandoned and filled with concrete. If this is proposed by a Respondent, the Respondent must provide an environmental report for DENR to review and potentially support such a proposal. (Sub-note: This is not an option at M&P whereby the tanks must be removed at M&P).

4.2.3. The area designated for the new above ground fuel tanks is located within a Water Protection Area and directly adjacent to a Woodland Reserve area. The Department of Planning, supported by DENR, confirmed with the Government that an Environmental Impact Statement (EIS) will not be required. The Woodland Reserve boundary will be reconsidered and adjusted according to whatever land is required to accommodate the new tanks. The final area used for the fuel tanks will be accommodated.

4.2.4. The area designated for the new above ground fuel tanks is located within what is currently designated Woodland Reserve. This designation is considered an anomaly and it has been agreed with the Department Of Planning that Policy ZON.12 will apply which states:
"Where there appears to be a discrepancy between a Base Zone, Conservation Area, Protection Area and/or coastal boundary on the Zoning Map and the physical conditions on the ground, the Board shall consider the relevant policies of the Statement, the zoning of adjacent lands, aerial photographs and the on-site conditions, in its determination of the boundaries that should apply".

4.2.5. Any Environmental Impact Statement (EIS) and Conservation Management Plan (CMP) requirements have been agreed to be waived by the Department of Planning.

4.3. Projects/Matters Out of Scope
For information purposes only, other related projects required to meet Environmental legislation and **not** part of the fuel tank replacement works include:

4.3.1. Cleaning out and re-establishing the site drainage system to capture runoff water from bus washing activities.

4.3.2. Cleaning out and re-establishing waste oil connection systems to properly contain waste oil as well as separate the collection of waste oil from waste coolant (radiator wash out).

4.3.3. New, or clean out and upgrade existing, soakaways that drain into the neighbouring golf course land and ponds.

4.3.4. Upgrade the existing bus wash facility.

4.3.5. New spray painting facility (in location of existing spray painting facility).

5. M&P East Broadway

Respondents are directed to the Annex K "Design Documentation" for additional details.

This solicitation is limited to creating the space within an existing large water tank to take the new fuel tanks. The separated area of the existing water tank would form an underground "vault" within which two (2) aboveground bunded fuel holding tanks can be located. This solution has been accepted and approved in principle by both the Department of Health and Department of Natural Resources. The Department of Planning, Ministry of Tourism Transport and Ministry of Public Works have been consulted and approve this strategy.

NOTE: The remaining area of the tank can be used for non-potable water collection to provide water for M&P operational functions such as ferry washing, flushing out of engine components etc. during routine maintenance.

For information purposes, there are three totally separate projects undergoing at the site:

- New wastewater connections
- New oil supply tanks and new waste oil disposal tanks

- New water connection to M&P site from the remaining water tank area after the space for the new fuel tanks has been sectioned off.

The Government has not proceeded with any work except some trenching for water supply lines from the Corporation of Hamilton tank to the M&P boundary. Those water lines are in place underground but not yet connected.

It is envisioned respondents to provide detailed design on the new fuel tank locations and not any of the other matters.

For the purposes of this RFP, the upgrade of the freshwater supply system and the replacement of the fuel tanks are linked in that the only place to put the new fuel tanks is to appropriate a portion of the water tank that lies beyond the property. This solution has been discussed at length within the Government as well as with the Corporation of Hamilton who agree in principle. The matter of full resolution of achieving this is sought from the Respondents. This solution allows the existing fuel tanks to remain operational during the installation of the new tanks allowing operational continuity as well as providing an essentially aboveground installation of the new tanks – albeit that they be located within the confines of a portion of the water tank. The key here is that the new fuel tanks be fully bunded double wall above ground fuel tanks providing protection from contamination of the water supply as well as by being further isolated by a new double wall separation between the fuel tank area and the water holding area.

5.1. Projects/Matters Out of Scope
For information purposes only, other related projects required to meet Environmental legislation and **not** part of the fuel tank replacement works include (:

5.1.1. A new waste water return system to connect the docks to the existing waste water discharge that runs along East Broadway, connecting into the City waste water lines that run past and to the hospital etc.

5.1.2. A new oil supply and waste oil return system to connect the docks to another bunded waste oil collection tank that can then be pumped out on a regular basis. A bunded oil supply tank will need to be housed within the maintenance facility building where oil drums are currently located with the bunded waste oil collection tank being located outside the building where a collection truck can access it.

5.2. Notes

5.2.1. The area designated for the new above ground fuel tanks is located within a Water Protection Area. Consequently, an Environmental Impact Statement (EIS) may be required by the Department of Planning.

5.2.2. Respondents may propose creating space to allow the installation of the new fuel tanks. With this, the type of bunded fuel tank would be prescribed by the respondent by the space created.

6. Department of Corrections: Westgate, Pender Road, Sandy's
Respondents are directed to the **Annex S** "Westgate Site Illustrations" for additional details.

6.1 The project will include the following staged works:

6.1.1 Install new aboveground fuel tanks to a Code compliant area within the designated and fenced stores area. An indicative location is shown on Annex S but proponents are advised to determine an area based the tank size required within that fenced area.

6.1.2 Maintain existing underground fuel tanks until new fuel tanks are installed and commissioned.

6.1.3 Observe the Department of Environment and Natural Resources' ("DENR") 'Risk Based Corrective Action (RBCA) Guidelines' ("RBCA Guidelines") during decommissioning and removal of existing underground fuel tanks.

6.1.4 The Successful Proponent must make good the existing asphalt driveway around the new aboveground fuel tanks as well as over the existing underground fuel tanks on completion of the project.

6.1.5 The new bunded AST's must be placed within a low walled containment structure that will contain any potential spill. The containment structure must be connected to a wastewater interceptor and then connected to a new soakaway.

6.1.6 Replace the existing above ground 500-gallon diesel holding tank located within the prison compound and beyond the security Sally Port gates. Note that this holding tank is fed directly from the main 4,500 gallon holding tank and it is assumed that the feed line does not need to be replaced. Respondents should allow re-connecting the feed line to this sub-tank from the new aboveground tank location.

6.1.7 Replace the unleaded and diesel single nozzle fuel dispensers. One (1) for unleaded fuel and one (1) for diesel fuel.

6.1.8 Replace the existing fuel management system and integrate this with a fuel dispenser tag system. Refer to section 7 below for further clarification.

6.2 Notes

6.2.1 In terms of design documentation, the Successful Proponent is expected to produce the drawings and specifications required that would meet the Code, Standards and Legislative requirements. As long as the design complies with these requirements, any alternative solution would be acceptable. Generally, the fuel tanks must be double walled, bunded, aboveground holding tanks, Refer to DENR Replacement of AST Fuel Tanks Guidance Note (issued January 2019).

6.2.2 The DENR may accept existing tanks being abandoned and filled with concrete. If a Respondent proposes this, the Respondent must provide an environmental report for DENR to review and potentially support such a proposal

7. Fuel Management System

The larger or "major" users identified in Table 2 require a fuel inventory management and (vehicle) usage tracking system, including the supply of fuel "tags" or "fobs" in the following quantities:

- Ministry of Public Works – 600 (approximately)
- DPT – 18 (11 vehicles, 4 "open" tags, 3 spares)
- M&P – 20 ("open" tags assigned to personnel)
- Bermuda Police Service – 353 (350 vehicles + 3 "open" tags)
- Corrections, Westgate – 14 utility vehicles + 3 "open" tags

7.1. Minimum system functionality include the following:

7.1.1. Web-based, including online help/support
7.1.2. Virtually unlimited capacity
7.1.3. Automatically capture tank levels
7.1.4. Automatically notify the supplier(s) when tanks reach re-order levels
7.1.5. Automatically record fuel deliveries
7.1.6. Access to fuelling facilities online
7.1.7. Ability to use "open" tags to permit personnel to dispense fuel to a particular vehicle and track the transaction accordingly
7.1.8. Ability to export transaction and master records in CSV (comma delimited) or MS Excel format

7.2. Activities required of the Successful Proponent include, but are not limited to, the following:

7.2.1. System installation
7.2.2. System testing that mirrors the production environment
7.2.3. Onsite training of Government personnel in operational and administrative functions
7.2.4. User Acceptance Testing to verify the full functionality and technical usability of the system

7.2.5. Support and maintenance for the duration of the Contract

D. EQUIPMENT USE, OWNERSHIP, MAINTENANCE AND REPAIR

1. Equipment Ownership

The Successful Proponent shall install or replace equipment, as the case may be, at the Participating Agencies within the first year of the contract at no cost to the Government. In addition, the Successful Proponent shall be responsible to maintaining all equipment and systems in good working order at no cost to the Government throughout the duration of the contract. All new and replaced equipment ("Equipment") shall remain the property of the Successful Proponent throughout the term of the contract. The Successful Proponent, by participating in this RFP, agrees the Equipment shall become the property and responsibility of the Government at the end of the contract.

2. Equipment Maintenance and Repair

2.1. The Successful Proponent shall be responsible to maintain in good mechanical order and condition and bear all associated costs throughout the duration of the contract all other equipment for the Government sites including, but not limited to, the following:

- 2.1.1. Fuel Tanks
- 2.1.2. Tank Sumps
- 2.1.3. Tank Discharge Sumps
- 2.1.4. Dispensers
- 2.1.5. Dispenser Sumps
- 2.1.6. Submersible Pumps
- 2.1.7. Fuel Management System and Related Components
- 2.1.8. Environmental Monitoring and Tank Gauge/Testing System
- 2.1.9. Periodic calibration of the pumps or when requested by the client or its agent
- 2.1.10. Periodic inspection of equipment or when requested by the client or its agent

2.2. The Government shall be responsible for all costs to maintain, repair and/or replace the following consumable items throughout the duration of the contract:

- 2.2.1. Hoses
- 2.2.2. Hose Safety Breakaways
- 2.2.3. Hose Swivels
- 2.2.4. Nozzles
- 2.2.5. Filters

3. Equipment Use

The Government shall use the Equipment in accordance with the manufacturers', Successful Proponent's or Successful Proponent's nominee's instructions for use. The Government shall not make any alterations, additions, attachments or adjustments to the Equipment without the written permission of the Successful Proponent. Such permission shall not be unreasonably withheld.

4. Equipment Damage

The Government shall notify the Successful Proponent promptly and without undue delay of any damage to, defect in, or theft of the equipment (all of which a referred wherein as "Damage"). The Successful Proponent shall, at its own expense and without undue delay, repair or replace any equipment or part thereof where Damage has occurred as a result of inherent fault, defect, normal wear and tear or from an act of God provided that the Damage was not caused by negligence or wilful act of the Government. Where Damage to Equipment occurred as a result of negligence or wilful act of the Government, the Government shall, at its own expense and without undue delay, repair or replace any Equipment or part thereof at the Successful Proponent's direction.

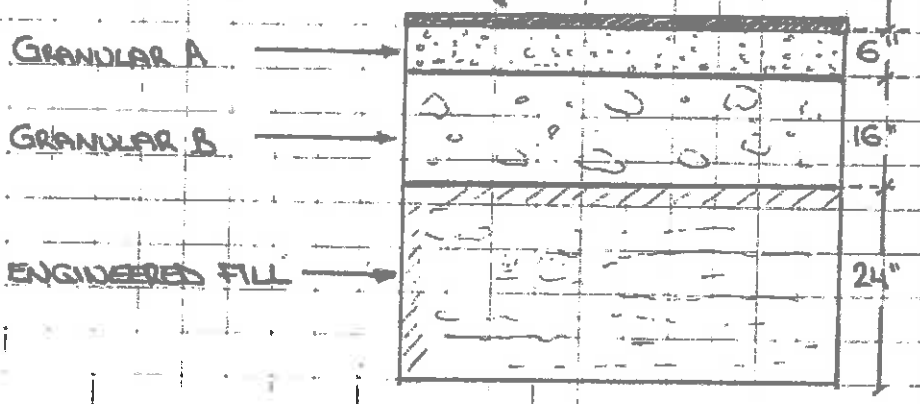
ANNEX "M"

LIMITED

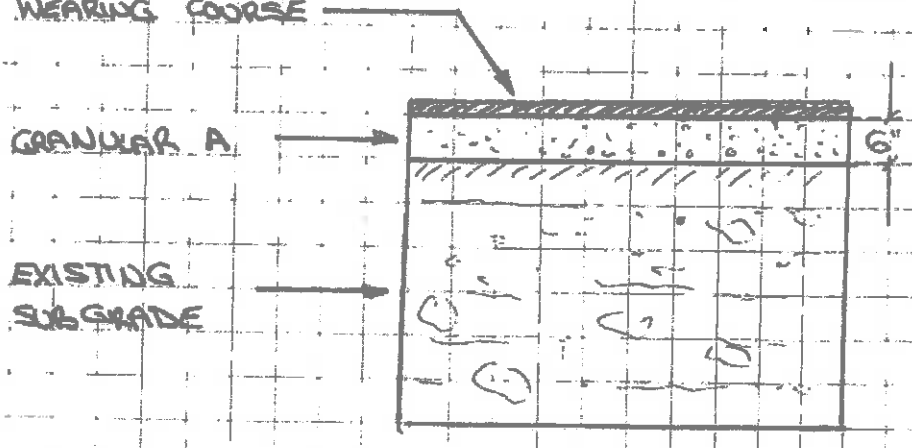
Project		Project ref
26 PALMETTO ROAD, DEVONSHIRE		E06128A
Component		Calc sheet no
DPT DRIVEWAY - SUBGRADE SPECS		1 OF 1
Drawing ref	Calc by: V. TURNER / Date: AUG 2020	Checked / Date

Ref	Calculations	Output

OPTION A: AREAS OF UNSUITABLE SUBGRADE



OPTION B: AREAS WITH SUITABLE SUBGRADE



(Where the existing subgrade is compacted to pass a 'proof-roll' test, and has been verified by a registered engineer.)

1. GENERAL NOTES

1.1. THESE NOTES APPLY TO ALL DRAWINGS.

1.2. CHECK ALL DIMENSIONS ON DETAILS WITH THE ARCHITECTURAL DRAWINGS. REPORT ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK.

1.3. UNLESS NOTED OTHERWISE (UNO) THE CONTRACTOR SHALL SUPPLY ALL OF THE NECESSARY MATERIALS TO COMPLETE THE WORK.

1.4. DO NOT SCALE THE DRAWINGS. CONTRACTOR TO VERIFY ALL DIMENSIONS IN FIELD PRIOR TO COMMENCING WORK.

1.5. WHERE SITE CONDITIONS VARY FROM THE RECORD DRAWINGS, THE CONTRACTOR SHALL CONTACT A REGISTERED STRUCTURAL/CIVIL ENGINEER TO OBTAIN ALTERNATIVE DETAILS.

1.6. THE ORIGINAL TOPOGRAPHY AND GROUND ELEVATIONS, SERVICING AND SURVEY DATA SHOWN ON THE PLAN ARE SUPPLIED FOR INFORMATION PURPOSES ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE ACCURACY OF ALL INFORMATION OBTAINED FROM THESE PLANS.

1.7. ALL ELEVATIONS ARE GEODETIC AND UTILIZE METRIC UNITS UNLESS OTHERWISE NOTED.

1.8. ALL DIMENSIONS AND INVERTS MUST BE VERIFIED PRIOR TO CONSTRUCTION, IF THERE IS ANY DISCREPANCY THE CONTRACTOR IS TO NOTIFY THE ENGINEER PROMPTLY.

1.9. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL UTILITIES DURING CONSTRUCTION. GAS, HYDRO, TELEPHONE OR ANY OTHER UTILITY THAT MAY EXIST ON SITE MUST BE LOCATED AND VERIFIED.

1.10. WHERE APPLICABLE, TOPSOIL TO BE STRIPPED AND STOCKPILED FOR REHABILITATION. CLEAN FILL TO BE PLACED IN FILL AREAS AND COMPACTED TO 95% STANDARD PROCTOR DENSITY.

1.11. ALL UNDERGROUND SERVICES, MATERIALS AND INSTALLATIONS TO BE IN ACCORDANCE WITH THE CURRENT STANDARDS AND CODES OF THE MINISTRY OF PUBLIC WORKS.

1.12. ALL DISTURBED AREAS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER UNLESS OTHERWISE SPECIFIED.

1.13. REINSTATE SOFT SURFACES WITH 75mm TOPSOIL, SEED AND MULCH. CONTRACTOR IS RESPONSIBLE FOR ALL LAYOUT FOR CONSTRUCTION PURPOSES.

1.14. TREES DESIGNATED BY THE ENGINEER MUST BE PROTECTED AND MAINTAINED DURING CONSTRUCTION.

1.15. DO NOT ALTER GRADING OF THE SITE WITHOUT PRIOR APPROVAL OF AUTHORITIES.

1.16. RESTORE ALL TRENCHES AND SURFACES TO CONDITION EQUAL OR BETTER THAN ORIGINAL CONDITION AND TO THE SATISFACTION OF AUTHORITIES.

1.17. CONTRACTOR TO EXCAVATE AND DISPOSE OF ALL EXCESS EXCAVATED MATERIAL, SUCH AS ASPHALT, CURBING AND DEBRIS, OFF SITE AT CONTRACTOR'S EXPENSE.

1.18. THE CONTRACTOR SHALL PROVIDE AT ALL TIMES AND AT NO EXTRA COST TO THE OWNER, ADEQUATE PEDESTRIAN AND VEHICULAR ACCESS AND CONTINUITY OF UTILITY SERVICES TO PROPERTIES ADJOINING THE WORKING AREA.

1.19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL AND SAFETY MEASURES DURING THE CONSTRUCTION PERIOD, INCLUDING THE SUPPLY, INSTALLATION, AND REMOVAL OF ALL NECESSARY SIGNAGE, DELINEATORS, MARKERS AND BARRIERS.

1.20. THE CONTRACTOR SHALL PROVIDE AT ALL TIMES AND AT NO EXTRA COST TO THE OWNER ACCESS TO ALL OTHER UTILITIES LOCATED IN THE WORKING AREA. WHERE ANY INTERRUPTIONS IN THE SUPPLY OF UTILITY SERVICES ARE REQUIRED AND ARE AUTHORIZED, THE CONTRACTOR SHALL GIVE THE AFFECTED PROPERTY OWNERS NOTICE AND SHALL ARRANGE SUCH INTERRUPTIONS SO AS TO CREATE A MINIMUM OF INTERFERENCE TO THOSE AFFECTED.

1.21. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ANY PERMITS, LICENCES, AND CERTIFICATES, THAT ARE REQUIRED FOR THE PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL ARRANGE FOR ALL NECESSARY INSPECTIONS REQUIRED BY THE APPROVALS AND PERMITS.

2. EARTHWORK, EROSION AND SEDIMENT CONTROL NOTES

2.1. THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES, TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE RECEIVING WATERCOURSE, DURING CONSTRUCTION ACTIVITIES. THIS INCLUDES LIMITING THE AMOUNT OF EXPOSED SOIL, TEMPORARY SEDIMENT CONTROL TO BE IMPLEMENTED DURING CONSTRUCTION ON ALL PROPOSED ROAD.

2.2. TEMPORARY SEDIMENT CONTROL TO BE IMPLEMENTED DURING CONSTRUCTION. INSTALL FILTER CLOTH UNDER GRATE OF COVER ON ALL EXISTING ROAD CATCHBASINS WITHIN THE CONSTRUCTION LIMITS AND ANY CATCHBASINS IMMEDIATELY DOWNSTREAM OF CONSTRUCTION AREA. INSTALLATION, MAINTENANCE AND REMOVAL OF SEDIMENT CONTROL MEASURES IS THE RESPONSIBILITY OF THE CONTRACTOR. NO RECYCLED GEOTEXTILE MATERIAL SHALL BE PERMITTED FOR USE ON SITE.

2.3. ALL EQUIPMENT AND MATERIALS SHOULD BE OPERATED AND STORED IN A MANNER TO PREVENT THE ENTRY OF ANY DELETERIOUS SUBSTANCE (EG. PETROLEUM PRODUCTS, SILT, ETC) INTO THE WATER.

2.4. AT THE DISCRETION OF THE PROJECT MANAGER OR MUNICIPAL STAFF, ADDITIONAL SILT CONTROL DEVICES SHALL BE INSTALLED AT DESIGNATED LOCATIONS.

2.5. SEDIMENT THAT IS ACCUMULATED BY THE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED IN A MANNER THAT AVOIDS ESCAPE OF THE SEDIMENT TO THE DOWNSTREAM SIDE OF THE CONTROL MEASURE AND AVOIDS DAMAGE TO THE CONTROL MEASURE. SEDIMENT SHALL BE REMOVED TO THE LEVEL OF THE GRADE EXISTING AT THE TIME THE CONTROL MEASURE WAS CONSTRUCTED.

2.6. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MONITORED TO ENSURE THEY ARE IN EFFECTIVE WORKING ORDER. THE CONDITION OF THE CONTROL MEASURES SHALL BE MONITORED PRIOR TO ANY FORECAST STORM EVENT AND FOLLOWING A STORM EVENT.

2.7. DUST CONTROL MEASURES SHOULD BE CONSIDERED PRIOR TO CLEARING AND GRADING. THE USE OF WATER, CALCIUM CHLORIDE FLAKES/SOLUTION OR MAGNESIUM CHLORIDE FLAKES/SOLUTION SHALL BE USED AS DUST SUPPRESSANTS.

2.8. ALL 'GREEN AREAS' TO BE TREATED WITH 75mm TOPSOIL, SEED AND MULCH. TOPSOIL TO BE STRIPPED AND STOCKPILED FOR REHABILITATION. CLEAN FILL TO BE PLACED IN FILL AREAS AND COMPACTED TO 95% STANDARD PROCTOR DENSITY.

2.9. ALL DISTURBED AREAS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER UNLESS OTHERWISE SPECIFIED.

2.10. STOCKPILED MATERIAL IS TO BE STORED AWAY FROM POTENTIAL RECEIVERS (E.G. STORM CATCHBASINS, MANHOLES), AND BE SURROUNDED BY EROSION CONTROL MEASURES WHERE MATERIAL IS LEFT IN PLACE IN EXCESS OF 14 DAYS.

2.11. WHERE SPECIFIED, ENGINEERED FILL SHALL BE GRADED LOCAL AGGREGATE (NOT GREATER THAN ONE INCH) 'SCREENINGS' FREE FROM ORGANICS AND DELETERIOUS MATERIAL AND APPROVED BY THE REGISTERED ENGINEER. THE FILL SHALL BE PLACED IN LIFTS OF NO GREATER THAN SIX INCHES. EACH LIFT SHAL BE WETTED AND COMPACTED TO A MINIMUM OF 95% OF THE MATERIAL'S MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D1557.

2.12. GRANULAR A: CRUSHED QUARRY STONE 1.25" IN DIAMETER OR LESS
GRANULAR B: QUARRY STONE 4" IN DIAMETER OR LESS

2.13. COMPACTION FOR THE SUBGRADE MAY BE ACHIEVED BY A 10 TON VIBRATORY ROLLER OVER A MINIMUM OF 6 PASSES. THE PROOF-ROLL TEST MAY BE CARRIED OUT BY USING A 20T LOADED DUMP TRUCK, AT WHICH TIME THE COMPACTED SURFACE IS REVIEWED INDENTATIONS. WHERE INDENTATION MEASURES LESS THAN 1/8", THE SURFACE MAY BE CONSIDERED ADEQUATELY COMPACTED.

3. CONCRETE AND ASPHALT NOTES

3.1. ALL STRUCTURAL CONCRETE SHALL ACHIEVE A MINIMUM CYLINDER COMPRESSIVE STRENGTH OF 3500 PSI AT 28 DAYS, (UNO).

3.2. ALL RUBBLE CONCRETE SHALL ACHIEVE A MINIMUM CYLINDER COMPRESSIVE STRENGTH OF 1500 PSI AT 28 DAYS, (UNO).

3.3. CONCRETE SHALL BE MECHANICALLY COMPACTED IN THE APPROVED MANNER.

3.4. CONCRETE COVER TO REBARS SHALL BE AS SPECIFIED ON THE DRAWINGS.

3.5. CONCRETE MIX DESIGN TO BE SUBMITTED TO A REGISTERED STRUCTURAL ENGINEER FOR APPROVAL.

3.6. NO ADDITIVES TO BE USED WITHOUT THE PRIOR APPROVAL FROM A REGISTERED STRUCTURAL ENGINEER.

3.7. ONLY PERSONNEL WITH EXPERIENCE IN STRUCTURAL CONCRETE SHALL BE RESPONSIBLE FOR THE PLACEMENT OF CONCRETE IN ACCORDANCE WITH SECTION 12 BRBC 2014.

3.8. DO NOT CUT OR CORE ANY OPENINGS OR THEIR LIKE IN ANY STRUCTURAL CONCRETE MEMBERS WITHOUT PRIOR WRITTEN APPROVAL FROM A REGISTERED STRUCTURAL ENGINEER.

3.9. EXCAVATE TO THE REQUIRED DEPTH. SEPARATE THE NATIVE SOIL FROM ANY GRANULARS. ALL UNSUITABLE AND/OR ORGANIC MATERIAL WITHIN A 24" DEPTH OF THE SUBGRADE SHALL BE REMOVED.

3.10. JUST PRIOR TO PLACING THE CONCRETE, THE SUBGRADE SHALL BE REGRADED (IF REQUIRED) AND RECOMPACTED.

3.11. SUITABLE SUBGRADES SHALL ENCOMPASS A WELL COMPACTED AND UNDISTURBED FOUNDATION OF OLD ROADS, SOLID ROCK, WELL GRADED GRAVELS COMPACTED TO AN AIR-VOID CONTENT OF 5% OR LESS HAVING A C.B.R. OF NOT LESS THAN 100% AT THE HIGHEST MOISTURE CONTENT LIKELY TO OCCUR IN THE ROAD. THE MINIMUM ACCEPTED COMPACTION FOR THE BACKFILL SHALL BE 95% STANDARD PROCTOR.

3.12. CONCRETE SLABS SHALL HAVE CONTROL JOINTS PLACED AT 15FT C/C IN EITHER DIRECTION. SIZE, DEPTH AND REINFORCEMENT OF CONTROL JOINTS SHALL BE INSTATED AS SPECIFIED IN THE DRAWINGS.

4. INSPECTION AND TESTING

4.1. CONTRACTOR TO PROVIDE 24 HOURS NOTICE FOR THE INSPECTION OF ALL REINFORCING, INCLUDING MASONRY REINFORCING PRIOR TO PLACING CONCRETE.

4.2. CONCRETE TO BE TESTED BASED ON SPECIFICATION REQUIREMENTS. TESTING TO BE DONE BY THE SUPPLIER.

Annex "S"

Westgate: 2 Pender Road Sandy's

Summary of **Scope of Work:**

1. Replace underground fuel holding tanks with double walled bunded above ground fuel tanks
2. Replace fuel pump dispensers (unleaded and diesel, single nozzle, one each)
3. Install Fuel Management system
3. Replace 500 gal diesel holding tank for prison generator (located withing sally port)
4. Remove existing underground fuel tanks when new tanks have been commissioned and operable.

Annex "I"

GOVERNMENT OF BERMUDA
Ministry of Home Affairs
Department of Environment & Natural Resources

Guidance Document for the INSTALLATION of Above-ground and Under-ground Petroleum Fuel Storage Tanks (AST/UST) and associated pipework

July 2019

1. Overview

Petroleum fuel storage tanks, either Underground Storage Tanks (UST) or Aboveground Storage Tanks (AST), and their associated pipework may leak, causing contamination of the ground and/or ground-water. Pollution to the groundwater, public water or seawater is considered an offence under the Water Resources Act 1975. This Guidance document is designed to aid installers of UST/AST tanks to minimise the risks of future spills using a pragmatic approach and is based on best practices recommended in other jurisdictions, some of which are referenced below[1,2,3]. It has also benefitted from input from the two primary fuel storage and supply companies located in Bermuda: **(i)** RUBIS Energy Bermuda Ltd (RUBIS) and (ii) SOL Petroleum Bermuda Ltd (SOL).

2. Background

Older USTs that were fabricated in steel with a single skin (*i.e.* one wall) have been shown to leak after many years within the ground via corrosion to the tank or associated pipework. This has led to measurable impacts to the ground and groundwater leading to costly cleanup efforts. Typically cleanup efforts include:

i. Delineation of the full extent of the contamination to the ground/groundwater using trial pits (i.e. small pits created using a mechanical excavator) and new boreholes drilled down to the water table or deeper,
ii. Excavation and remediation (cleanup) of contaminated material (this is usually undertaken offsite at purpose-built facilities),
iii. Monitoring and reporting according to Bermuda's Risk Based Corrective Action (RBCA) Guidelines[4].
iv. Occasionally additional in-situ treatment is also required for contaminated material located below the depth extent of the excavator or for situations where there is extensive sub-surface contamination.

There has been a concerted effort by companies to remove these older tanks from their asset register before they become such an environmental liability. However, many older USTs remain and many of them are owned by the property owner within residential zoned areas.

ASTs can also present a pollution risk, though due to their greater visibility any failures to the integrity of the tank can be readily observed with an appropriate schedule of visual inspections. However, ASTs can be prone to damage from vehicles, storm events, flooding and rainwater corrosion and as a result require certain precautions to be made. Leaks from ASTs can also occur, and go largely unnoticed, via any of the hidden or

[1] Guidance: Oil Storage Regualtions for businesses. Environment Agency and Departmetn for Environment, Food and Rural Affairs (DEFRA). 3 January 2018. https://www.gov.uk/guidance/storing-oil-at-a-home-or-business

[2] US EPA Source Water Protection Practices Bulletin – Managing Above Ground Storage Tanks to Prevent Contamination of Drinking Water, August 2010. https://nepis.epa.gov/Exe/ZyPDF.cgi/P100O2HB.PDF?Dockey=P100O2HB.PDF

[3] Minnesota Pollution Control Agency, Aboveground Storage Tank Facilities. Minnesota Rules, Chapter 7151. https://www.pca.state.mn.us/waste/aboveground-storage-tank-facilities-less-one-million-gallons-capacity and https://www.pca.state.mn.us/sites/default/files/t-a4-01.pdf (Dec 2008).

[4] **Bermuda's RBCA guidelines are available at:** https://www.gov.bm/file/bermuda%E2%80%99s-risk-based-corrective-action-rbca-guidelines

buried pipework. Also if the tank is used for frequent manual filling of vehicle fuel tanks then this can also lead to measurable environmental impact, especially if located outside of any spill containment areas.

DENR maintains a register of the UST and ASTs of volume 200 US Gallons (USG) and greater and has a policy requiring integrity testing for single-walled tanks greater than 20 years and removal/replacement of any single walled tanks greater than 30 years old. This guidance document does not currently contain a policy for the maximum age for double walled tanks, however, the age limits for associated pipework and tank connection points is limited to 30 years.

3. Purpose & Applicability

This document provides best practice guidance when specifying, designing and installing UST/AST tanks and their associated pipework and infrastructure. Contractors considering the design and install of UST/AST tanks should refer to and acknowledge that they will follow the details provided in this guidance document. Contractors who sign up to and agree to follow this guidance document will be placed on a DENR contractor list for recognised installers of UST/AST systems.

4. Applicable Legislation and Permits

Before planning the install of a UST/AST tank, the contractor shall obtain the following:

- A Building Permit required for *'(h) the installation or renewal of any gas fuel system.'* See Section 2.1(h) of the Bermuda Building Code 2014 and/or Bermuda Residential Building Code 2014. Contact the Deptarment of Planning (DoP) for appropriate forms and instructions: https://planning.gov.bm/index.php/forms/
- Evidence that the installation of a UST/AST has met the requirements of the Bermuda Building Code 2014 (or latest version), which references in Part I, Section 101 the following appropriate local and international codes:
    a. *Bermuda Commercial Building Code 2014*, which adopts and modifies the *International Building Code 2012* and *Bermuda Residential Building Code 2014*.
    b. *Bermuda Mechanical Code 2014*, which adopts and modifies the *International Mechanical Code (IMC) 2012*. Chapter 13 of the IMC **addresses 'Fuel Oil Piping and Storage.'**
    c. *Bermuda Fire Code 2014*, otherwise known as the *Bermuda Fire Safety Act 2014*, which states that the provisions of the National Fire Protection Association standards and codes of practice (*i.e. "NFPA Codes"*) **shall** have the force of law in Bermuda. UST/AST and associated pipework shall comply with:

        ***NFPA 30*, 'Flammable and Combustible Liquids Code,' (incl. UL-142, UL-2085) whereby:**
        i. **Chapter 21 addresses 'Storage of Liquids in Tanks – Requirements for ALL Storage Tanks'**
        ii. **Chapter 22 addreses 'Storage of Liquids in Tanks – Aboveground Storage Tanks'**
        iii. **Chapter 23 addresses 'Storage of Liquids in Tanks – Underground Tanks.'**
        iv. Chapter 25 addresses 'Storage Tank Vaults'
        v. Chapter 27 addresses 'Piping Systems'
        vi. Chapter 29 addresses 'Wharves.'

        ***NFPA 30A* 'Code for Motor Fuel Dispensing Facilities and Repair Garages,' whereby:**
        i. **Chapters 4, 5, 6, 8 and 9 addresses 'Storage of Liquids', 'Piping of Liquids,' 'Fuel Dispensing Systems,' 'Electrical Installations' and 'Operational Requirements,'** respectively.

ii. Chapter 11 addresses 'Marine fueling' for shore-based fuel storage being dispensed on piers, wharves or floating docks into the fuel tanks of marine craft.

***NFPA 303*, 'Fire Protection Standard for Marinas and Boatyards'**

d. *Bermuda Electrical Code 2014*, which modifies and adopts the *National Electrical Code 2011*, also known as *NFPA 70*. Specifically the UST/AST shall comply with:

***NFPA 70* 'National Electrical Code. International Electrical Code Series,' whereby:**

i. Article 514 addresses **'Motor Fuel Dispensing Facilities'**

ii. Article 515 addresses **'Bulk Storage Plants'**

- A completed Fuel Tank Registration form for any AST/UST tank that is 200 USG or greater and submit to the Department of Environment & Natural Resources. Application form is located at: https://www.gov.bm/online-services/register-petroleum-storage-tank

5. General Requirements - for ALL Storage Tanks (UST and ASTs)

Facilities used to store toxic and/or combustible liquids in quantities 200 USG or more shall assess the level of risk at the site before determining the necessary precautions and design requirements of such a facility. The guidance provided below is considered common to both UST and ASTs.

- **Location:** A risk assessment shall be conducted at each proposed location for a new fuel storage facility in order to determine the level of risk of pollution occurring at the site. The risk assessment shall take into consideration the type of facility, type and volume of fuels/oils stored, expected tank fill frequency, frequency of other nearby traffic, types of drainage arrangements (with/without Oily Water Separators), storm events, land zoning, and whether it is adjacent to a pond or in a Water Resources Protection Area or a Cave Protection Area. Further details of this requirement are provided in Annex A. Table 1 includes an example risk assessment for some typical hazards associated with AST/USTs. This assessment shall be provided to DENR for consideration.

  Location - Storm Surges: AST/USTs installed within a vertical distance of 6 metres (*i.e.* 19.7ft) of the groundwater water table shall consider mechanical stress factors associated with tank buoyancy during storm surge events in addition to the increased risk from corrosion to USTs via brackish water. It is recommended that AST/USTs located within 6 metres of the water table shall have a Major Hurricane Preparedness Plan within the Site Plan to highlight the measures necessary to secure the facility. DENR suggests referring to the recommended best practices for flood preparedness for ASTs made by a US state local emergency planning committee[5].

  The UST/AST shall be located where the risk of it being damaged by impact is minimised. Mitigation methods include locating the tank away from; driveways, vehicle turning circles and fork lift truck routes or by placing suitable barriers, bollards or a bund around the tank or surface infrastructure.

- **Manufacture:** New UST or AST tanks shall be sourced from manufacturers with manufacturing conformity certification for the jurisdiction of manufacture. Example conformity certifications include:
  - **'UL' (Underwriters Laboratory)** – typically for US products.
  - **'CE-Marking'** – for European-built products.
  - **'CSA'** – for Canadian built products.

[5] Corpus Cristi Local Emergency Planning Committee. Flood Preparedness: Recommended Best Practices. RRT6 Fact Sheet #103a. Feb 2016: http://www.cclepc.org/docs/Flood-Prepare-fact_sheet.pdf

It is expected that products that meet 'CCC' (China Compulsory Certification) shall also meet one of the above conformity markings as well.

- **Design:** The design drawings of the UST/AST and associated pipework and components shall be stamped and approved by a registered mechanical engineer for all tanks installed on or after 1st June 2019. Owners of older tanks shall make every effort to identify suitable system design approvals to set standards otherwise post-install assessments of the design may be required.
- **Corrosion Protection:** Other than paint and coating systems, electrochemical systems, such as sacrificial anodes, can be used to prevent corrosion. Corrosion protection systems shall be supplied in accordance with the requirements of the tank manufacturer.
- **Overfill Prevention:** This is required to limit the amount of fuel that can be stored within a fuel tank while allowing for expansion due to changes in temperature and/or pressure. Overfill protection shall be incorporated into the UST and AST tank design to 90% of the maximum capacity of the tank. This shall be written into the fuel supplier delivery policy. Examples of overfill protection systems include:
    i. High level alarm at 90% of the tanks capacity that is either visible or audible to the person controlling the transfer of product,
    ii. Automatic shutdown at 90% capacity,
    iii. Permanently mounted sight-glass or gauge that is clearly visible, or
    iv. Manual gauging if training is provided within the company to an industry standard with suitable support personnel to assist.
- **Tank Ventilation:** Venting of the tank is required when filling and dispensing of the fuel. Under normal operational conditions and with a correctly installed overfill prevention device vent lines should not contain any fuel. Condensate can form in the vent pipe and for this reason all vent lines should be laid with a fall/declevity back towards the tank. Use of minor pressure release valves on the vent pipe can be used to prevent loss of product though evaporation, however, pressure release valves shall be suitably sized to ensure that they do not lead to over-pressurisation of the tank upon filling.
- **Pipework:** It is important to limit the numbers of pipe joints and distances of pipe runs where ever possible. Single skin steel pipework that is finished with a galvanised coating may be used. Secondary containment of pipework is required for any pipework that is located along routes that are either hidden or buried. Refer to Chapter 13 of the *International Mechanical Code 2012* for requirements for piping materials, joints and piping supports.
- **Check Valves:** Check valves restrict the fuel flow between the tank and dispenser/appliance to one direction, which helps to keep the pump primed. However, incorrectly located check valves can cause the tank to empty via siphon action upon failure of the pipe. The design shall ensure that the check valve is located such that it does not lead to siphoning of the tank upon failure of any pipework. Anti-siphoning valves may also be installed.
- **Filling / Fuel Transfer Areas:** Fuel/oil transfer areas shall be designed with appropriate safeguards to prevent spillage outside of any containment areas. Spill trays, spill boxes, remote fill boxes or containment areas must effectively contain any release at a connection point. The tank fill point should always be visible from the delivery tanker or the documented filling process shall use more than one person in order to quickly identify any issues and raise the alarm during the filling process. For fuel filling of vehicles or vessels using a hand held nozzle the nozzle shall meet the requirements of NFPA 30A, **Chapter 6 'Fuel Dispensing Systems.'**
- **Labelling:** ASTs and associated pipework shall be clearly labelled indicating the:
    i. Type of substance being stored,

ii. Tank's maximum safe fill capacity (*i.e.* 90% of maximum tank capacity) and
iii. 24-hour Contact details in the event of an emergency shall include the owner of the tank (*i.e.* Property owner*, Land Leaseholder*, Building owner* or Fuel supplier* - **delete as applicable*).

Other labelling required by Bermuda Fire & Rescue Service (BFRS) shall also be provided clearly on the tank. For UST's, the filling points and other associated pipework that are visible above ground shall be labelled as described for ASTs.

- **Records:** All UST/ASTs shall have their monitoring and inspection records held on site. The format of the records shall be to an industry standard appropriate for any jurisidiction within US, Canada or UK/EU. A Tank Registration Form shall be submitted to DENR for any UST/AST of capacity 200 USG or more.

6. Specific Requirements - Above-ground Storage Tank (AST):

In addition to the common requirements provided for all UST/ASTs in section 5 the following requirements are pertinent to ASTs only:

- **AST Secondary Containment:** DENR recommends all installs of ASTs to have double skinned walls where each skin is separated by a void space, commonly called the interstitial space. This void space shall be monitored [6] for structural integrity (*i.e.* Interstitial Monitoring) using either vacuum or positive pressure detection systems that indicate when the integrity of the double wall has been compromised. The frequency of monitoring shall be inline with the recommendations of the OEM and once a failure is detected shall be reported to DENR within 24-hours of detection.

  Many of the international best practises require a bund with a capacity of 110% of the maximum volume of the largest tank in the bund in order to accommodate the fuel while allowing for potential displacement by collected rainwater or fire suppression chemicals[1,2,3]. It is noted that bunds work well on sites that store considerable volumes of fuel/oil (*i.e.* >10,000 USG) providing that the rainwater is either prevented from entering the bund (*i.e.* covered facilities) or is actively managed to prevent loss of containment capacity and to prevent breeding of mosquitoes[7]. DENR has found an alternative requirement that states that a separate secondary containment area (*i.e.* bund) of 110% is NOT required for double-walled above ground tanks[3].

  DENR recommends that new ASTs be double-walled with interstitial monitoring or, alternatively, for single-walled tanks to be located within a bund that has a nominal storage of 110% of the capacity of the largest fuel tank within the bund. However, in Cave Protection Areas or within 30 metres of a recognised pond DENR requires ASTs to be double-walled AND to also be located within a bund that has a capacity of 110% of the largest tank within the bund.

  If a bund is selected then it shall either be covered to prevent rain water ingress or shall use an oil filtering device[8] on the discharge valve located at the base of the bund. Other bund management processes may also be acceptable and should be discussed with DENR.

---

[6] US EPA Release Detection for underground Storage Tanks (USTs). https://www.epa.gov/ust/release-detection-underground-storage-tanks-usts

[7] Public Health (Mosquito Control) Regulations 1930. http://www.bermudalaws.bm/laws/Consolidated%20Laws/Public%20Health%20(Mosquito%20Control)%20Regulations%201930.pdf

[8] Example Oil Filtering devices: (i) Solidification Products International Inc (SPI) Petro-Pipe, (ii) Advanced Water Systems Inc. Spill Monkey, (iii) Imbibitive Technologies Corporation, Imbibere Beads Containment Shut-off Systems.

- **Partial containment of tanks larger than 1,000,000 USG:** can also be achieved through the use of compacted clay or other materials beneath the tank to capture and contain smaller leaks from less visible tank locations (*i.e.* tank underside). The clay or other material shall demonstrate a permeability rate to water of less than 1×10^{-7} cm/sec.
- **Traffic Bollards:** ASTs, without concrete bunds, shall be protected from impact by traffic using a system, such as a traffic bollard, that is approved to a stated standard.
- **Storage Drums:** It is acknowledged that although storage drums, such as steel 55 USG / 200 litre containers, are not technically ASTs greater than 200 USG requiring registration, they can present a considerable risk of pollution to the environment through inappropriate filling of smaller containers or from corrosion of the relatively thin steel outer shell. DENR recommends that every storage drum in use shall be located on top of a drip tray that has a capacity equal to or more than one quarter of the holding capacity of the drum[1]. If the drip tray can hold more than one drum, then it must hold one quarter of the combined capacity of the drums that it can hold[1]. Preferably, the storage drums that are in use shall be located under cover to prevent corrosion from rainwater and loss of containment capacity through displacement by rainwater.

7. Specific Requirements - Under-ground Storage Tank (UST):

In addition to the common requirements provided for all UST/ASTs in section 5, the following requirements are pertinent to USTs only:

- **UST Secondary Containment:** New UST tanks must be either double-walled with an interstitial monitor or placed in a secure, leak-tight vault with a leak detection system.
- **Location:** Consider the location with respect to future ease of removal. Do not, for example, locate the UST within a building foundation or within a structural wall.
- **Tank Infill:** Once a tank is installed underground it is subject to many stresses. The type of backfill and supports that should be used underground should take into consideration these stresses and shall be approved by the DoP.
- **Cover slab and access hatches/manholes**: over the tank shall be designed to take into consideration the ground and loading conditions.

UST/AST Installation Guidance Document Process & Declaration:

1. Engage a Suitable Contractor

Hire the services of a suitable contractor (*i.e.* responsible party) who will manage and oversee the design, permissions and installation of the UST/AST and associated pipework.

DENR will provide a list of companies who have agreed to work towards the requirements of this Department guidance document on their website (www.gov.bm/Fuel_Storage_Tank_Installation_Guidance). The Department makes no claim as to its completeness or to the quality of work performed by any of these companies. Inclusion on this list is not to be considered an endorsement by the Department of Environment & Natural Resources. The Department strongly recommends that the consumer obtain prices and review company references before entering into agreements with any contractors or service providers.

2. Permissions

Ensure you have the appropriate permissions from the DoP to proceed with the preparations to install a UST/AST. The DoP will manage the input from other stakeholders including Bermuda Fire & Rescue Service (BFRS), Department of Health and Department of Environment & Natural Resources.

Complete and submit a Tank Registration Form to DENR for any UST/AST of capacity 200 USG or more.

See Section 4 for full details of required permissions.

3. Declaration

Please read the contents of this guidance document and if you have any questions or points of clarification then contact personnel from the DENR-Pollution Control Section at the contact details provided in the footer below.

Companies who agree to install AST/USTs and associated pipework and ancillary equipment to the requirements stated in this guidance document shall initial each page of this document and sign below.

Declaration: I have read and understood the requirements provide in this guidance document and acknowledge that I, and the company I represent, will operate to adhere to these guidelines.

Company Name: _____

Name of Company Representative (Manager/Owner*): _____

Signature: _____
(Agreement to follow the requirements of this guidance document)

Date: _____

ANNEX A

Assessing and Preparing a Risk Assessments prior to the Design and Installation of a Petroleum Fuel Storage Tank

Before you specify, design or install either an Underground or Aboveground Storage Tank (UST/AST) you shall be able to show in writing that you:

- Have carried out an environmental risk assessment suitable for the facility,
- Will have considered all engineering requirements to reduce the risk of pollution,
- Will have appropriate management systems and controls included to reduce the risk of pollution, and
- Will prepare a Spill Contingency Plan and associated procedures for when the UST/AST is complete.

These requirements for this guidance document have been taken from the UK Government Environment Agency website: https://www.gov.uk/guidance/prevent-groundwater-pollution-from-underground-fuel-storage-tanks/assessing-and-preparing-for-risks-for-an-underground-storage-tank

To assist you, DENR has prepared a simplified and generic risk assessment example that has been adapted for UST/AST facilities in Bermuda and its specific environmental considerations. This example should not be relied on as being definitive for your project.

In summary the risk assessment process requires: Firstly, the potential **hazards** to be considered in addition to the **receptors** at risk and the **pathway(s)** to those receptors. **Risk management** involves listing what **mitigating measures** will need to put in place to reduce the **probability and severity of exposure** of each hazard to the point that the resultant risk is either negligible, low or cannot be practically reduced any further without incurring what is considered [agreed with DENR] to be excessive cost. The risk assessment should also consider the **consequences of the 'do-nothing' option if the mitigating measures were not utilised.**

DENR considers that locating a UST/AST in Bermuda will create the following risks:

- **Spills of fuel/oil [Hazard]:**
    - Neighbours and First Responders [Receptors] via inhalation/direct expose [Pathway] to fumes [Hazard].
    - Neigbours and First Responders [Receptors] via direct exposure [Pathway] to flowing liquid fuel [Hazard].
    - Neighbours and Property [Receptors] abstracting polluted groundwater [Hazard] via abstraction wells and exposed along the following pathways:
        - Drinking improperly treated water (e.g. via reverse osmosis processes),
        - Direct exposure to WC flush water / Laundry water;
        - Direct exposure to irrigation water (and damage to foliage/lawns etc by using contaminated water),
        - Direct exposure to polluted water used to fill swimming pools.
    - Neighbours [Receptor] via ingestion of contaminated food stuffs [Pathway],
    - Groundwater environment (fresh, brackish, saline) [Receptors] via infiltration [Pathway] of liquid/dissolved fuel [Hazard],
    - Seawater, marine ecosystems and damage to boats [Receptors] via direct exposure [Pathway] to liquid/dissolved fuel [Hazard],
    - Ponds and their unique species [Receptors] via direct exposure [Pathway] to liquid/dissolved fuel [Hazard]

- Cave systems and their unique species [Receptors] via infiltrating and exposure to [Pathway] liquid/dissolved fuel [Hazard].

It is important to note that some species present in the ponds and cave systems are likely to be present on the IUCN threatened species category, otherwise known as the Red-List, or included in Bermuda's Protected Species Act 2003 and associated Protected Species Order 2012[9].

- **Ignition of spilled fuels/oil [Hazard]:**
  - Neighbours and First Responders [Receptors] via explosion, fire or smoke inhalation [Pathways]
  - Neighbours [Receptors] via contamination to roofs/potable water tanks from fire, smoke deposition [Pathways]
  - Environment [Receptor] via explosion, fire or smoke [Pathways]
  - Property [Receptor] via explosion, fire or smoke [Pathways]
- **Mosquito infestation/Disease [Hazard]:**
  - Neighbours [Receptors] from collected rainwater held in AST bund allowing mosquitoes to breed [Pathway].

Risk Management Process:

Once the hazards, receptors and pathways are fully understood then **Risk Management** techniques can be applied to help to **reduce** the following:

- Probability of each of the hazards occurring, or
- Probability of the hazard reaching the receptor via the various pathways considered, or
- Severity of the impact of each hazard affecting the receptors

Table 1 provides a list of the potential hazards, receptors and pathways that could exist for a range of installations of AST/USTs in a risk assessment format. Some typical Risk Management Options have been provided to help mitigate the risk. You can use this table for your own purposes and adapt it to address the particular risks that may exist for your particular installation of AST/UST. This list is not meant to provide all of the known hazards and pathways that may exist. You should consider what additional risks may exist at your site, preferably at the design stage, so that these risks could be potentially mitigated before the AST/UST is procured and installed.

In your risk assessment consider each risk that applies and identify each actual or possible hazard and state the:

- **Hazard** - for example risk of fire or explosion.
- **Receptors** - people, animals, environment, property and anything else that could be affected by the hazard
- **Pathways** - how the hazard can get to a receptor
- **Risk Management Options** - what measures you'll take to reduce risks
- **Probability of Exposure** - whether a risk is unlikely or highly likely (*i.e.* low, medium or high risk)
- **Consequences** - what harm could be caused
- **Overall Risk** - based on what you've already stated in the table - for example 'Low if we apply the recommended risk management techniques'

[9] http://www.bermudalaws.bm/Laws/Annual%20Laws/2012/Statutory%20Instruments/Protected%20Species%20Order%202012.pdf

Table 1. UST/AST Risk Assessment – Consideration of most common types of Hazards, Receptors and Pathways for many AST/UST Installation scenarios:

#	Hazard	Receptor(s)	Pathway	Risk Management Options	Probability of Exposure	Consequence	Overall Risk
1	Fuel Spills from AST Failure - Inhalation	Neighbours and First Responders	Fumes Inhalation	• AST/UST shall meet the requirements set out in this guidance document. • AST/UST shall be inspected and serviced to the requirements set out by the manufacturer. • Maintain fuel reconciliation records. • Spill Contingency Plan with call-out list and immediate notification requirements. • Major Hurricane Preparedness Plan within Site Plan for AST/USTs located within 6 metres (19.7ft) elevation of the water table. • Notify BFRS (or MAROPS for coastal spills) who may, based on the size of the spill, set up a suitable cordon/exclusion zone and evacuation procedure if weather conditions, fuel type and monitoring data suggests.	**Low.** The amount of fuel exposure necessary to cause a health issue from inhalation of fumes would require: (i) catastrophic tank failure, (ii) large surface area of spill for evaporation to occur, and (iii) neighbours downwind of the incident.	Refer to Safety Data Sheets (SDS) for fuel properties to appreciate full consequences. Provide SDS in Annex of Spill Contingency Plan. It is acknowledged that short-term exposure to certain fumes can cause nausea and other medical conditions if exposure is prolonged.	**Very low.** If risk Management Options are followed including a practised Spill Contingency Plan.
2	Fuel Spills from AST Failure – Dermal Contact	Neighbours	Flowing liquid on surface of ground	• See Risk Management Options in #1. • Hold oil spill response equipments at the site to prevent spilled fuel coming into contact with the receptors listed (*i.e.* adsorbent booms, pads, blankets, PPE, Decontamination area, etc.). • ***NEVER* try to contain a spill of gasoline!**	**Low.** The amount of flowing fuel to reach the receptors listed would require: (i) catastrophic tank failure, (ii) gradient towards nearby receptors. **Low/Medium.** If bystanders/neighbours are not managed they may try to help with the clean-up efforts.	Fuel SDS provides exposure details including inhalation and dermal contact from fuels.	**Low.** If Risk Management Options are followed. When practicing the Spill Contingency Plan ensure that bystanders/neighbours do not try to assist with any cleanup and are cordoned away from any exposure pathways.

#	Hazard	Receptor(s)	Pathway	Risk Management Options	Probability of Exposure	Consequence	Overall Risk
3	Fuel Spills from AST Failure – Dermal Contact	First Responders	Flowing Liquid on surface of ground	• See Risk Management Options in #2. • Ensure First Responders are: (i) Aware of all the risks at the site, (ii) Are trained and have practised the operation of the Spill Contingency Plan including their call-out list. (iii) Have access on site to appropriate PPE to reduce their exposure.	**Low.** Trained First Responders should not put themselves at risk over any environmental or property risks.	Fuel SDS provides details of medical conditions caused by exposure to fuels from a range of pathways. Also note that dealing with regular small spills may increase a persons health risk compared to addressing a single large spill.	**Low.** If associated Risk Management Options have been followed.
4	Fuel Spill from AST or UST Failure – Groundwater Exposure	Neighbours	Fuel infiltrates through the ground to the groundwater and is accessed via wells.	• See Risk Management Options #1. • Spill Contingency Plan shall consider the types of wells located in the vicinity of the UST/AST. • Ensure contact details of well owners that could be affected are on the call-out list of the Spill Contingency Plan. • Ensure your property/business liability insurance cover addresses contingency measures for the nearest wells. • Ensure AST/UST has suitable inspection schedule, reconciliation records, etc.	**Medium.** If the spill has occurred over a long period of time and is occurring without any fuel reconciliation practices in place.	Fuel in the groundwater accessed by wells can also expose the public via WC flush, laundry, irrigation and swimming pool well water.	**Low.** If associated Risk Management Options have been considered at the point of designing and installing the AST/UST.
5	Fuel Spills from AST or UST Failure – Groundwater Equipment	Property	Fuel infiltrates through the ground to the groundwater and is accessed via wells.			Fuel in the groundwater accessed by wells could damage equipments including: Reverse Osmosis membranes, laundry machines, heat exchangers.	
6	Fuel Spills from AST or UST Failure – Environmental Impact	**Environment:** Groundwater, Ponds, Seawater, Marine Ecosystems	Fuel either infiltrates through the ground or flows over the ground surface to the receptors listed.	• See Risk Management Options #1.	**Medium.** For Groundwater Receptors. If spill has occurred over a long period of time. **Low.** For other receptors as the effects of a spill would be noticeable on the water surface.	Damage to the these environmental receptors will reduce the biodiversity within these ecosystems thereby affecting protected species which could damage parts of Bermuda's pristine environment.	**Low.** If associated Risk Management Options have been considered at the point of designing and installing the AST/UST.

#	Hazard	Receptor(s)	Pathway	Risk Management Options	Probability of Exposure	Consequence	Overall Risk
7	Fuel Spills from shoreside refueling stations (*i.e.* **marina's**) – Environmental Impact	**Environment:** Seawater, Marine Ecosystems	Fuel spills from gasboy nozzle/boat into the sea.	• See Risk Management Options #1. • Ensure fuel nozzles are serviced and inspected regularly as per manufacturer instructions. • Ensure training and/or oversight of all fueling actions. • ***NEVER*** apply detergents or dispersants without permission from DENR personnel on the day of the spill.	**Medium.** For Seawater receptors if spill occurs through frequent fueling of boats ar marinas.	See #6 above. Note that the environmental impact from detergents and dispersants can be much greater than from the impact caused by a small spill of petroleum product.	**Low.** If the various Risk Management Options are administered and followed.
8	Fuel Spills from land-based refueling points (*i.e.* Retail Stations or Fleet Vehicle fueling sites) – Environmental Impact	**Environment:** Groundwater	Fuel spills from gasboy nozzle/vehicle and onto unsealed ground.	• See Risk Management Options #1 • Note that Retail Fuel Stations shall be licenced under the Clean Air Act 1991 and will already have conditions applied to address these risks. • Commerical Fleet Vehicle Refueling Sites: Ensure that the ground where the fueling occurs is sealed and/or contained and AST/UST and nozzles etc are inspected and serviced regularly.	**Medium.** For Groundwater receptors if spill is occurring from frequent fueling of commercial fleet vehicles on uncontained ground.	Note that DENR has yet to establish whether the environmental risk caused by commercial fleet vehicle refueling sites is significant.	**Low/TBD** If the various Risk Management Options are administered and followed.
9	Fuel Spills from shoreside AST/UST Failure and from re-fueling **at marina's** - Boat damage	Property - Boats	Spills of liquid fuel/oil into the marine environment	• See Risk Management Options #1. • Provide spill containment equipments, Spill Contingency Plan and Training to address the risk. • Consider insurance cover to address cleaning of fuel/oil on boat hulls. • For Marina fueling ensure that fuel nozzle is inspected and serviced regularly. • *NEVER* apply detergents or dispersants unless approval is provided by DENR on the day.	**Low.** For catastrophic failure to shoreside AST/UST. **Medium.** From boat re-fuelling at marinas with AST/USTs.	Damage to boats from a known pollution source (*i.e.* hazard) is more likely to result in compensation claims by the boat owners for cleaning if the fuel/oil has caused staining to the boat hull.	**Low.** If the various Risk Management Options are administered and followed.

#	Hazard	Receptor(s)	Pathway	Risk Management Options	Probability of Exposure	Consequence	Overall Risk
10	Fuel Spills from AST/UST Failure – Environmental Impact	Ponds and their species	Flowing overground or infiltrating through limestone/ groundwater	• See Risk Management Options #1. • If the AST is within 30 metres of a recognised pond in Bermuda then the tank shall be double-walled AND located within a bund with capacity of 110% of the largest tank in the bund. • USTs shall be double-walled and located within a leak-tight vault.	**Low.** For catastrophic failure of an AST/UST within 30m of a pond. **Low/Medium.** For slow/continual leaks over a longer period of time from a UST.	Fuel covering the surface of a pond will quickly cause anoxic conditions to occur which would threaten the species present in the pond. Many species are present on the IUCN Red List and are also referenced on the Bermuda Protection Species Act 2003 and Order 2012.	**Low.** If the various Risk Management Options are administered and followed.
11	Fuel Spills from AST/UST Failure – Environmental Impact	Cave systems and their species	Infiltrating down through the limestone or migration once in the groundwater.	• See Risk Management Options #1. • If the AST is located within a Cave Protection Areas (CPAs) then the tank shall be double walled AND located within a bund with capacity of 110% of the largest tank in the bund. • USTs located in CPAs shall be double walled and located within a leak-tight vault.	**Low.** For catastrophic failure of an AST/UST within a CPA. **Low/Medium.** For slow/continual leaks over a longer period of time from a UST.	Fuel entering a cave system will contaminate the protected species present in the cave. There is also a risk that the fuel will quickly cause anoxic conditions to occur which would threaten the species present in the pond. Many species in Bermuda's caves are present on the IUCN Red List and are also referenced on the Bermuda Protection Species Act 2003 and Order 2012.	**Low.** If the various Risk Management Options are administered and followed.

#	Hazard	Receptor(s)	Pathway	Risk Management Options	Probability of Exposure	Consequence	Overall Risk
12	Ignition of spilt fuel/oil – Fire/ Explosion	Neigbours and First Responders	Proximity to fuel ignition/blast/fire and smoke inhalation	• See Risk Management Options #1. • Spill Contingency Plan with immediate Notification requirements. • Notify BFRS (or MAROPS for coastal spills) who will, based on the size of the spill, set up a suitable cordon/exclusion zone and evacuation procedure. • Ensure that the plan requires sources of ignition to be controlled in addition to the sole use of intrinsically-safe electrical equipments within a certain distance of the AST/UST. • Ensure your AST/UST is known by the insurer to be located at your property. • For commercial properties ensure that you have a Fire certificate from BFRS as required under the Fire Safety Act 2014.	**Low/Medium.** Hazard requires BOTH a catastrophic failure to the AST/UST AND an ignition source before it can occur.	The greatest risk of ignition of spilled fuel will be for the more volatile fuel, gasoline. *NEVER* try to contain or manage spilled gasoline. Always evacuate and notify BFRS immediately.	**Low.** If the various Risk Management Options are administered and followed.
13	Ignition of spilt fuel/oil – Fire/ Explosion	Property	Damage from explosion, fire or smoke.	• See Risk Management Options #12 above.	**Low/Medium.** Hazard requires BOTH a catastrophic failure to the AST/UST AND an ignition source before it can occur.		**Low.** If the various Risk Management Options are administered and followed.
14	Contamination to Bermuda roofs/ water tanks	Neighbours & Property	Fire, smoke and soot fallout onto Bermuda roofs	• See Risk Management Options #12. • Engage local roof cleaning companies to clean any contaminated roofs and to prevent contamination from entering potable water tank. • Engage local water tank cleaning companies if the tank has already been impacted.	**Low/Medium.** Hazard requires BOTH a catastrophic failure to the AST/UST AND an ignition source before it can occur.		**Low.** If the various Risk Management Options are administered and followed.
15	Mosquito infestation - carrying diseases	Neighbours	Mosquitoes breeding in rain water collected in AST bund	• See Risk Management Options #1. Improve AST/bund management processes. • Install an oil filter that permits water to pass through but blocks fuel/oil.	**Medium.** If the AST is fitted with a bund that is open to rainwater.	Mosquitoes may carry disease and infect neighbours in the locality of the AST/bund if rainwater collects.	**Low.** If Risk Management Options are administered.

Initial:____

ANNEX B

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

GENERIC STANDARD OPERATING PROCEDURE (SOP): FUEL/OIL SPILL - UNDER-GROUND OR ABOVE-GROUND STORAGE TANK LEAK (UST/AST)

CHANGE RECORD FORM

REV.	TYPE OF CHANGE	AUTHOR	DATE
			[Publish Date]

PRIORITIES	#1. Protection of First Responders and Public #2. Stabilization of the incident #3. Reduce and remediate damage to Property & Environment
PROBLEMS	#1. There is a risk that fumes from spilled or leaking fuel may ignite or explode due to its ***'Flash Point'*** being reached coupled with a source of spark from ***'non-intrinsically safe'*** equipment or static from personnel. #2. **The action of 'Recovery and Clean-up' may** cause fumes from the spilled fuel to ignite or explode. #3. There is a risk that spilled fuel may flow via drains etc. to outside of the estimated spill area or demarked perimeter and contaminate unsealed ground, groundwater and/or property (*i.e.* buildings, boats, etc.). #4. Soot from a resultant fire of spilt fuel/oil may contaminate water collection roofs and associated tanks used to store potable water. #5. **The fumes from the spilled fuel may cause *'occupational health'*** issues to neighbours or first responders as stipulated in the relevant Safety Data Sheet (SDS) (*i.e.* inhalation or dermal contact). #6. The spilled fuel may contaminate the environment and harm wildlife, including cave and pond fauna. #7. The spilled fuel may negatively affect processes that rely on the abstraction of groundwater via wells (*i.e.* Laundry, irrigation, WC flush, HVAC, Swimming pools, etc.).
OBJECTIVES *(WHAT to be achieved)* **INCIDENT COMMAND SYSTEM (ICS):** **Establish a STRATEGY to show how each OBJECTIVE will be addressed DURING a Spill.**	#1. Keep unauthorised persons away from spill and isolate source of spill if safe to do so. #2. Contact the appropriate organisation to protect the public and first responders (*i.e.* BFRS) and for the Recovery & Clean-Up (i.e. See Useful Contacts section below). Always notify DENR immediately. #3. Limit the spread and reduce the exposure of the fuel to the environment (*i.e.* sea, ponds, drains, caves, un-sealed ground, etc). #4. Recover (safely) spilled fuel / fire suppressant / water mixture into approved containers. #5. Transport of recovered liquid fuel mixture to MPW Sallyport or other DENR-approved facility. #6. Recover (safely) any contaminated soil/sand to DENR-approved Soil Remediation Cells (*i.e.* SOL, **MPW**). Use a DENR-approved certified Environmental professional to differentiate contaminated from non-**contaminated material in accordance with Bermuda's Risk based Corrective Action (RBCA) Guidelines[4]**. #7. Dispose of oiled spill response equipments such as boom and pads to the Tynes Bay Waste to Energy Facility with the black bagged waste. Use poly-lined trucks to prevent spillage during road transport. #8. Notify DENR Wildlife Ecologist/BAMZ to treat affected wildlife. #9. Provide a strategy that is approved by the Department of Health to clean rainwater collection roofs and associated water tanks if soot damage from fire has occurred as a result of the spill. #10. If contamination to the groundwater has occurred or if the spill is outside of any sealed ground then delineate the full extent of the spill by drilling monitoring wells down to the water table and below. #11. Assess what property could be affected as a result of the spill, including groundwater abstraction wells and associated equipment, property, boats, etc. Hold on record a plan view of the nearest assets (<100m). #12. Ensure that a Spill Contingency Plan exists for the UST/AST at sufficient detail to address the worst case scale of a spill.
EQUIPMENT RESOURCES AVAILABLE	#1. **UST/AST Owner:** List your own Spill Response Equipment: #2. **BFRS:** AFFF and Mobile spill response: Water; boom; Sphag sorb; Pads. #3. **MPW Sallyport:** Intrinsically-safe impeller pump; (115v), 20 USG/min; Non-intrinsically safe vacuum pump, (Diesel), 35 USG/min.; Chemical grade hose (earthing requirement of hose – TBD); Maximum

(Relevant to this SOP)	suction distance to pumps: 50-70ft with up to 6ft head; Fuel Storage Options: (i) 2000 USG with the two trucks available; (ii) 275 USG per Tote (Static Risk TBD); (iii) 24,000 Litre (6300 USG) eurotainer; Soil Remediation Cell; LEL Sensor, etc... #4. **SOL Petroleum:** Adsorbent boom; pads; pillow; adsorbent material (Sphag sorb); Chemical grade, earthed suction hoses, LEL Sensor; Soil remediation cell, AFFF, Corexit 9527. #5. **RUBIS:** (Dockyard & St Georges) 2x900ft sea boom, disc skimmer Booms; Pads; LEL Sensors (x2 – Dockyard, St Georges). #6. **BELCO:** PACS1000: oil vacuum suction trailer; Storage capacity (1000 USG); LEL Sensor; etc.... #7. **DENR:** Adsorbent boom and pads located at Government Quarry; LEL Sensor; PPE, MPCP Equipments.
SAFETY CONSIDERATIONS	• Do not enter the area of the spill/fumes from a volatile fuel such as gasoline or jet fuel unless you are confident that it is below the Lower Explosive Limit (LEL %). • Do not try to contain the fuel if there is a risk of an explosion. Apply retardants such as AFFF to lower the amount of vapours emanating from the fuel first. • Ensure that you do not carry non-intrinsically safe items into an explosive atmosphere (*i.e.* cell phones). • Consider whether earthing of equipment is required if there is a risk of static electricity building up from plastic/polymeric hoses etc. • **Consult fuel Safety Data Sheets for occupational exposure risks from its constituents. If you don't need to** be present at a location where the fumes are apparent then move out of that area.
CONTACT DETAILS	• **UST/AST Owner/Maintainer/Servicing Engineer:** *TBD* • **UST/AST Removal Companies:** *TBD See ww.gov.bm* • **UST/AST Contaminated Ground - Certified Environmental Professionals:** *TBD See www.gov.bm* • **MPW Sallyport Hazmat Facility:** Mr Clarkston Trott: Tel: 278 0562, Cell: 501 3026; 501 3053; 501 3025 • **SOL Petroleum:** Mr Nick Ball: Tel: 294 5240 or 297-3776 main. • **RUBIS:** 297-1577, Mr Robbie Godfrey; Howard Williams; Justin Barritt; Graham Redford. • **BFRS:** Tel: 911, 292 5555 • **Bermuda Radio:** Tel: 297 1010 and/or VHF Channel #16. • **Dept of Environment & Natural Resources (DENR):** PollutionControl@gov.bm, Cell: 747 2302; 505 3286
FUEL/OIL SAFETY DATA SHEET (SDS) Details	• **Gasoline:** LEL = 1.4%. Flash Point = -43°C (-45°F). Auto-Ignition Temperature = 247°C (476°F). • **Diesel (Fuel No.2):** LEL = 0.6%. Flash Point = 52°C (125°F). Auto-Ignition Temperature = 257°C (494°F). • **Marine Gas Oil:** LEL = 0.7%. Flash Point = 52°C (125°F). Auto-Ignition Temperature = 257°C (494°F). • **Jet Fuel (A):** LEL = 0.7%. Flash Point = 38°C (100°F). Auto-Ignition Temperature = 210°C (410°F). • **Heavy Fuel Oil:** LEL = 1.0%. Flash Point = >65°C (>149°F). Auto-Ignition Temperature = >400°C (>752°F) • **Other Chemicals Stored:** List pertinent data of other chemicals stored at site at 200 USG or greater.
OUTLINE TO SPILL CONTINGENCY PLAN **To address the following:**	#1. The Spill Contingency Plan shall contain: Plan review log and employee acknowledgement and sign-off. #2. Description of the physical layout of the facility including AST/UST, containment features, drainage features, location of: spill response equipment, Spill Contingency Plan, other environmentally sensitive assets (caves, ponds, sea, fresh groundwater) and potentially affected property (i.e. abstraction wells).. #3. Detailed facility diagram plan-view showing location of the above features described in addition to oil/fuel filled tanks, pipework, etc. #4. Routine operational procedures to prevent spills. #5. Procedures to respond to spills (*i.e.* adapt this document). #6. Evaluation of potential equipment failures and direction/rate of flow and potential maximum quantity that could be spilled. #7. Description of secondary containment features including design and operating/inspection procedures and shut-off valves, alarms etc. #8. Inspections and testing of equipment. #9. Details of Training and Site Security.

ANNEX "U"

CERTIFICATE OF REGISTRATION OF A PETROLEUM STORAGE TANK

Registration No. 1230

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
P.O. Box HM 834
Hamilton HM CX
Tel: 239-2303
email: pollutioncontrol@gov.bm

Bermuda Police Service
Police Headquarters
10 Headquarters Hill
Devonshire DV 01.
Attention : Fleet Manager

Assessment #	Map #	Grid Ref
041421914	3/15	33657466

THIS IS TO CERTIFY that a petroleum fuel storage tank located at:
Police Headquarters, 10 Headquarters Hill, Devonshire.

is registered in the names of :

TANK OWNER : **Rubis Energy Bermuda Ltd., P.O. Box GE 2, St. George's.**

TANK OPERATOR : **Bermuda Police Service, 10 Headquarters Hill, Devonshire.**

LAND OWNER : **Bermuda Government, 30 Parliament Street, Hamilton.**

Particulars of the tank:

Serial #/ID/Name :	
Date Installed:	**2008**
Capacity (US gallons) :	**4000**
Situation:	**Above ground**
Tank Construction:	**Glasteel**
Pump:	**Submersible**
Pipe Construction:	**Steel**
Corrosion Protection:	**Coated**
Monitoring System:	

Particulars of fuel stored:

Type:	**ULSD & Gasoline**
For use as:	**Vehicle supply**
Supplied by:	**Rubis**

THE REGISTRATION EXPIRES ON : **20 JANUARY 2021**

Issue date : 8 AUGUST 2019

Department of Environment and Natural Resources

UO

GOVERNMENT OF BERMUDA
Ministry of Home Affairs
Department of Environment and Natural Resources
Pollution Control Section

Autumn 2018

To: All Fuel Storage Tank Owners & Users

Your attention is drawn to the conditions on the reverse of the certificate.

Please be advised that owners and users of petroleum fuel storage tanks are required to comply with Bermuda's Risk Based Corrective Action Guidelines in the event of any leaks or spills from the fuel tanks or associated pipelines, and when fuel tanks are moved or closed. These guidelines are available online at www.gov.bm, searching "Guidelines for the Investigation and Remediation of Soil and Groundwater Contamination".

Failure to comply with these guidelines may result in prosecution under the Water Resource Act 1975.

The Department of Environment and Natural Resources will not accept a simple written notification that a fuel tank has been removed or closed in place. Evidence of there being no adverse effects on the environment from spills and leaks will be required.

Single-walled underground fuel storage tanks that are over 20 years old shall be inspected for leaks and 'leakproofness' (to the recommendations of the fuel suppliers) on an annual basis. The Department recommends that single-walled tanks greater than 30 years old be replaced with double walled tanks with interstitial leak monitors.

Fuel spills or leaks of more than 1 gallon shall be reported to the Department of Environment and Natural Resources (email pollutioncontrol@gov.bm or phone 747-2302 or 505-3286) within 24 hours.

Should you have any questions or if you would like us to meet you at the site of the tank, then please email pollutioncontrol@gov.bm.

Geoff Smith, Ph.D.
Environmental Engineer

Botanical Gardens, 169 South Road, Paget DV 04, Bermuda
P.O. Box HM 834, Hamilton HM CX, Bermuda
Phone: (441) 236-4201 Fax: (441) 236-7582
Email: pollutioncontrol@gov.bm